

Great Barrier Reef Marine Park, Queensland, Australia

A Case Study of Managers' Place Meanings and Environmental Governance of the Great Barrier Reef Marine Park, Australia



Final Technical Report
August, 2011

Carena J. van Riper, Gerard T. Kyle, Stephen G. Sutton, Renae C. Tobin

Final Technical Report of Managers' Place Meanings and Environmental Governance

August, 2011

Carena J. van Riper¹
Principal Investigator

Gerard T. Kyle¹, Stephen G. Sutton², Renae C. Tobin²
Contributing Authors

¹Human Dimensions of Natural Resources Laboratory
Department of Recreation, Park & Tourism Sciences
Texas A&M University
College Station, TX, USA

²Fishing and Fisheries Research Centre
School of Earth and Environmental Sciences
James Cook University
Townsville, Queensland, Australia

Table of Contents

INTRODUCTION.....	1
RESEARCH TEAM	1
BACKGROUND INFORMATION	1
METHODS	2
STUDY CONTEXT	2
RESEARCH APPROACH	2
EXECUTIVE SUMMARY OF FINDINGS	3
DETAILED FINDINGS.....	5
PLACE MEANINGS.....	6
<i>Natural</i>	7
<i>Functional</i>	8
<i>Experiential</i>	9
<i>Interpersonal</i>	10
Applying Place Meanings to Management Decision-Making	10
ENVIRONMENTAL GOVERNANCE	12
<i>Formal Policy Instruments</i>	12
<i>Informal Policy Instruments</i>	14
Applying Environmental Governance to Management Decision-Making	16
DISCUSSION OF STUDY FINDINGS	19
PLACE MEANINGS.....	19
ENVIRONMENTAL GOVERNANCE	20
CONCLUSIONS	21
MANAGEMENT RECOMMENDATIONS	22
LITERATURE CITED	23
APPENDIX I: INTERVIEW GUIDE: CONNECTING MANAGERS’ SENSE OF PLACE TO DECISION-MAKING WITHIN THE GREAT BARRIER REEF MARINE PARK	26
APPENDIX II: CONSENT FORM	28

Tables and Figures

<i>Table 1. Socio-demographic characteristics among managers of the GBRMP</i>	<i>6</i>
<i>Figure 1. Four dimensions of place meanings</i>	<i>7</i>
<i>Figure 2. Conceptual representation of management decision-making.....</i>	<i>12</i>

Introduction

The Great Barrier Reef Marine Park (GBRMP) Survey of Managers Final Technical Report presents the findings from a social science research project designed to inform environmental planning and management. This project serves as preliminary dissertation research for the primary investigator and informs a larger study of human-environment interactions in the context of the GBRMP. The findings explore managers' perceptions of places within the GBRMP and the environmental governance system that managers exist within. This report is designed to improve the information, services, and products that managers of the GBRMP provide to their public constituents.

Research Team

The research team was comprised of associates of the Human Dimensions of Natural Resources Laboratory at Texas A&M University, USA, and the Fishing and Fisheries Research Centre at James Cook University, Australia. Ph.D. student Carena van Riper and Dr. Gerard Kyle from Texas A&M University, as well as Drs. Stephen Sutton and Renae Tobin from James Cook University contributed to various phases of this research.

Background Information

“Place meanings” and related concepts that reference human attachment to spatial settings have received considerable research attention (Farnum et al., 2005). This line of work offers a promising approach to better understand the emotional and symbolic meanings that people ascribe to landscapes and, therefore, what is or is not considered important (Kyle et al., 2004). This information offers a guide for managers to oversee resource and recreation conditions in ways that are consistent with public preferences for protected area management. Previous investigations have explored how visitors and residents feel connected to places; however, the perspectives of managers have generally been absent from these investigations (Hutson et al., 2010). This is problematic, because managers are entrusted by the will of the people to oversee resource and recreation conditions in ways that are consistent with stakeholder expectations. It is important to clarify how managers' personal connections to places can shape the decision-making process. This information can be helpful to negotiate policy outcomes related to environmental protection and public access to natural resources.

The process of protecting environmental conditions while providing meaningful experiences for constituents is embedded within a political system that relies on subjectivity in decision-making and personal insights into landscape change and human use. This is an “environmental governance” regime and it is tied to managers' attachments to the physical world. Environmental governance is a deliberative process of decision-making whereby a range of regulatory practices, institutions, organizations, and relationships shape policy outcomes (Lemos & Agrawal, 2006). In other words, governance systems involve not only a hierarchy of government agencies but also a “bottom up” approach to management that considers the interests of individuals and groups

of stakeholders. In this report, we used an environmental governance framework to examine how managers legitimized decision-making and incorporated public viewpoints into environmental planning and management of the GBRMP.

We organized this report around two ideas. First we explored the idea of place meaning in terms of four dimensions – natural, functional, experiential, and interpersonal – to illustrate the diversity in attachment formed between managers and places under their jurisdiction. Second, we described the environmental governance system that surrounded management decision-making in terms of formal and informal policy instruments utilized by managers of the GBRMP. We then applied our governance framework to the 2004 re-zoning of the GBRMP to offer a perspective on how managers believed their public constituents contributed to the formulation of environmental policies. We hope this information will shed light on managers' personal relationships with places, the structuring of authority in governance systems that managers operate within, and the benefits and drawbacks of negotiating policy changes through public consultation.

Methods

Study Context

The GBRMP extends approximately 2,300km along the northeastern coast of Australia in the state of Queensland. 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 (GBRMPA, 2009). Interconnected within these habitats are other communities such as mangroves, seagrass beds and sponge gardens that contribute to an extraordinarily productive ecosystem. The GBRMP is an iconic destination that fosters a range of values and meanings among user groups (Wynveen et al., 2010) and serves as a driving force for the economy of Queensland (e.g., tourism industry, fishing) and, in part, for all of Australia (Day, 2002). Federal, state and local organizations work in cooperation to address key environmental threats (e.g., climate change, coastal development, water quality), engage local communities and accommodate multiple interests such as shipping, commercial charters, recreational activities, indigenous hunting, and scientific research (GBRMPA, 2009).

Research Approach

We drew on grounded theory to examine the meanings that managers from three federal and state agencies charged to oversee the GBRMP ascribed to places (Glasser & Strauss, 1976) and the governance system that surrounded management decision-making (Jordan et al., 2005). This was an inductive method used to develop concepts and identify patterns throughout data collection and the analysis procedures (Clark, 2005; Marshall & Rossman, 2006). Semi-structured interviews were conducted both in-person and by telephone June – September 2010 (n = 35) (see Table 1). Informants were selected using a purposive “snowball” sampling frame, which involved identifying key figures in the management network and building a sample based on recommendations from study informants. The interview guide consisted of 25 questions designed to query place meanings and management decision-making. Following Schroeder (1996), we elicited responses by asking informants to describe a “special” place and explain why it was important.

Conversations ranged from 34 minutes and 22 seconds to one hour and 42 minutes, amounting to over 33 hours of formal interview time that was tape recorded, transcribed verbatim and analyzed using open coding in ATLAS.ti version 4.2.

All interviews were conducted by the primary investigator. Each participant was provided with background on the study purpose and personal copies of the consent form and interview guide (see Appendix I and II). The consent form provided detailed information about the purpose of the study and the participant selection procedures. The form also promised individual and institutional anonymity. Throughout the one year timeline of the study, research records were stored securely and kept private. Participants were asked for their consent to be tape-recorded and it was explained that all recordings would be erased upon completion of the research. There was no compensation to be involved in the study and there was no more risk than would be experienced in everyday life. This study was reviewed by the Texas A & M University Institutional Review Board and approved under exempt status (IRB Protocol Number 2010-0330).

The use of qualitative research allowed the primary investigator to gain a more comprehensive understanding of the research context; however, there were several considerations associated with this approach that should be noted and taken into account when interpreting the results. For example, the academic position adopted for this research was shaped by the intellectual biography and academic training of the primary investigator. The underpinning beliefs about natural resources management and personal value systems contributed to the interview questions that were selected to guide conversations, the progression of ideas and content of the interviews, as well as a subjective interpretation of study findings. The advantages and disadvantages of this position were recognized and reflected upon throughout the research process in order to respond to preconceptions and preexisting knowledge concerning the study topic, maintain a flexible and receptive attitude, and encourage a critical analysis of various forms of data. This approach was used to gain an in-depth understanding of place meanings among GBRMP managers, rather than a representative sample used to extrapolate to larger populations.

Executive Summary of Findings

Our study findings illustrated how 35 managers from state and federal agencies felt connected to places and operated within a system of environmental governance in the context of the Great Barrier Reef Marine Park.

- Managers of the GBRMP formed strong and diverse attachment to places. These personal connections can be characterized by four dimensions of place meaning.
 - Natural: Ecosystem function and resilience, biodiversity, and aesthetic beauty were important elements in the naturalistic meanings that managers ascribed to the GBRMP.
 - Functional: Managers' involvement in recreation activities, concern over public access, multiple use philosophies, and appreciation for economic value of natural resources facilitated a connection between managers and places under their jurisdiction.

- Experiential: Individual attachment was formed through familiarity with places, a sense of spirituality / ancestry, solitude, knowledge acquisition / curiosity, and a deep-seated passion for professional vocations.
- Interpersonal: The relationship between managers and places was driven by a desire to provide for future generations, promote environmental stewardship, and interact with family and friends.
- Managers' personal views of the environment and decision-making processes were interrelated.
 - Managers' interactions with the landscape helped them better understand the sentiments of their public constituents. Through involvement in outdoor recreation activities, managers built appreciation for natural settings and recognized the importance of places as perceived by user groups. Previous experiences in farming, ranching and fishing were also helpful in this regard.
 - Individual relationships with places were enhanced by a professional understanding of natural systems. Managers' work-related duties made them more attuned to the environments in which they recreated, which enhanced the quality of leisure pursuits in these same places.
 - Personal connections to places within the GBRMP provided common ground shared by managers and users of the GBRMP. Study informants reported that their personal appreciation for use of natural resources could help alleviate fear among stakeholders that management decisions would be made in ignorance without understanding public viewpoints.
 - Emotional and symbolic attachment to places enhanced managers' abilities to clearly communicate issues of interest, in turn, facilitating, trust and "street credit" among their constituents.
- A system of environmental governance surrounded management of the GBRMP. This system can be characterized by formal and informal policy instruments, which determined the means (i.e., goals) and ends (i.e., outcomes) of the decision-making process.
 - Formal policy instruments were aspects of a centralized form of governance that supported decisions *after* environmental policies had been established.
 - The arrangement of governmental authorities that oversaw the GBRMP fed into a "top - down" approach to management that reflected vertical conceptions of power. These agencies worked within a complex and complimentary governance regime.
 - A variety of formal policy instruments (e.g., plans of management, site planning, special management areas) were used as tools for conservation and sustainable management of the GBRMP.
 - Informal policy instruments were aspects of a more decentralized form of governance used to incorporate public views *throughout* decision-making.
 - Governmental authorities worked in cooperation with individuals and groups of stakeholders to support a "bottom - up" approach to management. When employed, this governance system reflected horizontal conceptions of power.

- A variety of informal policy instruments (e.g., partnerships, collaborations, advisory committees) were seen as mechanisms to integrate public perceptions into environmental planning and management efforts.
- Re-zoning of the GBRMP was a salient management issue discussed in the majority of interviews conducted for this research. For the purpose of this report, the re-zoning process was used to illustrate the extent to which constituents were thought to be involved in changes to this policy.
 - Throughout the re-zoning process, as well as other policy changes, managers balanced different viewpoints to determine outcomes.
 - Not everyone was satisfied with the outcome of the 2004 rezoning of the GBRMP; compromises were made and views transformed throughout the process of engaging stakeholders.
 - Higher level considerations (e.g., indigenous use) were factored into decisions about human use of natural resources.
 - Scientific expertise was critical to collate public responses, draw on previous understandings and offer recommendations that acknowledged different perspectives.
 - Community meetings held in towns adjacent to the GBRMP were seen as places of negotiation and reciprocal exchange.
 - Equal access – things as simple as the layout of a room – was an important consideration to ensure opportunities for individuals to express their views.
 - Re-zoning meetings provided space to express and explain management frameworks back to communities. From the perspectives of managers, community meetings helped to alleviate distrust and work toward social acceptance of decisions.
 - Negative attitudes were directed toward the government as a result of rezoning the GBRMP.
 - The managers interviewed in this study were concerned with distrust of the government and relations between decision-makers and local communities.
 - The 2004 re-zoning was a salient issue in the public eye, in part due to high visibility (e.g., newspaper coverage) and personal importance; livelihoods and sustainable management conditions were at stake.
 - There was a response to the needs and desires expressed by local communities throughout the re-zoning process. For example, regional offices were established within the federal government agency that oversees the GBRMP.

Detailed Findings

The following section of this report presents the detailed findings generated from a thematic analysis of qualitative data, including two sub sections: 1) Managers' Place Meanings, and 2) Environmental Governance. Both of these subsections include practical applications of these ideas to management decision-making. Table One summarizes the

frequencies for informants' socio-demographics. Excerpts from the interviews are presented below to reinforce our conceptualization of the study findings.

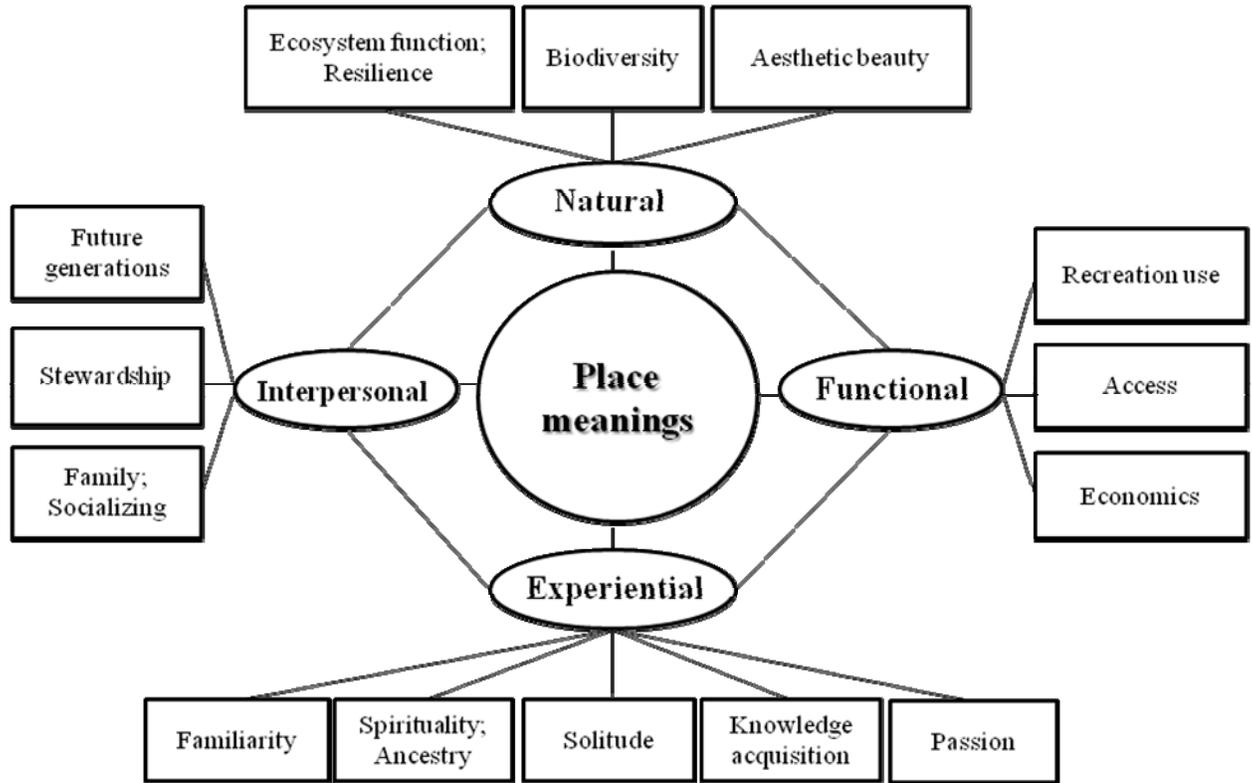
Table 1. Socio-demographic characteristics among managers of the Great Barrier Reef Marine Park

Variable		Frequency
Gender (n=35)	Male	23
	Female	12
Age (n=35)	Average	44
Ethnicity (n=32)	Aboriginal or Torres Strait Islander	1
	Not Aboriginal or Torres Strait Islander	31
Race (n=33)	Primary school	0
Education (n=35)	Secondary school	1
	Tertiary degree	3
	C.A.E. degree	1
	Graduate degree	30
Annual Household Income (n=31)	\$50,000 - \$99,999	3
	\$100,000 - \$149,999	9
	\$150,000 - \$199,999	14
	\$200,000 - \$249,999	3
	\$250,000 - \$299,999	2
Years in Management	Ranges from 1.5 to 31 years	
Years in Agency	Ranges from 2.5 to 31 years	
Years in Current Position	Ranges from 4 weeks to 12 years	

Place Meanings

Results illustrated strong and diverse attachment formed between federal and state managers from three agencies and places within the GBRMP. To organize our informants' narratives, we identified various aspects of place meanings that fell within four dimensions (e.g., Davenport & Anderson, 2005; Williams & Vaske, 2003) (see Figure 1). Each of these dimensions was comprised of facets of the human experience within the GBRMP. Managers' attachments to places within the GBRMP were characterized by natural, functional, experiential, and interpersonal dimensions.

Figure 1. Four dimensions of place meanings



Natural

Our first place dimension, titled “natural,” illustrated managers’ appreciation for biological resources and physical forces that existed independent of human presence. Places were seen as important to managers, because of their naturalistic meanings. Ecosystem function and resilience were two related ideas that were of great concern among managers and seemingly prioritized in management goals and objectives. Pristine environmental conditions were also central to conversations about why places within the GBRMP were of value. One informant explained, “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 informant echoed the sentiments of many others who believed natural environments should be maintained and preserved in their own right and to facilitate connections between people and places. Biodiversity, in terms of marine life and vegetation, characterized the meanings ascribed to settings by a number of study informants. One manager referred to aesthetic experiences, explaining that geographic locales became important when linked to species conservation: “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...the location becomes important if you’ve got an island, like this place called Raine Island in the north, which is the most important green turtle nesting site in the world...It’s not a very pretty place. It’s all been churned over by green

turtles all the time when they're nesting. But it's a vital place for the turtle." This passage emphasized the importance of biodiversity conservation and illustrated one manager's belief that places such as Raine Island served the critical purpose of providing habitat for marine life. It was in this role that the study informant ascribed ecological value or worth to the island.

The aesthetic beauty of places also helped managers to construct attachments to the physical world. When asked to describe a place of importance, an informant described one of their first experiences at the Great Barrier Reef visiting a place called Lady Musgrave Island. This individual elaborated on how biophysical conditions furthered his appreciation of the area: "I have very fond memories about that first exposure to the coral cay, uh, and the surrounding coral communities and the reef more broadly." He then described the natural features of Sandbank number eight: "out in the reef where you can go from being in three meters of water to 3,000 meters of water in less than 100 meters I think, it was an extraordinary drop-off right on the cusp of the Australian continent coral shelf. And that sense of isolation and then how turtles can find their way home to a sandbank that's only a couple of hectares in size in the middle of a vast ocean, again, just spoke volumes about the miracle of nature and how those systems have continued to function." The natural qualities of places, and as articulated by this informant, the breathtaking beauty and aesthetic characteristics of the Great Barrier Reef were part of managers' emotional and symbolic connections to special places.

Functional

We labeled the second dimension of managers' place meanings "functional," and it represented utilitarian-oriented values that underpinned the idea that places provided people with functional benefits. This dimension was comprised of various aspects of human use and consumptive practices that drew on natural properties of the GBRMP. "Fishing," "snorkeling," "diving," and "swimming" were activities often referenced by the study informants. Some derived benefits from places by "catching a really good fish and eating it," "trail running on the weekend," and "recreational activities and fishing values." A number of managers felt connected to Hinchinbrook Island National Park, because, as explained by one informant, "It's where I, uhm, prefer to do some of those recreational activities." The ideas of use and involvement in outdoor settings were central to the bonds formed between many managers and places considered in this study: "I spent all my life on the ocean or on the water. On it. Under it. You know. That's sort of what I understand. So when I look at something like that now, anywhere, my picture of it is the totality of the activities that occur in it." Human-place bonds among managers were clearly underpinned by recreational interactions with the natural environment.

The functional dimension of place was reflected in a multiple use philosophy that resonated with many informants: "I'm 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 that see something and appreciate it, the more support you will have...Places become special because you can use them." Access to some resources and protection of others was a strong ideal held by many managers interviewed in this study. This aspect of attachment between managers and places was linked to the importance of

economic support stemming from outlets such as tourism, recreational activities and commercial fishing. Several study informants discussed the importance of the GBR's socio-economic value as perceived by users that draw on resources protected by the GBRMP, as well as residents living within the catchment area.

Experiential

The third dimension of managers' place meanings was titled "experiential" and it referenced individually-oriented experiences that facilitated connections between managers and their environments. Familiarity was central to meaning creation: "Isles is also a very special place to me 'cause I've. I'm very familiar with it." Another informant explained, "People that are particularly familiar with the local environment have a strong sense of place about it." Familiarity, in these terms, was a mechanism that allowed managers to develop personal connections with places they had visited over time. One informant referenced this process: "Torres Strait is something that means a lot to me since I spent six years there and got to know the people very well. And, you know, intimately got to know most of the locations. Uhm, I used to travel around the Torres Strait quite a lot. Uhm, so that to me is an area of special interest." In this sense, individuals' connections were rooted in a sense of familiarity and prolonged interaction with places.

Spirituality and ancestry were also linked to this experiential dimension largely in conversations about Aboriginal populations or "traditional owners." A small number of managers spoke about the connections that Aborigines have to their "sea country," and elaborated on how these connections were unique and different than the connections formed between European settlers and places. One manager said natives were understood to have "quite strong linkages to sites and place...they still have a strong sense of place, of belonging back to here through their ancestral roots." When asked why a place was important one manager stated, "There is a strong sort of spiritual background to the landscape." Others defined their connections to the natural world as moving through an intangible and spiritual realm: "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."

Solitude was also important to managers in developing attachment to places on an individual basis. Many of the study informants felt that places became meaningful through rejuvenation, a sense of humility and the importance of solitary experiences: "the remoteness or the feelings of being, of moving away from civilization and not being part of, you know, the sort of ant hills of human population." Places were also intrinsically important for the purposes of intellectual stimulation and curiosity to understand what objectively existed at the GBRMP: "A big part of it is knowledge. Just seeing what's out there and the beauty of it." Another informant noted, "The most important place for me in the Marine Park is Lizard Island...and I think one of the things that makes it so valuable to me is...the research station there." Science, knowledge and understanding all helped managers to construct a relationship with the natural world.

The final experiential sentiment that characterized managers' connections to places was grounded in a strong enthusiasm and concern for environmental issues. The vast majority of study informants mentioned "loyalty," "commitment" and "passion" when discussing

their professional worlds and personal ties to places. One manager discussed his emotional investment in environmental management: “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. It’s not just a job that you bundle off and go home and do something totally different.” Others reiterated this point: “I think if you asked anyone in [the agency] how they feel about the reef, they’re all incredibly emotionally attached to it...you’ll find a similar thing with a lot of people in here is that it’s a, uh. It’s one of those areas where you can see what you’re doing when you work for [the agency]...I think a lot of people have got a commitment to it.” Attachment, in this sense, was centered on the enthusiasm of managers to protect the natural environment and provide opportunities for public use and enjoyment.

Interpersonal

We titled the fourth dimension “interpersonal” and it was rooted in social aspects of place meanings. Managers, as custodians of the GBRMP, expressed a strong desire to provide for future generations and maintain professional responsibility and stewardship. The dedication expressed by managers also shaped the importance of places through other people’s experiences, whether it was family, friends or general users of the GBRMP. One informant articulated this point: “I mean that’s why I came onboard to this position. I felt I could contribute to the, you know, conservation of the Great Barrier Reef. But at the same time, I was also very linked with all the users, the fishermen out there as well.” Many informants were driven by a desire to best suit the needs of their public constituents, and this imbued places with meaning.

The interpersonal dimension of place meanings was strong among most managers owing to the connections formed with their families and the importance of sharing quality experiences within the GBRMP. For example, when asked whether recreation activities were pursued with other people, one informant responded, “Yeah, and that’s the purpose. They definitely have a social component.” One individual reiterated the importance of shared experiences: “Queensland is my home state and while I’ve lived for many years away from Queensland, it has a, you know, a powerful sense for me because of family and history and all those things that bind people to an area.”

Applying Place Meanings to Management Decision-Making

Our discussion of managers’ place meanings extended to the interrelationship between personal views of the environment and decision-making processes. Managers may find it useful to consider how their perspectives shape interpretations of places and allow them to better understand the sentiments of their public constituents. Human-place bonds were beneficial for managers to understand local issues: “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 informant 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 their

understanding of places to construct management plans and more effectively engage their public constituents, ideally keeping in mind the opportunity for bias to interject in decision-making.

The relationship between managers and places was comprised of personal and professional ties. In this sense, there was interplay between managers' personal lives and professional duties, in that one informed the other, and vice versa: "I only became a fisheries scientist, fisheries manager, because I love fishing." Many informants were motivated by their desire to interact with natural resources, and these interests were used to build an understanding of the natural world and better communicate issues to their public constituents. Managers' responsibilities as government employees offered opportunities for scientific observation and enhanced their sensory experiences while engaging in recreation activities. One manager 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? ...So it's about the observations of the ecosystem, as well as trying to work out how to catch fish."

This informant drew on an analytical lens sharpened through his professional world to more fully enjoy his interactions with a landscape on an informal basis. These personal interactions with places were informative for his professional duties, as he went on to explain, "...part of my job is to talk about or to be...fluent in issues with respect to protected species, for example. So when I talk about marine turtles, quite often I'll put that into a context of place. Okay, I've been to these locations working on marine turtles...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 as why is the marine park important." Thus, in-depth understandings of places were developed on personal and professional levels.

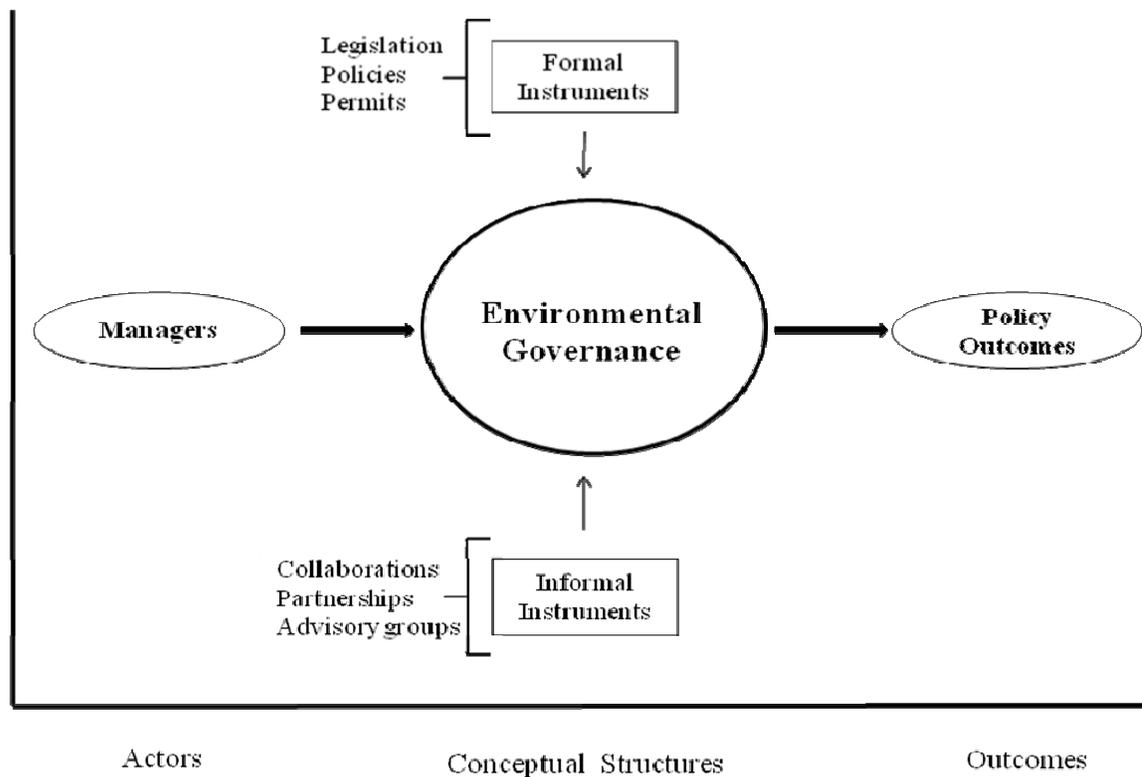
It is through the creation of human-place bonds that managers were better able to communicate and negotiate meanings and uses of natural resources. In some cases, attachment to places provided common ground shared by managers and locals and/or residents. One informant explained, "Most of the people in [the agency] are from North Queensland...most of us were into things like recreational fishing and that sort of thing, and I think that the people felt a lot better...I think the fear people have is that decisions will be made about their lives by someone who doesn't understand." This manager believed that practical and personal experiences could help alleviate the fear that management decisions would be made in ignorance without considering or understanding public viewpoints. Others referenced "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." In this sense, decision-making relied on managers' personal connections to places, knowledge and

experience with issues of interest and the ability to clearly communicate with lay audiences.

Environmental Governance

Our research results suggested that a governance system surrounded the decisions made by GBRMP managers from three government agencies. The idea of environmental governance was a conceptual structure that mediated the process of forming environmental policies (see Figure 2). In this sense, managers moved through and operated within a governance regime to make decisions about environmental issues. Throughout this process, managers responded to formal and informal policy instruments as the means (i.e., goals) of the decision-making process to ultimately arrive at the ends (i.e., outcomes) of an environmental policy.

Figure 2. Conceptual representation of management decision-making



Formal Policy Instruments

The process of managing the GBRMP was informed by formal policy instruments, such as legislation, permits, treaties, zoning, and other management arrangements that supported decision-making processes *after* policies had been established. These aspects of governance were “hard” mechanisms that aligned with a centralized form of decision-making, and supported vertical conceptions of power among government agencies.

When asked what informed the decision-making process, managers situated themselves within an overarching managerial framework that was comprised of more specific and formal mechanisms: “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.” Managers were institutionally driven and their decisions were guided by and based on forms of regulation: “I live and breathe the legislative documents that support our decisions.” This reliance on hard governance mechanisms helped to justify and support decision-making.

Formal policy instruments fed into a top-down system that coordinated the efforts of multiple agencies charged to oversee the GBRMP. Legislative tools were formalized in a complimentary yet hierarchical structure of governmental arrangements. One informant explained,

“In Australia here...one of the important things that we have is what we call complimentary management, where the state has effectively mirrored what the Commonwealth has done in terms of legislation. And then we have an agreement on how we manage so all of the waters, from high water all the way through the state waters out into the Commonwealth waters, are managed in a complimentary way. It is a very effective thing that we have achieved over the years and that we are doing.”

The GBRMP was not governed by simply a two or three dimensional overlay of management regimes, but instead an “intricate system of spatial planning that accommodates commercial use such as shipping lanes and tourism operations, as well as traditional use.” Building on this idea, another manager explained, “All of those are management layers that basically go on top of each other. Now if you put them all together it is incredibly complex and the man in the street doesn’t need to know that complexity. We as managers do. And we ensure that those complexities work.” Several of the formal regulations highlighted in conversations with managers indicated this formalized framework, within which managers operated, offered a guide for decisions to regulate human use within the GBRMP. The permitting system implemented by a Field Management Program was a good example of an effort coordinated across agency boundaries, which helped managers to monitor on-site conditions and encourage compliance with rules and regulations.

These management regimes operated in combination with a suite of other formal instruments such as zoning plans, plans of management, site planning, and special management areas. One informant explained, “We have zoning plans, which, you know, are the base underlay if you like for management. And then we have plans of management, which specifically are a management regime that tries to provide for a range of recreational and tourism experiences in an area.” This manager further distinguished among these categories by explaining that plans of management governed activities for the four most heavily used areas, whereas site plans designated types of use for islands and smaller regions. This information guided decisions about protecting resources, designating

recreational, commercial and indigenous use, and addressing coastal concerns about external impacts from the GBR catchment (e.g., agriculture run-off).

Many of the tools mentioned above were structurally designed to require or abstain from public consultation based on the extent to which actions would impact the general public. Managers referred to a suite of evaluation criteria such as intensity of existing use, degree of environmental impact, presence of traditional use, and potential recreation conflicts to determine when public consultation would be appropriate. Dredging, new marinas or other large-scale operations were forms of human use that required the standard process of public input; however, most tourist operations and other small scale permit applications were overseen entirely by government authorities. Many of the managers interviewed for this study recognized the importance of incorporating public views in policy changes:

“I mean 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 or a number of other groups... So management decisions are very much, are often a compromise between various people’s priorities, and if any one group or one person was solely responsible for determining a management process it would be different than the product that you get when you’ve got a group of people.”

Informal Policy Instruments

Managers of the GBRMP relied on informal policy instruments, including partnerships, collaborations, and advisory committees to engage stakeholders *throughout* the decision-making process. These aspects of governance were “soft” mechanisms aimed to integrate public perceptions into planning and management, and spanned horizontally across individuals and groups affected by policy change.

One mechanism used to engage members of the regional community evolved from an environmental stewardship effort initiated by the Australian government, the Caring for Country Program. An element of this larger program that was more specific to the GBRMP was the Reef Rescue program administered by the Great Barrier Reef Marine Park Authority. Through this program, managers engaged Aboriginal communities to help them better manage resources existing within the GBRMP. The associated Traditional Use of Marine Resources Agreements (TUMRAs) between traditional owners and the federal government enabled managers to concentrate on and mitigate impacts to particular species (e.g., dugong, green turtle) that traditional owners hunted under law stipulated by the Native Title Act: “The traditional owners self-manage, you know, traditionally and spiritually, and managers work within this agreement to meld scientific knowledge or scientific facts with their traditional law and their traditional knowledge for better conservation.” This instrument allowed managers to work with indigenous communities and mediate their involvement in environmental initiatives: “Traditional owners are interested in climate change and getting involved with water quality monitoring and all that sort of thing... managers set up the appropriate linkages to make those sort of things happen.”

TUMRAs fostered communication and facilitated knowledge exchange between authorities and traditional owners. This program yielded mutually beneficial outcomes for enhanced understanding of Traditional Ecological Knowledge and greater compliance on illegal hunting, thus serving as a useful extension of management to help carry out statutory obligations. One manager explained, “We want to see if we can...get some discussion and get some dialogue just to develop a stronger relationship with the [aboriginal] community to get a few other things happening, which we think may benefit the other bigger issue in terms of turtle and dugong hunting.” This learning process worked better in some communities than others: “There are certain traditional owner groups that are, I guess, have very good capacity within themselves about getting business done in their country. And then we have some groups that aren’t.” This manager went on to emphasize that “the important thing is to identify key stakeholders that are authorized by the community to represent the interests and preferences of their people.”

Also falling under the rubric of Reef Rescue was the concept of Reef Guardians, which began in primary schools to target behavior change and spark interest in protecting the Great Barrier Reef among youth at an early age. This rapidly expanding program spread across the whole of the catchment to foster a sense of 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. Uhm, 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.” The Reef Guardian Councils supported environmental stewardship among school children and adults: “Reef Guardianship as a participatory role that any community member or organizational business or whatever can do... So you can be a Reef Guardian if you help the reef by doing environmental type activities.” Study informants explained that the Reef Rescue program was an adaptive and inclusive policy instrument that served as an outlet for managers to reach a broad demographic of public constituents living proximate to the Great Barrier Reef.

Instituted within the federal management system were Local Marine Advisory Committees (LMACs), which were citizen groups comprised of key stakeholders from the regional community. LMACs represented community views and preferences for various management topics. Each of the organizational branches of the federal management agency of the Great Barrier Reef was associated with a LMAC. One informant noted, “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. And they’re good. It’s a good mechanism in many ways to get a snapshot of different regional views.” However, contrary perspectives were also presented:

“well, there’s the LMACs that I mentioned earlier. To tell you the truth, I don’t. I haven’t seen them play any major role into input to policy making within [the agency]. I did talk to the LMACs, uh, when we we’re putting together the outlook report looking at sort of community concerns...about the major threats to the GBR. Uhm, they engaged the LMACs on that, but there’s probably. The mechanism is there, but they could use the LMACs, uhm, as a sort of a sounding board more.”

This passage suggested that, in some situations, public input didn't directly change policies per se; rather, served as a voice to inform managers who in turn translated interests into decisions at their own discretion. This informant went on to explain that community groups provided leverage for managers: "I often use the LMAC's as, "oh, the LMAC has raised this issue." It's not just me raising an issue, it's the LMAC and there's more power behind that, especially if we have a range of different stakeholders that are in agreement that they've got an issue or concern." Thus, outcomes were influenced – tangentially at times – by social movements voiced through local organizations that were structurally connected to government entities.

Applying Environmental Governance to Management Decision-Making

The environmental governance regime that surrounded management decision-making at the GBRMP was comprised of formal and informal policy instruments, a few of which were described in the preceding two subsections. Managers may find it useful to consider how these instruments can be applied to policy changes that incorporate public views into decisions. To extend our understanding of how systems of governance are employed during policy changes, we examined the extent to which managers believed public deliberation occurred throughout the 2004 re-zoning of the GBRMP. We drew on conversations with study informants to explore how various perspectives were incorporated into conservation outcomes of the spatial planning network of the GBRMP.

At the heart of balancing environmental protection with public use of natural resources within the GBRMP was the Great Barrier Reef Marine Park Zoning Plan. The majority of managers raised this topic during the study interviews and drew from examples and experiences gained by involvement in the re-zoning process. Most believed that the major re-zoning of the GBRMP (1999-2004) illustrated well how their constituents could be consulted and engaged throughout decision-making. Approximately 31,500 public submissions fed into subcommittees; the rezoning was an unparalleled environmental issue in the history of Australian public consultation. This feedback, in addition to other forms of consultation, helped design the final zoning network, which was not pre-determined. Many study informants discussed the zoning plan in light of the government's commitment to incorporating values and meanings of lay citizens within environmental planning and management.

A number of managers dedicated years of their professional careers to providing opportunities for public interests to be vocalized through soft policy instruments and to communicate government decisions back to regional communities. One manager explained the tactics he used to ensure equal access during community meetings: "We organized some of our own where we'd go to a big hall. And we'd put say four or five tables around the hall in different places, like generally in the corners. And then we'd be there for a long time...And what it enabled people to do is come in...They could come up to us...but one of the good things was the quiet people were able to get a chance to talk to one of us and have a proper conversation and get all their questions answered." Another informant elaborated on the extent to which deliberation occurred during community meetings held throughout the 2004 re-zoning:

“if you just say go into a community and you just talk to the troll fishermen on their own, they’ll tell you one thing and have one set of desires and almost draw you a map of where the green zones should and shouldn’t go. And then you go and talk to another group on their own. Then what happens is you end up with all these different things. If you can get within the community as many of those groups as possible together in the same room, so that they’re each listening to each other, and then get them to sort it out. That happened really well in some communities.”

These meetings were approached by managers as places of negotiation and reciprocal exchange of information about different types and intensities of use that should be accommodated within the GBRMP. Throughout this process, managers were challenged to balance input from the community with “higher level” considerations such as legitimate rights to traditional use of marine resources. Tradeoffs were inevitably made in decision-making, because not every view could be dominant in the final decisions about resource use. One manager spoke to this challenge: “there is such a diversity of expectation and opinions in the community at large that we can’t hope to satisfy everyone’s needs, wants, and expectations in terms of how, uh, particular places are managed.” However, it was the job of the manager to accept public input while not alienating those who believed resources should be used in a way that was different than the dominant view put forth by government authorities.

Several managers that elicited feedback from public constituents for the re-zoning came from backgrounds of farming and ranching. This prior experience enhanced their abilities to relate to people. One manager explained that a better understanding of stakeholder groups was helpful to make more informed decisions:

“I’m a big believer that anyone who works in natural resource management needs to have a very good understanding of the stakeholder groups that they work with, you know...What I’m alluding to here is not just a paper-based understanding of that stakeholder group. You really need to be part of that group of people. See the real pressures that are on them as well. Uh, with respect to their use of that natural resource, uhm, so that you can have a fuller appreciation for the impacts that the decisions that you may have or make will have on other good people in particular.”

In discussions about the re-zoning and associated decision-making processes, balancing use of formal and informal policy instruments was important to managers. Many study informants took seriously their responsibilities as stewards of protected areas and representatives of public will. For example, one man spoke about the importance of sustainable management decisions that considered multiple viewpoints: “[the] key of decision-making is moving forward within a confined space that considers Queensland laws, politics within organizations and communities, and considerations about what is technically feasible, economically viable, and socially acceptable.” Informal policy instruments, in particular, helped managers accomplish this goal while ensuring successful implementation of policies: “If you haven’t sorted out the local, uhm, acceptance of the management framework, then your management outcome may not be achieved even though you might have it accepted in legislation and law.” Another informant expressed a

similar opinion: “There is the need to express and explain the management framework and if you are going to be successful to have that accepted – accepted to the point that people don’t wish to actively seek changes to it – they may still not agree with some of the end results, but it’s not the die in a ditch issue.” This process of engaging public constituents, either through informal policy instruments or previous experience, was central to policy changes concerning human use of natural resources.

An outcome from the process of re-zoning the GBRMP was distrust of and negative attitudes toward the government. Although these perceptions may have existed prior to the re-zoning, the issue was raised on a number of occasions by the managers interviewed for this study. One informant explained that the re-zoning process was informative, though inevitably it led to animosity. He also pointed to community interaction with authority figures as a way to alleviate this distrust: “doing the legwork with the community, sowing the seeds, getting out there, getting their ideas, having the time to discuss it, having taken the time to go out there and talk to groups who will be impacted. They’re likely to hate you first. You can’t talk to ‘em. Go and start to work to bring ‘em around.” It was explained that many members of coastal communities formed strong opinions about the 2004 re-zoning, because the issue was highly visible: “It was on the front page of all the papers every day...we had some, you know, a few really wild folk out there wanting to close us down...most people, I think agreed with what we were doing...There was another group that just hated our guts and said, “We don’t like government telling us what to do.” You know. “We’ll fish anywhere we damn well please and kill whatever we want.”” Additionally, there were lasting effects from this policy change, in that many lay citizens maintained critical views toward the Australian government. One manager’s story illustrated this point well:

“I ran into a guy the other day at a barbeque of our neighbors. Their father in-law. And I started talking to him. And he’s a mad fisherman that’s got a heart in the place, you know. And he said, “Oh, what do you do, [informant’s name]?” You know, I’ve talked to him for a year, but I’ve never actually said what I’ve done. I told him what I did and he went, “Oh, my God. You work for them. Oh, my God. Did you have anything to do with the rezoning?”

Re-zoning the GBMRP was an arduous process, though all managers that spoke of the issue were proud of the outcome despite the resulting public attitudes as a result of or developing prior to the policy change. One manager spoke of “lessons learned” from the re-zoning: “Since the zoning plan though, the agency has made a decision that we needed to include members of the public a lot more in the business that [the agency] undertakes... We used to be only based in Townsville, but now we have regional offices in, uh, Cairns, Rock Hampton, and McKay.” This manager went on to explain that regional offices were instituted so people living in regional communities could “see that [the agency] is present to tell them what their concerns are...and that’s then fed back into main office work.” Other managers echoed this view when discussing reviews of the re-zoning process: “And a response to that review was the establishment of our regional offices...so that’s enabled us to sort of have far better connections to communities...and making those personal connections with those other people in those regional areas.”

Discussion of Study Findings

This case study explored the perspectives of 35 managers from three federal and state agencies charged to protect and provide access to the GBRMP. Specifically, these interview data provided insights on the ideas of place meanings and environmental governance in the context of the GBRMP. The study findings suggested that managers developed connections to places through four dimensions. Findings also illustrated the ways in which managers were informed by formal or hard policy instruments (e.g., legislation, management plans) that relied relatively less on public input throughout decision-making, and informal or soft policy instruments (e.g., partnerships, citizen groups) that were more akin to deliberative ideals in public participation. We also shared several managers' perspectives on how formal and informal policy instruments helped structure decisions during policy changes such as the re-zoning of the GBRMP.

Place Meanings

Consistent with past research, our study informants reported multifaceted and diverse attachment manifested in the meanings they ascribed to the GBRMP (Wynveen et al., 2010). We organized managers' expressed meanings into four dimensions: 1) natural, 2) functional, 3) experiential, and 4) interpersonal (Davenport & Anderson, 2005). First, naturalistic meanings reflected elements such as ecosystem function and resilience, biodiversity and aesthetic beauty. Second, recreation use and involvement in outdoor activities, access to resources and economic benefits were central tenets to the functional dimension of place. Third, the experiential dimension referenced managers' desires for solitude, spirituality and ancestry, familiarity, and knowledge acquisition. Finally, providing for future generations, environmental stewardship, and socializing contributed to interpersonal relations that made places meaningful for resource and recreation managers of the GBRMP.

A central part of the connection formed between managers and places was individual concern for the health of the natural environment. Many of the managers interviewed in this study were markedly passionate about their line of work and were often engaged in outdoor recreational activities for the purpose of interacting with the natural environment. It may be that these affiliations reinforced their existing value systems and connections to places. Thus, there is need for future research to include ecological dimensions of place, in addition to other ways of understanding human-place bonds (Manning et al., 1999).

Our investigation aimed at helping to incorporate a range of values and meanings within planning and management of parks and protected areas (Cheng & Daniels, 2003). We examined managers' perspectives to shift focus from individuals and groups to those empowered through public consent to oversee environmental conditions in ways consistent with stakeholder expectations (Hutson et al., 2010). Managers, equipped with competence and authorization, were held accountable for recognizing their personal connections to places, responding to their public constituents' diverse value systems and participating in a process of negotiating meaning and use of natural resources. We hope the information in this report will guide managers to address this charge and more effectively initiate discourse of how place meanings can materialize in decision-making processes.

Environmental Governance

This report explored formal and informal policy instruments as established structures that supported management decision-making and provided opportunities for public consultation during policy changes. Various institutional arrangements were used by 35 managers to recognize, organize and regulate emergent perceptions from the public sphere. The formal and informal instruments mentioned above were not considered mutually exclusive and were thought to be flexible and adaptive tools employed in varying combinations, thereby allowing managers to interpret changing conditions and better respond to stakeholder needs and preferences for management. The policy instruments highlighted in this report served as mechanisms of legitimacy through which constituents communicated their views to managers of the GBRMP.

There were benefits and drawbacks of the institutional arrangements that supported management of the GBRMP. On one hand, formal or “hard” policy instruments helped to minimize bias, maintain consistency in practices and ensure that managers were held accountable for their decisions. As government employees, many of our study informants dealt with expectations placed on their behavior through codes of conduct and other statutory mechanisms. A number of managers pointed to the importance of acting in accordance with policy, maintaining transparency and demonstrating that decision-making was not biased by personal views. Formal instruments helped to accomplish these professional goals. However, on the other hand, the support of formal policy instruments was accompanied by legislative constraints that hindered the decision-making process. For example, political boundaries were considered problematic, because many of the adverse impacts (e.g., ocean acidification, agriculture run-off) that managers needed to address were connected to systems outside the scope of a particular agency. In this sense, the policy instruments that justified managers’ decisions simultaneously restricted activities to specific geographic locales.

Management decision-making was also shaped by informal policy instruments. In structural terms, these mechanisms engaged both individuals and groups of stakeholders to vocalize their concerns regarding policy changes. The informal policy instruments discussed by managers in this case study indicated that the GBRMP model of management was surrounded by a system of governance rather than government (Jordan, 2008). In other words, there were top-down *and* bottom-up mechanisms employed by managers to consider the interests of their public constituents. Informal instruments enabled managers to reach a broad demographic of people through various forms of public consultation. Rather than manage strictly by enforcement (although enforcement played a major role in management of the marine park) managers aimed to consider public interests while maintaining opportunities for people to develop an understanding of the resource and why it was important. In the end, informal instruments encouraged small behavior changes that people could adopt to ensure a sustainable future for the GBRMP. One critique of informal policy instruments related to their inherently political nature. Deliberation between constituents and decision-makers occurred in response to issues that were of great importance, and as such, it required much time and effort to arrive at politically acceptable outcomes. Several managers referred to the increasingly politicized environments in which they worked, and the increased emphasis placed on consultation and confirmation of

intended decisions. There were major challenges of hierarchical government responsibilities and increased accountability for decisions that potentially impacted stakeholders, which delayed and/or impeded the decision-making process. Although informal policy instruments were critical considerations, there was concern expressed over an appropriate balance of public consultation and trust in decision-makers' scientific expertise.

We applied the idea of environmental governance to the re-zoning of the GBRMP with the intent to examine the extent to which public constituents were engaged and consulted throughout this process. The majority of managers pointed to the value and success of re-zoning, because of the associated positive environmental effects (Day, 2000). Questions about public values, equal opportunities to express opinions and other social effects were also considered by the study informants (Davis, 2005). The implications of this policy change were reflected in managers' accounts of public perceptions of governmental initiatives (Sutton & Tobin, 2009), as well as socio-economic impacts from reallocations of human use and access to natural resources (Tobin et al., 2010).

Conclusions

This case study is built from the perspectives of 35 managers from three agencies that oversee the GBRMP. We explore managers' place meanings to help incorporate a range of values that can be ascribed to places alongside biological considerations in environmental planning and management (Cheng & Daniels, 2003; Farnum et al., 2005). We also investigate the governance system surrounding management of the GBRMP to illustrate how policy instruments are structured to maintain legitimacy while integrating public perceptions into decision-making (Jordan, 2005).

Findings present insights on managers' place meanings, including natural, functional, experiential, and interpersonal connections to the natural environment. Our results also suggest that managers of the GBRMP exist within a deliberative model of environmental governance that draws on formal and informal institutional arrangements to support and authenticate decisions about human use of natural resources. The application of these ideas to the re-zoning of the GBRMP illustrates reliance on both consensus-based practices and scientific expertise.

We examine managers' perspectives to shift focus from individuals and groups to those empowered by public consent to oversee resource and recreation conditions in ways consistent with stakeholder expectations (Hutson et al., 2010). Previous investigations of place meaning have focused on residents and/or visitors to protected areas, and although these insights are important, the perspectives of managers are rarely considered. This is problematic, because managers' personal connections to places, in addition to the governance regimes that guide decision-making processes, can shape policy outcomes. A stronger understanding of managers' place meanings is needed to clarify the range of values they attach to the natural environment they are charged to oversee. We anticipate that this information will help managers negotiate meaning and use of natural resources among their constituents, and initiate discourse of how place meanings can materialize in decision-making processes.

Management Recommendations

The following management recommendations flow from the qualitative data explored in this case study. They are meant as suggestions or areas of consideration for managers to think about their perspectives on human use and protection of natural resources at the GBRMP. The following recommendations are offered:

1. Utilize the results of this study to better understand the diverse connections that form between people and places existing within the GBRMP, keeping in mind that attachment can be characterized by natural, functional, experiential, and interpersonal meanings ascribed to places.
2. Recognize that managers' personal views of the environment may or may not align with users' perspectives; subjectivity in decision-making can color policy outcomes.
3. Encourage managers' informal interactions with natural settings to build familiarity with places, increase understanding of sentiments among public constituents and enhance communication skills regarding topics of human use.
4. Continue to draw on formal and informal policy instruments that support decision-making and provide places – physically, socially, and politically – for deliberation among public constituents.
5. Rely on formal policy instruments to employ scientific expertise and increase efficacy in decision-making.
6. Rely on informal policy instruments to better reach collective solutions alongside individuals that have a vested interest in policy changes.
7. Question whether informal policy instruments (e.g., citizen groups) are representative of local populations.
8. Ensure equal access to opportunities that allow constituents to express viewpoints.
9. Strive to reach compromised endpoints and transform stakeholder perspectives through public participation.
10. Minimize negative attitudes toward government authorities by continued public consultation; social acceptance of current / future policies may be improved through education about the long-term effects of the 2004 re-zoning of the GBRMP.

Literature Cited

- Cheng, A., Kruger, L. E., & Daniels, S. E. (2003). "Place" as an integrating concept in natural resource politics: Propositions for a social science research agenda. *Society and Natural Resources*, 16(2), 87-104.
- Clarke, A. E. (2005). *Situational analysis: Grounded theory after the postmodern turn*. Thousand Oaks, CA: Sage Publications, Inc.
- Davenport, M. E., & Anderson, D. H. (2005). Getting from sense of place to place-based management: An interpretive investigation of place meanings and perceptions of landscape change. *Society and Natural Resources*, 18, 625-641.
- Davis, G. (2005). Science and society: Marine reserve design for the California Channel Islands. *Conservation Biology*, 1745-1751.
- Day, J., Fernandes, L., Lewis, A., De'ath, G., Slegers, S., Barnett, B., et al. (2000). The Representative Areas Program for protecting biodiversity in the Great Barrier Reef World Heritage Area, *Proceedings 9th International Coral Reef Symposium*. Bali, Indonesia.
- Day, J. (2002). Zoning - Lessons from the Great Barrier Reef Marine Park. *Ocean & Coastal Management*, 45, 139-156.
- Farnum, J., Hall, T., & Kruger, L. (2005). *Sense of place in natural resource recreation and tourism: An evaluation and assessment of research findings*. USFS General Technical Report. PNW-GTR-880.
- GBRMPA (2009). *Great Barrier Reef Outlook Report*. Published by the Great Barrier Reef Marine Park Authority.
- Glasser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for*

qualitative research. Hawthorne: New York: Aldine de Gruyter.

Hutson, G., Montgomery, D., & Caneday, L. (2010). Perceptions of outdoor recreation professionals toward place meanings in natural environments: A Q-Method inquiry. *Journal of Leisure Research*, 42(3), 417-442.

Jordan, A., Wurzel, R. K. W., & Zito, A. (2005). The rise of 'new' policy instruments in comparative perspective: Has governance eclipsed government? *Political Studies*, 53, 477-496.

Jordan, A. (2008). The governance of sustainable development: Taking stock and looking forwards. *Environment and Planning C: Government and Policy*, 26, 17-33.

Kyle, G., Mowen, A. J., & Tarrant, M. (2004). Linking place preferences with place meaning: An examination of the relationship between place motivation and place attachment. *Journal of Environmental Psychology*, 24(4), 439-454.

Lemos, M. C., & Agrawal, A. (2006). Environmental governance. *Annual Review of Environment and Resources*, 31, 297-325.

Marshall, C., & Rossman, G. B. (2006). *Designing qualitative research*. Thousand Oaks, CA: Sage Publications, Inc.

Manning, R., Valliere, W., & Minter, B. (1999). Values, ethics, and attitudes toward national forest management: An empirical study. *Society & Natural Resources*, 12, 421-436.

Schroeder, H. W. (1996). *Voices from Michigan's Black River: Obtaining information on 'special places' for natural resource planning* (General Technical Report NC-184). St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station.

Sutton, S. G., & Tobin, R. C. (2009). Recreational fishers' attitudes towards the 2004 rezoning of the Great Barrier Reef Marine Park. *Environmental Conservation*, 36(3), 245-252.

Tobin, R.C., Beggs, K., Sutton, S.G., & Penny, A. (2010). *Baseline socio-economic data for Queensland east coast inshore and rocky reef fishery stakeholders. Part C: Recreation fishers*. Fishing and Fisheries Research Centre Technical Report No. 7.

Williams, D. R., & Vaske, J. J. (2003). The measurement of place attachment: Validity and generalizability of a psychometric approach. *Forest Science*, 49, 830-840.

Wynveen, C. J., Kyle, G. T., & Sutton, S. G. (2010). Place Meanings Ascribed to Marine Settings: The Case of the Great Barrier Reef Marine Park. *Leisure Sciences*, 32(3), 270 - 287.

Appendix I: Interview Guide: Connecting managers' sense of place to decision-making within the Great Barrier Reef Marine Park

Date _____
Interviewee: _____
Starting time: _____
Finishing time: _____
Location: _____



INTRODUCTION

This study is being conducted by Carena van Riper, a Ph.D. student in the Department of Recreation, Park and Tourism Sciences at Texas A&M University. The purpose of this research is to explore sense of place and management decision-making regarding the Great Barrier Reef Marine Park, specifically focusing on how value systems shape the decision-making process. This is an exploratory study of marine park managers working for both state and federal agencies. Names and organizations are kept completely confidential. The conversation should last for approximately one hour.

INTERVIEW QUESTIONS

1. What is the title of your current position?
2. How long have you been working in this position?
3. Do you have previous management experiences?
4. Do you have a background in the sciences?
5. Do you participate in leisure activities within the Marine Park?
6. How do you define sense of place?
7. Please describe a place within the Marine Park that is particularly important.
8. Why does this place hold special meaning or value?
9. Has your sense of place in this area changed over time?
10. Is your sense of place related to management decision-making?
11. Please describe one management issue related to human–environment interactions?
12. How do you decide which management actions are most appropriate?
13. Are there institutional considerations that shape your decisions?
14. How do you take these factors into consideration?
15. Are there any important issues I should know about that I have not already mentioned?

SOCIO-DEMOGRAPHIC INFORMATION

16. Are you a resident of Australia?

17. Were you born in Australia?

18. In what year were you born?

19. Gender
 - a. Male
 - b. Female

20. What is the highest level of formal education you have completed?
 - a. Primary school
 - b. Secondary school
 - c. Technical or commercial
 - d. Some university
 - e. Tertiary diploma
 - f. C.A.E. degree
 - g. Graduate degree

21. What would you consider to be your ethnicity?

22. What would you consider to be your race?

23. Would you mind telling me your household's TOTAL approximate annual income from all sources before tax?
 - a. LESS THAN \$20,000
 - b. \$20,000-\$49,999
 - c. \$50,000-\$99,999
 - d. \$100,000-\$119,999
 - e. \$120,000 - \$149,999
 - f. \$150,000 - \$199,999
 - g. \$200,000 - \$219,999
 - h. \$220,000 - \$249,999
 - i. \$250,000 - \$299,999

24. Would you mind if I contacted you in the future for further information?

25. Would you like a copy of the report?

Appendix II: Consent form

Connecting managers' sense of place to decision-making at the Great Barrier Reef

You have been invited to participate in research concerning place meanings and management decision-making at the Great Barrier Reef Marine Park, a study conducted by Carena van Riper from the Department of Recreation, Park and Tourism Sciences at Texas A&M University. The purpose of this study is to explore how managers integrate sense of place into decisions about human use and natural resources management at the Great Barrier Reef Marine Park. Approximately thirty people will be asked to participate in the study. You were selected to be a possible participant, because of your management position and your experiences and knowledge about the Great Barrier Reef Marine Park.

If you agree to participate, you will be asked to be audio taped during the interview and to draw on your experiences as a manager. You may refuse to be audio taped. You may also refuse to answer any questions, request to have the tape recorder turned off or statement removed, and may withdraw at any time without penalty. The interviews will last for approximately one hour.

Your name and institution will be kept completely confidential. This project will last for approximately one year, during which time all research records will be stored securely and kept completely private. Upon completion of this research, any recordings will be erased. The risk of participating in this study is no more than experienced in daily life.

There is no compensation for participating in this research; however, your participation will further our understanding of natural resources and recreation management in parks and protected areas. This research has been reviewed and approved by the Institutional Review Board (IRB) for human subjects in research through Texas A&M University, USA. If you have questions or concerns about your rights as a research participant, please contact this organization at irb@tamu.edu or 01-979-458-4067. Alternatively, you can contact Carena van Riper (cvanripe@tamu.edu) at 01-979-862-3068 (office) with any questions about this research.

Please be sure you have read the above information and clarified any questions you might have. You will be given a copy of this information sheet for your records.

I agree to be audio taped: _____yes _____no

Signature of participant

date _____

Signature of investigator

date _____