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Abstract approved:

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Mark D. Needham

Designation of areas as marine wilderness has been proposed as a strategy for managing the increasing threats facing the world's oceans. Although social factors influence marine protected area success, the human dimensions of marine wilderness remain minimally explored. This thesis examines views of marine wilderness expressed by a representative sample of residents in Oregon's most populous region. Data were collected from a mixed-mode (e.g., mail, internet) survey of Oregon residents living from Portland to Ashland between the Coast and Cascade mountain ranges (n = 530). The first of two related articles investigates whether the concept of wilderness is thought to apply to the ocean in general and to Oregon's current marine reserves in particular. Further exploration of the meanings of 'marine protected area,' 'marine reserve,' 'wilderness,' and 'marine wilderness' are conducted with content analysis of open-ended survey questions. The anticipated effect of wilderness designation on visitation and attitudes associated with marine reserves is also measured. Respondents were generally willing to apply the concept and label of wilderness to ocean spaces, including Oregon's marine reserves, although land areas were deemed more appropriate for wilderness. The designations of 'marine protected area,'

‘marine reserve,’ ‘wilderness,’ and ‘marine wilderness’ evoked distinct meanings with ‘marine protected area’ and ‘marine reserve’ associated with rules and restrictions, and ‘wilderness’ and ‘marine wilderness’ tightly bound with ideas of pristineness. Most respondents indicated that marine wilderness designation of Oregon’s marine reserves would not change either their attitudes toward or visitation of these areas. Of those who indicated a change, most specified positive attitude change and increased visitation. The second article builds on this concept of marine wilderness by using a path model to examine the values and attitudes that residents have for Oregon’s marine reserves, and whether these attitudes could change with designation of these reserves as wilderness. Respondents clearly preferred that Oregon’s marine reserves provide values that foster environmental protection over values that strictly provide for human well-being. These environmental protection values had a positive relationship with both general attitudes toward the marine reserves and attitude change associated with wilderness designation of the reserves. In contrast, recreation values had a negative relationship to both general attitudes and attitude change. General attitudes toward the marine reserves were positively related to attitude change with possible wilderness designation of the marine reserves. The relationships between environmental protection values, recreation values, and attitude change were partially mediated by general attitudes toward the marine reserves. Although this population seems potentially receptive to the idea of marine wilderness, this thesis reveals expectations, associations, and important values that must be understood if marine wilderness areas were ever to be designated in Oregon. Together, these articles provide a foundational understanding of the social dynamics surrounding the application of the concept of wilderness to marine areas. This understanding can help foster the success of marine wilderness and other marine protected areas.

Wild Waters: Perspectives on Oregon's Marine Reserves as Marine Wilderness Areas

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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

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Jennifer R. Johnston, Author

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CHAPTER 1
INTRODUCTION

Oceans around the world face unprecedented challenges (Halpern et al., 2008; Jackson et al., 2001; Millennium Ecosystem Assessment, 2005). Fisheries collapse, ocean acidification, coral bleaching, and energy development are some of the current issues confronting managers. Designating marine protected areas (MPAs) is increasingly utilized as one approach for addressing these and other challenges (Boonzaier & Pauly, 2016; National Academy of Sciences, 2001; Toropova, Meliane, Laffoley, Matthews, & Spalding, 2010; Wood, Fish, Laughren, & Pauly, 2008). As a broadly defined category, MPA can refer to any spatially explicit portion of the ocean with legally enforceable protections in place, ranging from no-take marine reserves (MRs) to areas where fishing and other activities are allowed to some degree (National Academy of Sciences, 2001). In this thesis, the term MPA is used for denoting protected marine spaces in general, except when used in reference to specific areas that are officially designated as nothing other than MPA. Although small in size relative to the extent of global oceans, MPAs now cover an estimated 12,300,000 km^2, or 3.41% of these oceans, up from 2.35 million km^2 (.65%) in 2008, with more expected to be added every year in the future (Boonzaier & Pauly, 2016; National Ocean Council, 2013; Thomas et al., 2014; Wood et al., 2008).

Interest in the concept of "marine wilderness" has been a small undercurrent in the recent tide of support for establishing MPAs in the United States (Barr & Kliskey, 2014b). Estimates of the amount of marine wilderness vary, with approximately several hundred thousand acres of the ocean managed as wilderness in the United States today. Most of these areas are adjacent to terrestrial areas officially designated as wilderness, rather than being standalone and formally designated marine wilderness areas (Barr, 2008; B.W. Barr, personal communication, April 12

2016; D.W. Johnston, personal communication, April 18 2016). Although there are few MPAs officially designated as marine wilderness, consideration of the idea of marine wilderness has continually resurfaced over the past few decades (e.g., Barr & Kliskey, 2014a; Bohnsack et al., 1989; Davis, 1999; Sloan, 2002). This longstanding interest has not led to a widely accepted definition of marine wilderness, and there is little consistency with which the term has been applied (Barr & Kliskey, 2014b). In general, most definitions of marine wilderness emphasize: (a) restrictions on development (e.g., aquaculture, energy exploration), fishing, and other resource extraction; and (b) absence of intentional modification of natural features and processes (e.g., Bohnsack et al., 1989; Kelleher & Kenchington, 1991). A definition offered by the North American Committee on Cooperation for Wilderness and Protected Areas Conservation (NAWPA) encompasses many themes common to other definitions of marine wilderness: "marine and coastal areas that exist in a natural state or are capable of being returned to a natural state, are treasured for their intrinsic value, and offer opportunities to experience natural heritage places through activities that require few, if any, rudimentary facilities or services" (NAWPA, 2011, p. 1).

Despite a lack of cohesive conceptualization and implementation, persistence of the marine wilderness idea is perhaps indicative of the unique place that wilderness holds in the American psyche (Barr, 2001, 2008). Scientific, historical, and cultural studies indicate that the concept of wilderness is inherently bound with American identity, and that although attitudes toward wilderness have changed over time and are not presently uniform, wilderness remains highly relevant (e.g., Grant, 1994; Nash, 2014; Oelschlaeger, 1991; Schroeder, 2007; Watson & Cordell, 2014; Watson, Cordell, Manning, & Martin, 2015).

To date, however, there have been few studies examining whether the relevancy of terrestrial wilderness to individual citizens and American society at large carries over to wilderness in marine environments. The few empirical studies on perceptions of marine wilderness have addressed ocean recreation users (Shafer & Benzaken, 1998) and managers of ocean or wilderness resources (Barr & Kliskey 2014a, 2014b). Despite the importance of these stakeholders, their views on marine wilderness may not reflect those of the general public. Public perceptions of marine wilderness remain largely unexplored, a limitation common to research on marine areas in general and MPAs in particular (Barr & Lindholm, 2000; Börger, Hattam, Burdon, Atkins, & Austen, 2014). Given the legacy of wilderness in a terrestrial context, applying this label and concept to marine areas such as MPAs may affect how the public views, values, and behaves toward these areas.

Effective management of the world's MPAs, including marine wilderness areas, requires understanding public perceptions and managing human behavior (Day, 2006). Indeed, in ecosystem based management (EBM), humans are not simply exogenous drivers of ecosystem change, but an integral part of the ecosystem itself (Shackeroff, Hazen, & Crowder, 2009). As functioning ecosystem members, humans and their behaviors, values, attitudes, and beliefs have profound effects on the ability of an MPA to achieve conservation goals (Jefferson et al., 2015; Voyer, Gladstone, & Goodall, 2015). Experiences from around the world have demonstrated that MPA success often depends on social factors, including perceptions of and attitudes and behaviors toward these areas (Cocklin, Craw, & McAuley, 1998; Hoelting, Hard, Christie, & Pollnac, 2013; Thomassin, White, Stead, & David, 2010; Weible, 2008). Understanding these

public cognitions associated with marine wilderness, therefore, is critical if this concept is to be fully realized and capable of protecting the resources and values that such a designation merits.

This thesis explores cognitions associated with marine wilderness within the context of the newly-established MRs in Oregon. Also called no-take areas (Lubchenco, Palumbi, Gaines, & Andelman, 2003; National Academy of Sciences, 2001), MRs are similar to marine wilderness areas in that development is limited, natural forces dominate, and most importantly, extractive activities such as fishing are generally forbidden (Lubchenco et al., 2003; Pollnac et al., 2010). Similarities between the concepts of MRs and marine wilderness have led some to use the two terms synonymously (Brailovskaya, 1998; Davis, 1999; Rockefeller, 2008). Using MRs and marine wilderness interchangeably, however, ignores the long history of Americans' relationship with the word and concept of wilderness.

Oregon is particularly well-suited for investigating cognitions associated with marine wilderness. Efforts to protect parts of Oregon's territorial sea reached a milestone with the designation of five MRs in 2012 after more than a decade of public debate (Learn, 2012; Oregon Senate Bill 1510, 2012; The Oregonian Editorial Board, 2008). This debate did not generally include discussions of marine wilderness, partly because MPA proponents found it difficult enough to gain acceptance for the more well-known MR designation (G. Gates, personal communication, September 8 2016). Oregonians have demonstrated strong opinions on how marine resources in this state are managed and there is a similar history of strong public reaction, both positive and negative, to public lands management in Oregon, including the designation of wilderness (Evans, 2015; Hernandez, 2016; Marsh, 2007; Richard, 2015). Coupled with strong public feelings toward marine and wilderness areas in Oregon are state laws that make it

relatively easy for citizen-initiated measures to advance to statewide ballots (Oregon Secretary of State, 2016). In this context, understanding public opinions of potentially contentious natural resource management actions, such as the possible designation of marine wilderness areas, has both practical and scientific implications.

This thesis contains two standalone articles that explore how members of the Oregon public perceive marine wilderness, and relationships between these views and both attitudes and values associated with Oregon's MRs. The first article studies the applicability of the concept of wilderness to the ocean, and how application of this concept might affect attitudes toward and visitation of the MRs. Five research questions are examined: (a) to what extent does the general public think that the concept and label of wilderness applies to areas of the ocean in general and to Oregon's MRs in particular; (b) does this differ from the extent that wilderness is thought to apply to areas on land; (c) what are similarities and differences between the meanings of "marine protected area," "marine reserve," "wilderness," and "marine wilderness;" (d) how would application of wilderness to Oregon's MRs alter attitudes about these areas; and (e) how would wilderness rather than MR designation affect intended visitation of these areas?

The second article examines values that Oregon residents have for the state's MRs, how these are related to attitudes toward the MRs, and whether attitudes would change if these MRs were ever to be designated as marine wilderness. Four research questions are examined: (a) what values do residents have for Oregon's MRs, (b) how might these values best be categorized, (c) what is the relationship between these values and attitudes toward Oregon's MRs, and (d) what is the relationship between these values and attitudes toward the MRs, and potential changes in these attitudes if the MRs were to be designated as wilderness?

Taken together, these articles illuminate Oregonian's perceptions of marine wilderness and the extent they are related to other cognitions (e.g., values and attitudes toward MRs). As the concept of marine wilderness continues to resurface in marine resource management, this information provides insight into potential public reactions to such a designation should it ever occur. This thesis helps to determine whether or not marine wilderness might be both a tool for marine resource management and a new development in the American relationship with wilderness.

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CHAPTER 2
PUBLIC PERCEPTIONS OF MARINE WILDERNESS AS A MARINE PROTECTED AREA DESIGNATION

Introduction

Recognition of extensive anthropogenic impacts to the world's oceans has led to increasing calls for the establishment of marine protected areas (MPAs; Boonzaier & Pauly, 2016; Halpern et al., 2008; National Ocean Council, 2013; Pollnac et al., 2010). As MPAs increase in number in the United States and around the world, so too do the titles given to such protected areas. In addition to the overarching 'MPA,' there are marine sanctuaries, marine reserves, marine parks, fishery reserves, marine conservation zones, marine nature reserves, and other designations. Researchers have pointed out the confusion among managers and the public generated by these poorly defined and inconsistently applied labels (e.g., Christie & White, 2007; Davis, 1998; Ehler, 2008; Fitzsimons, 2011; Shafer & Benzaken, 1998). Beyond being merely an inconvenience, this confusion can obscure the importance of MPAs (Al-Abdulrazzak & Trombulak, 2012), impede comprehensive management (Rodriguez-Rodriguez et al., 2015; Voyer, Gladstone, & Goodall, 2015), and hamper development of MPA policy and decision-making, especially at large scales (Ehler, 2008; Fitzsimons, 2011). A number of classification schemes have been proposed to address this issue (e.g., Agardy, 1997; Al-Abdulrazzak & Trombulak, 2012; Day et al., 2012; Horta e Costa et al., 2016), but none have been widely adopted. World Conservation Union (IUCN) guidelines for applying protected area categories (e.g., Category 1a, strict nature reserve; Category 1b, wilderness area) to marine areas (Day et al., 2012) provide perhaps the best chance for coherent application of management categories

and labels, but even these guidelines are used inconsistently at international, national, and local levels (Boonzaier & Pauly, 2016; Fitzsimons, 2011; Govan & Jupiter, 2013).

Further exacerbating the confusion surrounding designating MPAs as sanctuaries, reserves, or parks is that many of these terms have been directly adopted from their original use in terrestrial protected areas, despite the well-documented ecological differences between marine and terrestrial ecosystems (e.g., Allison, Lubchenco, & Carr, 1998; Carr et al., 2003; Kearney, Farebrother, Buxton, & Goodsell, 2013; National Academy of Sciences, 2001; Steele, 1985). These ecological differences are an important underlying factor in the calls of some researchers and practitioners urging caution in adopting terrestrial labels and concepts in the marine context (Al-Abdulrazzak & Trombulak, 2012; Kearney et al., 2013; Peel & Lloyd, 2004; Sloan, 2002).

Although ecological differences are often invoked to discourage the application of some labels to MPAs, the literature on MPA designation generally fails to empirically examine how people conceive of and react to these different concepts and labels. These views are critical considerations, as they influence attitudes and behaviors toward protected areas, regardless of underlying ecology (Gobster, Nassauer, Daniel, & Fry, 2007). Given that the ecological success of MPAs is often dependent on their social acceptability (Cocklin, Craw, & McAuley, 1998; Hoelting, Hard, Christie, & Pollnac, 2013; Thomassin, White, Stead, & David, 2010; Weible, 2008), public beliefs regarding MPAs carry particular importance. The label given to MPAs can affect these beliefs by providing an indication of what actions (e.g., fishing, motorized boating) are permissible and for which values the MPA is managed (e.g., fishery stock replenishment, conservation, recreation).

"Wilderness" is a prime example of a concept and label used for describing terrestrial protected areas that has also been applied to some areas of the ocean and MPAs without close consideration of what this term means in the marine context. Societal relationships with areas deemed as wilderness on land have been long, polarizing, and much-discussed in the scientific, historical, and popular literature (Crist, 2004; Cronon, 1996; Dawson & Hendee, 2009; Nash, 2014; Watson, Cordell, Manning, & Martin, 2015). The evocative – and provocative – nature of a term such as wilderness indicates a need to examine its usage in new contexts such as MPAs. Although some research on this topic has been conducted (e.g., Barr & Kliskey, 2014a, 2014b; Lindholm & Barr, 2001; Shafer & Benzaken, 1998; Sloan, 2002), important gaps remain in understanding how populations outside of traditional stakeholders (e.g., commercial fishers and recreational anglers, coastal residents, managers) view the application of the wilderness label and concept to the marine environment, and how this application might affect attitudes and actions toward the ocean.

Couching MPAs as wilderness, for example, may or may not be a way for managers to excite the interest of people who otherwise may not pay much attention to ocean issues (Jay, 2010; Steel, Smith, Opsommer, Curiel, & Warner-Steel, 2005), but whose perceptions, opinions, and actions regarding MPAs have an impact on the success of these areas. The utility of such an approach partly depends on what wilderness as applied to the ocean means to people, and what attitudes and behaviors this designation might inspire. Basing MPA designations not only on ecological or regulatory criteria, but also on an understanding of the effects of various designations on public cognitions has the potential to ease the confusion around the numerous labels given to MPAs. This understanding can facilitate clearer communication with the public

about the objectives and values of protected ocean spaces. This article, therefore, explores applicability of the label and concept of wilderness in a marine context, and its implications for public cognitions and views regarding MPAs.

Conceptual Foundation

Wilderness

Wilderness is a complex concept, even outside of the relatively novel marine context. If anything is clear from the vast research conducted regarding terrestrial wilderness, it is that wilderness is a contentious term and there is little consensus on precisely what constitutes wilderness (Cronon, 1996; Nelson & Callicott, 2008; Shultis, 1999). Some guidance on what wilderness means can be gleaned from administrative and statutory classifications. Perhaps the most commonly used and recognizable definition is from the United States 1964 Wilderness Act: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." This Act, however, has only been applied to terrestrial areas formally designated as wilderness in the United States, as well as a few marine areas immediately adjacent to land-based wilderness areas. Expanding outside the United States, the IUCN also has guidelines on what constitutes wilderness areas; these are "large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed to preserve their natural condition" (Dudley, 2008, p. 14). This conceptualization explicitly includes the possibility of marine areas as wilderness (Day et al., 2012). Still, these definitions can only accurately be applied to wildernesses officially designated as such under the appropriate

statute, law, or administrative guidelines (Dawson & Hendee, 2009). As a result, wilderness in this paradigm is a definable legal title given to an area.

Many would argue, however, that substantial wilderness exists that has not been formally named or designated as such through legal or political means (Barnes, 2003; Higham, Kearsley, & Kliskey, 2000; Mittermeier et al., 2003; Shultis, 1999). In some instances, this undesignated wilderness is identified through the presence or absence of physical characteristics. Conditions such as roadlessness, remoteness, a lack of human structures or alterations, and large size are often cited as defining characteristics of wilderness areas, whether or not the areas have been formally designated as such (Higham et al., 2000; McMorran, Price, & Warren, 2008; Wall-Reinius, 2012). As has been widely discussed (e.g., Durrant & Shumway, 2004; Johnson, Horan, & Pepper, 1997; Lupp, Höchtl, & Wende, 2011; Lutz, Simpson-Housley, & DeMan, 1999; Vucetich & Nelson, 2008), however, people from various periods, locations, and backgrounds can perceive the same conditions as possessing widely varying degrees of wildness or a complete absence thereof.

Wilderness, therefore, might best be regarded not simply as a legal designation and not solely as a collection of physical attributes, but rather as a social construct or idea (Callicott, 2008; Cronon, 1996; Williams, 2000). From this perspective, wilderness is in the eye of the beholder; it is "the terra incognita of people's minds" (Dawson & Hendee, 2009, p.4), or, at the very least, a human construct (Cronon, 1996). In this sense, wilderness may or may not actually be present in formally designated wilderness areas, and a given set of physical characteristics may or may not constitute de-facto wilderness, depending on who makes the assessment (Lupp et al., 2011; Wall-Reinius, 2012).

Wilderness, whatever its definition, is a powerfully evocative term. Nash (2014) and Oelschlaeger (1991) have written extensively on the roots of wilderness in American culture, including the various and changing perceptions that Americans have of land that is considered wild. Studies conducted since the mid-1990s have indicated a broad and growing level of popularity for wilderness across the American public (Cordell, Tarrant, & Green, 2003; Cordell, Tarrant, McDonald, & Bergstrom, 1998; Lutz et al., 1999). This support is far from ubiquitous, however, with a small but noteworthy minority of Americans who are apprehensive, distrustful, or outright hostile to the idea of wilderness and protected wild lands (Durrant & Shumway, 2004; Yung, Freimund, & Chandler-Pepelnjak, 2008). In addition, it has been debated whether wilderness even exists in the face of pervasive human alteration of the biosphere (Cole & Yung, 2010; McKibben, 1989) and even if it does, whether the idea of wilderness can continue to maintain relevancy in modern society (McCool & Freimund, 2015, Smith & Kirby, 2015).

Clearly, wilderness is a multi-faceted concept deserving of careful consideration when it is applied to new areas and new contexts. This is particularly the case given that whether wilderness or other labels are used to connote protected areas can make a difference in how those protected areas are perceived and valued (Brailovskaya, 1998; Pike, Johnson, Fletcher, Wright, & Lee, 2010; Yung et al., 2008). As more MPAs are designated, including as marine wildernesses, it becomes increasingly important to investigate what the concept and label of wilderness means in the marine context, and whether any views regarding terrestrial wilderness might be applicable to this new environment.

Marine Wilderness

Although the concept of wilderness is well-developed in terrestrial areas, its formal application to the ocean was not widely discussed until the late 1980s and since then, there has been little conformity in its conceptualization and implementation (Barr, 2008; Sloan, 2002). Early discussions were primarily conducted in academic and professional forums, and produced various definitions of what might constitute marine wilderness (e.g., Bohnsack et al., 1989; Kelleher & Kenchington, 1991). Members of the fourth World Wilderness Conference in 1987 chose to define marine wilderness as "marine areas where little or no evidence of human intrusion is present or permitted, so that natural processes will take place unaffected by human intervention" (Kelleher & Kenchington, 1991, p. 44). Currently, the IUCN states that marine wilderness areas "should be sites of relatively undisturbed seascape, significantly free of human disturbance, […] works, or facilities and capable of remaining so through effective management" (Day et al., 2012, p. 20). In North America, the North American Committee on Cooperation for Wilderness and Protected Areas Conservation (NAWPA) offered a definition of marine wilderness that is consistent with definitions for terrestrial wilderness: "marine and coastal areas that exist in a natural state or are capable of being returned to a natural state, are treasured for their intrinsic value, and offer opportunities to experience natural heritage places through activities that require few, if any, rudimentary facilities or services" (NAWPA, 2011, p. 1). In general, the emphasis for marine wilderness tends to be on the perpetuation of natural conditions and processes, and restrictions on human activities. Definitions for marine wilderness have substantial overlap with definitions for marine reserves (MRs), as the defining characteristic of an MR is prohibition of development and extractive uses (Lubchenco, Palumbi, Gaines, &

Andelman, 2003; National Academy of Sciences, 2001). In some instances, these terms are used synonymously (Brailovskaya, 1998; Davis, 1999; Rockefeller, 2008).

Informed primarily by biophysical research and policy concerns, these definitions and early discussions generally had limited explorations of what application of the concept or label of wilderness to marine areas might mean for members of the public, and whether such application is perceived as legitimate. Shafer and Benzaken (1998) were among the first to empirically investigate whether people outside academia and marine resource management thought the label of wilderness was applicable to areas of the ocean. Their work at Australia's Great Barrier Reef found the vast majority (80%) of respondents agreed that wilderness existed in the Great Barrier Reef Marine Park, and also identified a number of attributes thought to affect the wilderness character of a marine area (e.g., number of people in the area, amount of noise, amount of boat traffic, distance from coastal access). Barr and Kliskey (2014a, 2014b) replicated elements of this study and also found that a large majority of respondents (nearly 76%) indicated that areas of the ocean could be considered wilderness and identified similar important marine wilderness attributes. In these instances, the term wilderness was found to transcend differences between terrestrial and marine environments. These investigations into marine wilderness did not, however, address whether applying this concept or label to the ocean imbues this term with new meanings, or how application of wilderness to areas of the ocean might change cognitions or behaviors related to that portion of the sea.

Beyond these studies, there has been little work on cognitions associated with marine wilderness. Both Shafer and Benzaken (1998) and Barr and Kliskey (2014a, 2014b) conducted their studies with invested stakeholders such as reef users and various marine, wilderness, and

scientific professionals. Left unexamined are the views of a more general public, a population whose general lack of familiarity with the ocean (Steel et al., 2005) may affect their willingness to extend the terrestrially-centered notion of wilderness to marine areas. The essential but often neglected general population has been shown to have strong opinions about wilderness on land (Cordell et al., 2003; Dawson & Hendee, 2009; Yung et al., 2008). Additionally, this population constitutes the people on whose behalf public resources such as MPAs are supposed to be managed (Barr & Lindholm, 2000; Wood, 2014), and in many cases make up the majority of the tax and voting bases that ensure the viability of MPAs. Moreover, given that populations other than traditional stakeholder groups (e.g., managers, local residents, fishers, recreationists) are less likely to have direct experience with or be impacted by MPAs (Voyer, Gladstone, & Goodall, 2012), the label given to these areas is a crucial, perhaps singular, means by which they encounter protected ocean space (King, 2005). Research on cognitions associated with marine wilderness has also not untangled the relationship between terrestrial and marine applications of wilderness, a potentially important distinction particularly if marine wilderness is used as a label for communicating with citizens about protected ocean spaces.

Social Science Perspectives

If wilderness is regarded as a social construction and "state of mind" (Nash, 2014, p. 5), there should be no complication applying this concept to the ocean. This assumption, however, has been largely unexamined due to the relatively limited explorations of marine wilderness from a social perspective. Place-based research offers one lens through which to examine the applicability of wilderness to a marine setting. Historically, place-based research has focused on the social construction of a sense of place, downplaying the role of the physical environment in

human-place relationships (Greider & Garkovich, 1994; Lewicka, 2011; Tuan, 1974; Williams & Patterson, 1996). Stedman (2003) challenged this focus, asserting that the physical nature of a place (i.e., marine or terrestrial) has a real impact on how that place is interpreted and what meanings it is ascribed. Although some researchers have not gone as far as Stedman (2003) in asserting the primary importance of the physical environment, many have found that the meaning of a place is closely intertwined with its physical characteristics (e.g., Brehm, 2007; Cheng, Kruger, & Daniels, 2003; Kyle & Chick, 2007; Leap, 2015; Windsong, 2014). In a marine setting, it is possible that physical attributes unique to the ocean take on increased importance. In their investigation of meanings given to the Great Barrier Reef Marine Park, Wynveen, Kyle, and Sutton (2010) found that physical characteristics exclusive to the marine environment made important contributions to the formation of place meanings, setting the marine park apart from terrestrial places.

Although the concept of wilderness can be considered a social construction and the physical landscape, whether marine or terrestrial, "sets bounds and gives form to" the meanings supporting that construction (Stedman, 2003, p. 671), the label wilderness has its own effects on how a place such as an MPA is viewed. Research utilizing a symbolic interactionist framework indicates that symbols, including words, names, and labels, influence how the social and physical environments are interpreted (Blumer, 1969; Mead, 1934). In fact, symbols (e.g., words) can carry more meaning than either social or physical characteristics alone (Colton, 1987). Wynveen et al. (2010), for example, found consensus among respondents on the intrinsic value of the unique natural resources protected in the Great Barrier Marine Park, and suggested this consensus was partly shaped by the symbolism of the marine park designation. Wilderness is

often interpreted as a symbol for a variety of human aspirations and values (Cole, 2005; Grant, 1994; Schroeder, 2007), and designating a place such as an MPA as wilderness ostensibly would confer those values and aspirations to that place. Limited research has investigated whether this occurs with the designation of marine wilderness areas, or whether wilderness designation would alter attitudes (i.e., positive or negative evaluations; Fishbein & Ajzen, 2010) toward an MPA. This issue is not simply of interest to those researching human-environment relationships. Rather, because use of symbols such as wilderness can affect intentions and behavior toward a place (Colton, 1987; Fishbein & Ajzen, 2010), the sustainable management of MPAs demands a greater understanding of what wilderness in the ocean might mean to a broad representation of the public.

To address these gaps in understanding the social implications of the concept and label of marine wilderness, this article explores five research questions: (a) to what extent does the general public think that the concept of wilderness applies to areas of the ocean in general and to Oregon's MRs in particular; (b) does this differ from the extent that this concept is thought to apply to areas on land; (c) what are similarities and differences between the meanings of "marine protected area, "marine reserve," "wilderness," and "marine wilderness;" (d) how would application of wilderness to Oregon's MRs alter attitudes about these areas, and (e) how would wilderness rather than MR designation affect intended visitation of these areas?

Methods

Study Context

This study was conducted in Oregon, which recently designated five MRs at Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks. Oregon defines an MR as

"an area within Oregon's Territorial Sea or adjacent rocky intertidal area that is protected from all extractive activities, including the removal or disturbance of living and non-living marine resources, except as necessary for monitoring or research to evaluate reserve condition, effectiveness, or impact of stressors" (Oregon Ocean Policy Advisory Council [OPAC], 2008, p. 1). Four of the five MR sites (all except Otter Rock) also have a portion of their area designated as MPAs with slightly less restrictive regulations in place. In Oregon, an MPA is defined as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein" (OPAC, 2008, p. 5). Although none of these areas are termed as wilderness, the emphasis on protection from extractive use and limitations on human disturbance in the MRs is similar to guidelines for marine wilderness areas (Bohnsack et al., 1989; Day et al., 2012; Shields & Moore, 2014).

With a few exceptions (e.g., Needham, Cramer, & Perry, 2013; Perry, Needham, & Cramer, 2016; Perry, Needham, Cramer, & Rosenberger, 2014), most studies of Oregon's MRs have focused on groups traditionally considered direct stakeholders (e.g., commercial fishers, recreational anglers, other non-consumptive recreationists; Connor, Stauffer, & Harte, 2007; Eardley & Conway, 2011; Murphy, 2010; Swearningen, Don, Murphy, Davis, & Polis, 2014). Even Needham et al. (2013) and Perry et al. (2014, 2016) oversampled coastal residents in communities of place nearest the MRs. Although these stakeholder groups and adjacent communities are likely to be the most directly affected by these reserves, data from these populations are not necessarily reflective of dynamics in other regions of the state or of broader

societal relationships with the ocean, which is a common limitation of social science research on MPAs (Barr & Lindholm, 2000; Börger, Hattam, Burdon, Atkins, & Austen, 2014).

As part of a larger project focused on resident perceptions of Oregon's marine reserves, (Needham, Cramer, & Johnston, 2016), this article investigates the views and cognitions of residents in the most heavily populated region of Oregon (i.e., Portland to Ashland between the Coast and Cascade Mountain Ranges). This non-coastal population is significant in that it constitutes the majority of Oregon's voting population and is more culturally and socio-economically diverse in comparison to the rest of the state. Studying this population will provide managers of Oregon's MRs with more insight into views held by residents of this area of the state, and will add a needed facet to the understanding of human-ocean relationships.

Data Collection

Data were obtained from a mixed-mode survey (i.e., internet, mail) of residents in this region in early 2016. The sample was drawn randomly from the most recent postal records delineated by census blocks. Questionnaires were administered using four mailings (Dillman, Smyth, & Christian, 2014). The first mailing consisted of a postcard pre-notification with an option to complete the questionnaire on the internet using individual access codes. Those who did not complete the questionnaire on the internet received the second mailing, which consisted of a letter, questionnaire, and postage-paid return envelope. This was followed by a postcard reminder (with the option to complete the questionnaire on the internet) and then a second full mailing (i.e., letter, questionnaire, return envelope) to those who had not yet responded. Of the 2,800 Oregon residents contacted, 530 completed questionnaires, yielding a response rate of 20% after accounting for undeliverables (e.g., incorrect address, moved).

A telephone non-response bias check was conducted with a sample of 75 residents who did not complete the questionnaire online or by mail (Bartlett, Kotrlik, & Higgins, 2001). Residents contacted in the non-response bias check were asked a subset of questions from the full questionnaire. No substantive differences were found between those who completed the full questionnaire and those who completed the telephone non-response bias check. Demographic data (e.g., age, sex) from respondents were also compared with the most recent Census data from the study area. Data were weighted by age and sex to ensure representativeness of the sample.

Analysis Variables

The questionnaire contained items measuring: (a) the perceived appropriateness of applying the label and concept of wilderness to ocean and land spaces; (b) word associations with the terms "marine protected area," "marine reserve," "wilderness," and "marine wilderness;" and (c) the effect that applying the term wilderness to Oregon's MRs might have on visitation and attitudes. Respondents were asked in open-ended questions to list the three most salient words or phrases that occur to them when they think of the terms marine protected area, marine reserve, wilderness, and marine wilderness. Placement of these questions early in the instrument minimized potential order effects through exposure to the terms and ideas expressed in the remainder of the questionnaire (Kalton & Schuman, 1982).

In a later portion of the questionnaire, respondents were provided with a map of Oregon's five MRs and the following information: "Although Oregon's marine reserves are not officially designated as 'wilderness,' some people believe wilderness exists not only on land, but also in the ocean. However, other people believe wilderness only exists on land and does not include the ocean. Wilderness has many possible definitions, but for the purposes of the rest of this survey, it

can generally be considered as places where natural processes dominate and intentional human modification of the environment is minimal." The perceived appropriateness of applying wilderness to portions of the ocean and land was then assessed by asking respondents the extent they disagreed or agreed that each of six areas could be called wilderness: (a) areas of the ocean in the world, (b) areas of the ocean along Oregon's coast, (c) Oregon's MRs, (d) areas of land in the world, (e) protected areas of land in Oregon, and, (f) other areas of land in Oregon. These items were measured on a five-point scale of 1 "strongly disagree" to 5 "strongly agree."

Attitudinal changes in response to this potential designation as marine wilderness were measured with two items, each on five-point scales. The first item addressed if opinions would become more negative (1 on scale), remain unchanged (3), or become more positive (5). The second item asked if respondents would like Oregon's MRs less (1 on scale), not change their attitudes (3), or like these reserves more (5) if they were ever to be designated as marine wilderness. An open-ended question asked respondents who indicated that their attitudes would change to describe the nature of that change. Anticipated behavioral changes in visitation to Oregon's MRs if they were ever to be designated as marine wilderness were measured by asking respondents on a five-point scale whether they would want to visit these areas less often (1 on scale), the same amount as now (3), or more often (5) if they were formally designated as marine wilderness. Another question on the same five-point scale addressed if respondents would visit Oregon's marine areas less often (1 on scale), the same amount as now (3), or more often (5) if they were formally designated as MRs. In order to minimize bias against those who had never visited before or who do not have the ability to visit Oregon's coast, both questions addressing change in visitation asked if respondents would *want* to change visitation.

Data Analysis

Descriptive and univariate statistics described: (a) whether and to what extent the term wilderness is thought to be appropriate for areas of the ocean and/or Oregon's MRs, and (b) changes in visitation and attitudes if these MRs were to be designated as wilderness. Differences between the applicability of wilderness to marine and terrestrial areas were assessed using bivariate paired samples *t*-tests and Cohen's *d* effect sizes (Cohen, 1988, Vaske, 2008). Paired samples *t*-tests and Cohen's *d* effect sizes also assessed differences in anticipated visitation with MR and wilderness designations. Further exploration of the meanings of wilderness in marine and terrestrial environments were conducted with qualitative analysis of open-ended questions using content analysis to extract themes regarding word associations with 'marine protected area,' 'marine reserve,' 'wilderness,' and 'marine wilderness.' A second researcher coded a subset of the responses to open-ended questions, and interrater reliability was 92%. Interrater reliability was determined by the degree of overlap in what each researcher found concerning the number, composition, and relative intensities of themes that emerged for each designation. It is possible that this high interrater reliability was due to the simplistic nature (i.e., single words or short phrases) of the data as compared to other common forms of qualitative data (e.g., lengthy interview or focus group transcripts).

Results

Perceived Applicability of Wilderness to Marine Areas

Respondents were generally willing to apply the concept of wilderness to ocean areas (Figure 2.1). More than half of respondents either agreed or strongly agreed that areas of ocean

in the world (80%, $M = 4.10$), areas of the ocean along Oregon's coast (72%, $M = 3.88$), and Oregon's MRs (60%, $M = 3.62$) could be called wilderness (Table 2.1).

Table 2.1. Results of reliability analyses assessing applicability of wilderness to ocean and terrestrial areas, and attitude change with wilderness designation of Oregon's marine reserves.

	Mean	% Agree [a]	Item Total Correlation	Alpha if deleted	Cronbach Alpha
Applicability of wilderness to the ocean [b]					.86
Areas of ocean in the world	4.10	80	.69	.84	
Areas along Oregon's coast	3.88	72	.82	.71	
Oregon's marine reserves	3.62	60	.69	.84	
Applicability of wilderness to land [b]					.91
Areas of land in the world	4.52	95	.82	.89	
Protected areas of land in Oregon	4.40	91	.87	.84	
Other areas of land in Oregon	4.29	87	.82	.89	
Attitude change with wilderness designation					.91
Opinion would be more positive [c]	3.25	28	.83		
Would like Oregon's marine more [d]	3.21	28	.83		

[a] Percent of respondents indicating that they either "agree" or "strongly agree" with the statement
[b] Variables coded on 5-point scales from 1 "strongly disagree" to 5 "strongly agree"
[c] Variable coded on a 5-point scale from 1 "my opinion of Oregon's marine reserves would be more negative if they were designated as wilderness" to 5 "my opinion of Oregon's marine reserves would be more positive if they were designated as wilderness"
[d] Variable coded on a 5-point scale from 1 "I would like Oregon's marine reserves less if they were designated as wilderness" to 5 "I would like Oregon's marine reserves more if they were designated as wilderness"

Only 15% of respondents disagreed or strongly disagreed that Oregon's MRs could be called wilderness. However, this 15% was greater than the portions of respondents who disagreed that wilderness could apply to areas of ocean in the world (6%) or other areas along Oregon's coast (10%). Overall, among these three geographic contexts, wilderness was least applicable to Oregon's MRs (Figure 2.1).

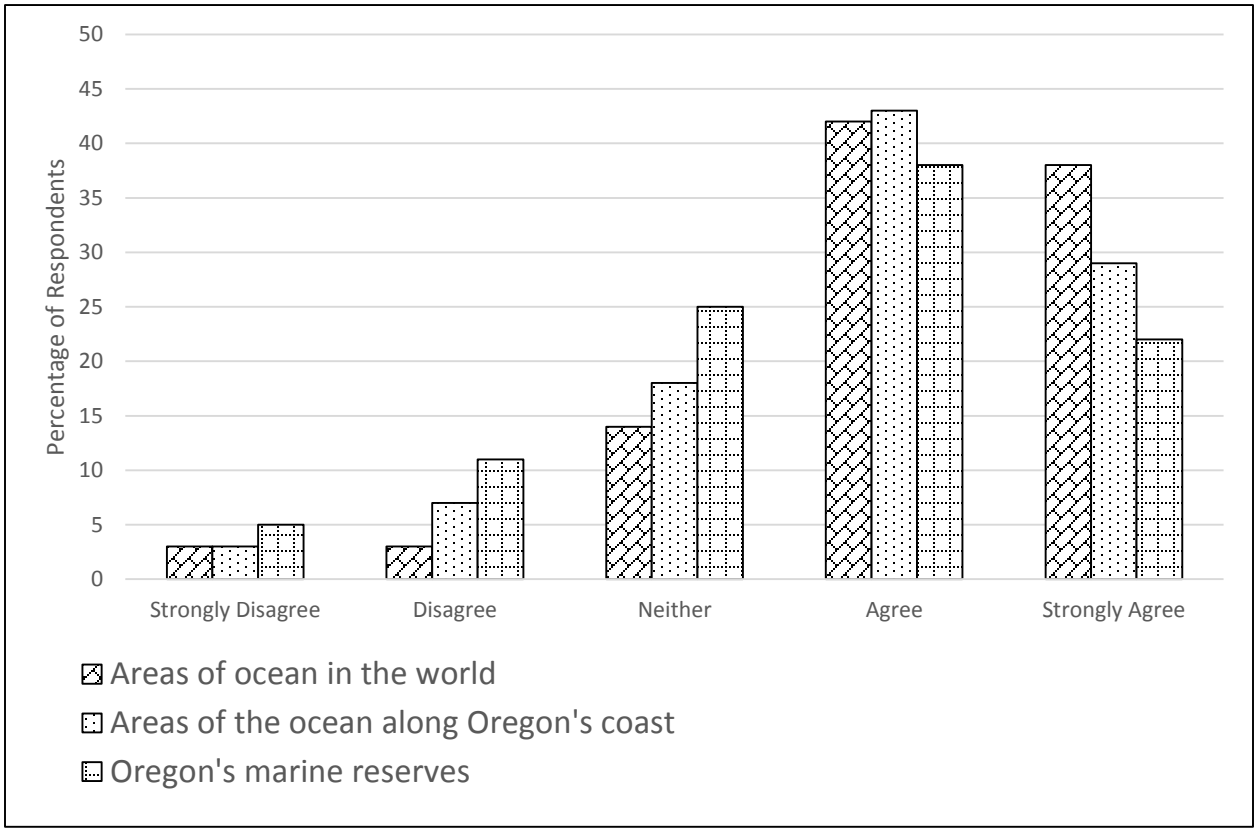

Figure 2.1. Percentage of respondents who disagree or agree that areas of the ocean at different geographic extents could be called wilderness.

Applicability of Wilderness to Marine vs. Terrestrial Areas

The overwhelming majority of respondents agreed or strongly agreed that wilderness applies to areas of land in the world (95%, $M = 4.52$), protected areas of land in Oregon (91%, $M = 4.40$), and other areas of land in Oregon that are not officially protected (87%, $M = 4.29$; Table 2.1). Respondents were significantly more willing to apply the concept of wilderness to land areas rather than ocean areas across every geographic context (i.e., areas in the world, areas in Oregon, protected areas in Oregon), $t = 8.31$ to 14.63, $p < .001$ (Table 2.2). Effect sizes ($d = .45$ to $.84$) indicated that the strength of the statistical differences in wilderness applicability between

areas of land and ocean in Oregon and around the world were "typical" (Vaske, 2008) or "medium" (Cohen, 1988), but there were "substantial" (Vaske, 2008) or "large" (Cohen, 1988) differences in wilderness applicability between protected areas of land in Oregon and Oregon's MRs.

Table 2.2. Comparison of the applicability of wilderness to land and ocean areas in general, and in different geographic contexts.

	Mean wilderness applicability [a]				
	Ocean Areas	Land Areas	Paired-sample *t*-test value	*p*-value	Cohen's *d* effect size
Areas in the world [b]	4.10	4.52	9.31	<.001	.50
Protected areas in Oregon [c]	3.62	4.40	14.63	<.001	.84
Other areas in Oregon [d]	3.88	4.29	8.31	<.001	.45
Composite index	3.86	4.41	12.69	<.001	.67

[a] Variables coded on 5-point scales from 1 "strongly disagree" to 5 "strongly agree"
[b] Items include "areas of ocean in the world" and "areas of land in the world"
[c] Items include "Oregon's marine reserves" and "protected areas of land in Oregon"
[d] Items include "areas of the ocean along Oregon's coast" and "other areas of land in Oregon"

Cronbach alpha reliability analysis indicated that the items assessing applicability of wilderness to ocean ($\alpha = .86$) and land areas ($\alpha = .91$) could be aggregated into two separate scales, one for ocean areas (3 items) and one for land areas (3 items, Table 2.1). Deletion of any variable from its respective concept did not improve reliability. Alphas $\geq .65$ suggest that variables are measuring the same concept and justify combining them in an index (Vaske, 2008). Comparison of the aggregated ocean ($M = 3.86$) and land ($M = 4.41$) scales suggested that respondents were more likely to report wilderness as more applicable to terrestrial rather than marine environments, $t = 12.69$, $p < .001$ (Table 2.2). This effect size ($d = .67$) indicates a

"typical" to "substantial" difference in the degree to which respondents considered wilderness applicable to land and ocean areas (Vaske, 2008).

Meanings of 'Marine Protected Area,' 'Marine Reserve,' 'Wilderness,' and 'Marine Wilderness'

A majority of respondents (77%) provided at least one response to open-ended questions regarding associations with protected area designations. Several broadly shared themes emerged from the words and phrases associated with 'marine protected area,' 'marine reserve,' 'marine wilderness,' and 'wilderness' (Table 2.3). References to Environmental Attributes, including biological and physical components of the environment, were particularly common, with little difference among the four designations. Words such as "wildlife," "habitat," and "ecosystem" were associated with each of the designations to a similar extent. Wildlife and animals seemed to be a particular focus within the larger theme of Environmental Attributes. Similarly, each of the four designations evoked notions of Protection and conservation, with words such as "protected," "wildlife protection," and "preserved" appearing across all categories. The theme of Prohibitions and Regulations also arose for each designation, with mentions of restrictions, regulations, and limitations appearing in response to each designation. However, there was substantial variation in the overall tone and language used to describe regulations.

Several additional themes appeared across all designations, but were not particularly strong for any of them. These themes include Importance (e.g., "needed," "good idea"), Governance and Management (e.g., "enforcement," "well controlled"), Health and Cleanliness (e.g., "clean water," "healthy"), and Complaints and Confusion (e.g., "too many," "what is reserved?"). Although the themes of Prohibition and Regulations, Protection, and Environmental Attributes were shared and had some importance across designations, they were not necessarily

the most prominent themes for each of the designations, and distinctions exist in how these themes were expressed in relation to each of the four designations. Differences in the words and phrases associated with each designation are discussed below.

Table 2.3. Prominent qualitative themes associated with protected area designations. Ratings of high, moderate, and low are relative to other themes associated with the same designation (i.e., vertically down columns). A rating in one designation does not imply the same importance as that rating within another designation (i.e., horizontally across columns).

Themes	Marine Protected Area	Marine Reserve	Marine Wilderness	Wilderness
Prohibitions and Regulations (e.g., no fishing, limited access)	High	High	High	Moderate
Protection (e.g., protected, conservation)	High	High	Moderate	Moderate
Environmental Attributes (e.g., wildlife, ocean, habitat)	High	Moderate	High	High
Restoration (e.g., habitat restoration, recovery)	Moderate	High	Moderate	N/A
Human Activities (e.g., recreation, research)	Low	High	Low	Moderate
Concerns and Threats (e.g., vulnerable, endangered)	Moderate	Low	Low	Low
Importance (e.g., necessary, critical, good idea)	Low	Moderate	Low	Low
Pristineness (e.g., untouched, pure, unspoiled)	Low	Low	High	High
Emotive Connections (e.g., inspiring, serene, interesting)	Low	Low	High	High
Governance and Management (e.g., controlled, ODFW, managed)	Moderate	Moderate	Low	Low
Health and Cleanliness (e.g., clean, healthy, unpolluted)	Low	Low	Moderate	Low
Complaints and Confusion (e.g. not necessary, ambiguous)	Low	Low	Low	Low

Marine Protected Area. Respondents strongly associated ‘marine protected area’ with restrictions, regulations, and prohibitions. Restrictions on access and fishing were of particular importance, with phrases such as “no access,” “no public entry,” and “off limits” among the most frequently mentioned. Many respondents expressed the theme of Prohibition and Regulation using imperative, commanding language including “don’t fish or hunt,” “stay out,” and “don’t disturb wildlife.” Some of these seeming commands, such as “exercise care,” “do not impact,” “tread lightly,” and “leave as found” appeared to express a stewardship ethic with respect to MPAs.

Indeed, among the four designations investigated, ‘marine protected area’ evoked the sturdiest sense of stewardship, with references including “do it before too late!”, “defend,” and “guard.” This emphasis within the theme of Concerns and Threats may have emerged because of a perception that these areas require protection; respondents associated ‘marine protected area’ with potential threats, providing responses such as “endangered area” or “area needs help.” Despite the emergence of Concerns and Threats and the subtheme of stewardship associated with ‘marine protected area,’ the Importance or worth of these areas was not emphasized as much as it was for other designations. Rather, there were a number of responses that reflected Complaints and Confusion, indicating uncertainty or even resistance to the idea of an MPA. These included replies such as “more area controlled by needless organizations and government,” “really vague designation,” and “confusing.”

Marine Reserve. Similar to associations with ‘marine protected area,’ responses to ‘marine reserve’ also focused heavily on Prohibitions and Regulations, particularly limitations on access and permissible activities. Some respondents seemed to feel that ‘marine reserve’ implies

an area that is completely off-limits to people, associating the designation with phrases such as "closed to the public," "no human activity," and "oceanic 'no use' area."

Although respondents clearly emphasized restrictions and regulations in association with 'marine reserve,' not all indicated that MRs are entirely off-limits. A number of respondents, more than for any of the other designations, mentioned Human Activities such as research and recreation when thinking about MRs. This seeming contradiction between a strong emphasis on prohibitions and a concurrent sense of recreation and other human activities was echoed by respondents associating 'marine reserve' with confusion or a lack of clarity. Examples of these Complaints and Confusion include, "what?", "honestly don't know what a marine reserve is," and "are the US Marines involved?"

In spite of some confusion, Protection clearly emerged as the strongest theme associated with 'marine reserve.' Respondents seemed to feel that MRs are certainly protected areas of the ocean, whether they are protected by regulations or protected for recreation and research. More so than with other designations, 'marine reserve' brought forth notions of protection with a particular emphasis on Restoration and rebuilding for the future. Examples such as "species regeneration," "reestablish marine ecosystem," and "saving for the future" were more common in association with 'marine reserve' than for any of the other designations.

Marine Wilderness. Prohibitions and Regulations again figured prominently in associations with 'marine wilderness.' However, there were virtually no uses of the commanding, imperative language more commonly employed in association with 'marine protected area' and 'marine reserve.' Limitations, especially limitations on access, were still an important theme for 'marine wilderness,' with restricted fishing receiving much less attention.

Rather, the limitations and restrictions that seemed most salient to respondents involved issues similar to wilderness regulation in the terrestrial context, such as a lack of development (e.g., "no man-made structures"), restrictions on motorized equipment (e.g., "motor-less"), and minimal human footprint or habitation (e.g., "few/no signs of human presence").

The emphasis of these restrictions on limiting human influence and development is directly related to the strongest theme to emerge in relation to 'marine wilderness' – Pristineness. Notions of the "pristine," "undisturbed or altered," and "untouched" quality of marine wilderness was a focus for respondents. Although "pristine," "natural," and similar phrases appeared in associations with 'marine protected area' and 'marine reserve,' they did not emerge as a strong theme for these designations. Moreover, some of the phrases used in association with 'marine wilderness' suggested a freedom from human impurity or incursion, language that did not appear for the other designations. Examples included "protected from human contamination," "uninfected by man," and "minimal invasion of man."

A further distinction of responses to 'marine wilderness' was the preponderance of descriptive, even emotional language used by respondents, exemplified in the theme of Emotive Connections. Each of the four designations brought forth some degree of descriptive responses, with a particularly broad distribution of references to scenic beauty. Even so, descriptive terms such as "beautiful" or "isolated" appeared more frequently for 'marine wilderness.' An important subset of these Emotive Connection terms used for describing marine wilderness focused on the vibrancy, diversity, and abundance of life in marine wilderness. Phrases such as "lush," "flourishing," and "full of life" appeared more frequently here than for any other designation. Additionally, 'marine wilderness' evoked emotive language that was nearly absent from

associations with ‘marine protected area’ or ‘marine reserve.’ Respondents described marine wilderness as “fascinating,” “undiscovered,” “inspiring,” and “magical.” One respondent even found “joy” an important association with ‘marine wilderness.’

Not all respondents, however, had positive or emotional associations with ‘marine wilderness.’ Although each designation had a portion of respondents report negative or confused reactions, ‘marine wilderness’ had more of these Complaints and Confusion and negative associations than any of the other designations. Respondents with negative reactions to ‘marine wilderness’ used phrases such as “government takeover,” “tied up,” “red tape,” and “no common sense.”

Wilderness. By far the most prominent theme to emerge from associations with ‘wilderness’ was Pristineness, with numerous references to the untouched or pristine nature of wilderness. Notions of pristineness were more strongly associated with wilderness than any other theme was for any other designation. Evidently, there was considerable consensus among respondents that ‘wilderness’ indicates “untouched by man,” “unspoiled,” and “pure.”

Also similar to connotations with ‘marine wilderness,’ respondents used a variety of Emotive Connections and descriptive terms when reflecting on ‘wilderness.’ Once again, words such as “remote,” “uninhibited,” “happiness,” “enchanting,” and “uplifting” were used for describing wilderness. There were few, if any, similar words used in relation to either ‘marine protected area’ or ‘marine reserve.’

A further difference between responses to ‘wilderness’ and those to either ‘marine protected area’ or ‘marine reserve’ was the limited presence of imperative, commanding language related to rules and regulations. Although Prohibitions and Regulations such as

"restricted entry" were certainly used with respect to wilderness, few responses took the form of commands. There were also relatively few references to recreation in association with 'wilderness' compared to the strength of some of the other themes affiliated with the designation. When recreation was mentioned, it was almost always in connection with terrestrial recreation activities such as "hiking" and "camping." Indeed, 'wilderness' prompted many respondents to think of specifically terrestrial characteristics including "forest," "deep in the woods," and "mountains." Some of the rules and regulations associated with 'wilderness' such as "no logging" and "no cars" were also focused on terrestrial activities or regulations typical for terrestrial wilderness areas.

Changes in Attitudes and Intended Visitation with Wilderness Designation

For each of the two items measuring attitude change with potential wilderness designation of MRs in Oregon, over half of respondents (61-63%) indicated that wilderness designation would not change their opinion of Oregon's MRs. Cronbach alpha reliability analysis suggested that these two items could be reliably combined into a single scale measuring attitude change with designation of Oregon's MRs as wilderness ($\alpha = .91$, Table 2.1). Using this combined scale, more respondents (32%) indicated that their opinions would change positively (e.g., like, positive) as compared to negatively (13%), but over half still thought that wilderness designation would not change their opinion of Oregon's MRs ($M = 3.23$).

Qualitative responses to an item asking about how opinions would change with wilderness designation of Oregon's MRs also suggested that of those whose opinions would change at all, most would change positively. These positive responses centered on several themes that emerged. The first and most prominent of these themes was the idea that wilderness

designation would afford the MRs with increased protection beyond the level at which they are currently protected. Many respondents had responses similar to those who stated, “wilderness designations usually carry extra protections of which I am in favor,” “I would assume there were more protections in place for the marine ecosystem,” and “I hope a stronger designation would help with protection of the oceans.”

Respondents also indicated that their positive reactions to potential wilderness designation of Oregon’s MRs stemmed from their beliefs that such a designation would imply protection of a pristine area, or that the intent of wilderness designation is to decrease the human influence on the natural ecosystem. One respondent, for example, indicated that “my opinion would change in a positive sense. I would have more respect for these reserves and understanding that their purpose is to retain a pristine ecological ecosystem.” Several other respondents had statements with sentiments similar to those who stated “I would think these areas would be untouched” and “it makes them sound more wild with less human footprints.”

The last theme to emerge from those who said their opinions would change positively with wilderness designation is the idea that this designation would confer more respect, value, and appreciation of the MRs. Respondents made statements such as “they might get more of the attention they deserve,” “I would expect people to respect these areas more,” and “I feel that more respect and concern were being shown.”

Although most respondents indicated their opinions would change positively, there were also respondents who had negative reactions to the idea of wilderness designation of Oregon’s MRs. Many of these negative reactions focused on the belief that wilderness designation would carry additional restrictions, particularly the exclusion of people to an excessive degree. These

concerns were expressed in statements such as “I’d hate for no one to be allowed in or only very few” and “I would feel I wouldn’t be able to use because it would be restricted.” Similar to those who expressed fear of exclusion from areas designated as marine wilderness, many respondents with negative reactions to the possible designation cited government and regulatory overreach as an important factor. Respondents stated, for example, “yes government would have too much control and they do a terrible job at everything,” indicating concern about “more government control and land grabs.”

There were some respondents with negative opinions of potential wilderness designation of Oregon’s MRs who thought that changing the marine reserve designation to wilderness would be unnecessary. One respondent echoed this sentiment by stating “I feel it’s unnecessary to change name to ‘wilderness,’ what would be the point?” Others saw wilderness designation as a semantic ruse, stating it “seems like a gimmick” and “right now I am very suspicious that changing terminology is a way to take advantage of taxpayers.” Despite these concerns about potential wilderness designation of Oregon’s MRs, most respondents would either not change their opinion at all, or if their opinion would change, they described it as positive.

The vast majority of respondents (88%) reported having visited marine areas in Oregon before, and 60% reported having visited at least one of the marine reserve sites. A majority of respondents likewise indicated that neither MR (67%, $M = 3.12$) nor wilderness (64%, $M = 3.02$) designation would alter their desired visitation of these areas. Slightly more respondents wanted to visit more frequently with MR designation (23%) than with wilderness designation (21%). Marine wilderness designation would inspire 16% of respondents to visit less, compared to 10% of respondents who stated they would visit areas designated as MRs less because of that

designation. Although the difference between the means was statistically significant ($p < .001$), the effect size ($d = .12$) indicated that the strength of this difference was "minimal" (Vaske, 2008) or "small" (Cohen, 1988).

Discussion

Overall, respondents felt that the label and concept of wilderness could be applied to areas of the ocean. Although a majority of respondents indicated that Oregon's MRs could be called wilderness, other areas around Oregon's coast and areas of ocean in the world were seen as more appropriately deemed wilderness. Additionally, respondents found wilderness more applicable to land areas than marine areas across geographic contexts, and over half of respondents indicated that wilderness designation would not change their attitudes toward or intended visitation of marine areas formally designated as wilderness.

For respondents whose attitudes toward Oregon's MRs would be affected by wilderness designation, most would change their attitudes in a positive direction. Qualitative responses suggested this is because wilderness designation is seen as adding increased protection, that a marine wilderness area would preserve a pristine area, and that this designation would increase the respect or value given to those areas.

Whether or not designation as marine wilderness would consciously alter attitudes toward Oregon's MRs , qualitative responses indicated that the designations of 'marine protected area,' 'marine reserve,' 'marine wilderness,' and 'wilderness' evoked distinct reactions. Associations with 'marine protected area' and 'marine reserve' focused on rules, regulations, limitations, and commands, whereas associations with 'marine wilderness' and 'wilderness' centered more on notions of purity and descriptive language that at times carried emotional overtones.

Some differences in associations with the various designations may have stemmed from the longstanding discussion about MPAs and MRs in Oregon. In the decade leading up to the designation of Oregon's MRs, the consequences, risks, and benefits of MPA and MR designation were discussed statewide. Some of this discussion involved the restrictions and limitations that MR and MPA designations would require (Manning, 2008; Oregon Department of Fish and Wildlife [ODFW], 2009). Marine wilderness, in contrast, has not been a topic of wide discussion either in Oregon or across the United States, with little public debate about what regulations would accompany marine wilderness designation (Barr & Kliskey, 2014b). The difference in the extent to which these designations have been the subject of public dialogue may have influenced the associations given to each designation. Despite the debate about MRs in Oregon, members of the public are generally not knowledgeable about the subject (Perry et al., 2014; Steel et al., 2005). The effect of different levels of public discourse on MRs and marine wilderness may have been blunted by this overall lack of knowledge. Implications of these results for management and future research are discussed below.

Implications for Management

Although most respondents deemed the label and concept of wilderness appropriate for marine areas, it appears that the term 'wilderness' brings its terrestrial legacy when applied to the ocean. Wilderness was deemed more appropriate for land rather than marine areas and many respondents associated the term with terrestrial images, activities, and regulations. Perhaps most importantly for management of MPAs labeled marine wilderness, both 'wilderness' and 'marine wilderness' were thought to be untouched, unaltered, and pristine areas, whereas no such expectation existed for 'marine protected area' and 'marine reserve.' It is doubtful that these

expectations of purity could be met by any MPA given the extensive anthropogenic alteration of global marine ecosystems (Halpern et al., 2008; Jackson et al., 2001; Millennium Ecosystem Assessment, 2005). It is perhaps this mismatch between the "untouched" ideal of marine wilderness and the lived experience of Oregon's MRs that prompted respondents to find wilderness less fitting for the reserves than for other areas of the ocean.

If marine wilderness areas were to be designated, managers would need to prepare to face these expectations of pristineness, which might ultimately be unattainable. Previous research has demonstrated that dissatisfaction often finds its roots in the mismatch between expectation and reality (Manning, 2011; Tonge & Moore, 2007), and such a mismatch might erode the acceptability of MPAs labelled as marine wilderness. Respondents also indicated an expectation that marine wilderness designation would confer added protections. Due to a lack of consensus on what regulations marine wilderness might require, it may or may not provide the additional environmental protection that respondents anticipated. Once again, the mismatch between this expectation and reality might prove detrimental to fledgling marine wilderness areas.

It is perhaps these expectations of marine wilderness being unspoiled and particularly protective of ecosystems that inspired a greater number of respondents to want to visit areas designated as marine wilderness less than areas designated as an MR. It is possible that some respondents, perceiving marine wilderness as "unspoiled" and "protected from human contamination," thought that visiting would counteract the very environmental protection for which the area was set aside, and concluded they would rather not visit a marine wilderness area. For marine wilderness areas established with the intent of minimizing human influence, this may be beneficial. However, it is conceivable that a marine wilderness might be established for other

reasons, such as to promote ecotourism (Shafer & Benzaken, 1998). In this situation, the label of 'marine wilderness' might dissuade the very visitation or recreational use these managers or agencies seek.

The designations of 'marine protected area' and 'marine reserve' have their own attendant expectations, chiefly focused on limitations, prohibitions, and restrictions. These expectations of a tightly regulated space might suit manager and agency needs, as many MPAs, including Oregon's MRs, are established to minimize negative anthropogenic impacts to the ecosystem, primarily though restrictions on access and use. However, Oregon's MRs and other MPAs around the world are not intended to entirely exclude people or prohibit non-consumptive recreational use. Depending on the reasons for designating an MPA and the degree to which the public is allowed to access the area, it may or may not be beneficial that restrictions such as "no human activity" and "off limits to everyone" are among the most salient associations that members of the public have with 'marine protected area' and 'marine reserve.'

Clearly, the management of public expectations will be paramount if and when marine wilderness areas begin to be designated on a wider scale. Assuming these expectations are anticipated and addressed, these results suggest that it may be time for managers to begin seriously considering marine wilderness designation. Most people found wilderness an appropriate label for marine areas, and either would not change their attitudes or would change them positively if an existing MPA or MR were ever to be designated as wilderness. Perhaps, then, marine wilderness designation might be a relatively low-risk proposition worthy of attempt by MPA managers and others concerned with marine resource management.

Implications for Research

The result from this study that a large majority of the general public in the most populous region of Oregon found wilderness to be an appropriate label for areas of the ocean corroborated results from previous research focused on ocean recreationists (Shafer & Benzaken, 1998) and wilderness managers (Barr & Kliskey 2014a, 2014b). Taken together, these studies indicate that marine wilderness might be a concept with some degree of social acceptability to groups of traditional stakeholders (recreationists, managers) and the general public alike. This does not suggest, however, that the designation of marine wilderness would always be socially acceptable or without conflict. Rather, results from these studies imply that any conflict associated with the first attempts to establish marine wilderness might not stem from the use of the label 'wilderness.' It is important to note, however, that studies addressing this issue, including this study, have all been conducted by asking respondents about the hypothetical applicability of the label and concept of wilderness to marine areas without reference to an actual designated marine wilderness area. Research on a marine wilderness area post-establishment would help discern whether social acceptability of marine wilderness as a concept is durable after designation.

This study also explored the impressions and meanings associated with 'marine protected area,' marine reserve,' 'marine wilderness,' and 'wilderness' designations. It is evident that these terms inspire differing expectations. Classification schemes for MPAs, such as those proposed by Al-Abdulrazzak and Trombulak (2012), Horta e Costa et al. (2016), and Day et al. (2012), have been developed without regard to what social expectations are provoked by the labels used. Given that the ecological success of an MPA is tied to its social success (Hoelting et al., 2013; Thomassin et al., 2010; Weible, 2008), classification schemes should take into account the effect

that a given designation may have on public views of the MPA. In a similar way, other researchers have urged caution in adopting terrestrially oriented terms such as wilderness to the marine context, primarily citing the differences between marine and terrestrial ecosystems (Al-Abdulrazzak & Trombulak, 2012; Kearney et al., 2013; Peel & Lloyd, 2004; Sloan, 2002). Although results here did not indicate that wilderness can be applied to the ocean without complications (e.g., expectations of purity, historical association with terrestrial environments, potential changes in visitation), it is a clear demonstration that social expectations as well as ecological implications must be taken into account when applying terms such as wilderness to a new context.

In the relatively new context of marine wilderness, the import of the label and concept of wilderness remains intact, lending support to the symbolic interactionist view of words as potent symbols. 'Marine wilderness' shared many of its associations with those of 'wilderness,' especially notions of pristineness and descriptive, emotional ideas such as inspiration or serenity. Although there were some differences in the meanings given to 'marine wilderness' and 'wilderness,' the core symbolism of 'wilderness' as a place beyond human touch or interference stays with the term, even when it is applied to a vastly different environment than is typical. This powerful symbolism superseded any "bounds" as suggested by Stedman (2003, p. 671) that may have been given to those meanings by the physical environment of the marine ecosystem. However, most place-based research (e.g., Brehm, 2007; Stedman, 2003) concerns populations that have a degree of familiarity with the physical environment in question. Although speculative and not assessed in this study, it is possible that the symbolism of wilderness carried over to Oregon's MRs because this population was not expressly familiar with the physical environment

of these marine areas. Future research might consider potentially differing perceptions of marine wilderness between people who are and are not intimately familiar with marine areas.

Despite the persistent symbolism of 'wilderness' as a place distinct from other areas such as MPAs and MRs, application of the wilderness label and concept to marine areas did not have a substantial effect on the attitudes or intended visitation patterns of a majority of respondents. It is important to note, however, that this study only addressed self-assessed changes in attitudes and behavioral intentions in response to a hypothetical marine wilderness designation. An experimental approach, without relying on self-reports, might be able to more precisely identify if the symbolism of wilderness has an effect on attitudes and behavioral intentions of which respondents might not be consciously aware. It is also possible that cognitions and other mental processes not investigated here might be affected by application of the term wilderness to an MPA or MR. Emotions, social norms about acceptable behavior these areas, and beliefs about the positive and negative consequences of establishing a protected area might all be affected by the title or label given to the area, especially a term as symbolically rich as wilderness. Although attitudes are undeniably important in understanding the human dimensions of protected areas, these other emotions and cognitions are also worthy of investigation, and may reveal even more about the effects of applying the label and concept of wilderness to marine areas.

As with most empirical social science research, caution must be used when extrapolating results of this study beyond the population involved. Even within Oregon, there are strong regional differences in environmental values, attitudes, and behaviors, with the population in this study known to be generally pro-environment (Morzillo & Needham, 2015; Steel, List, & Shindler, 1994). These results, therefore, are not reflective of *the* general public writ large, but

rather of *a* general public, one with socioeconomic and political importance in Oregon. Research on other populations will help discern whether the results here are more broadly generalizable.

Conclusion

Wilderness is indeed a powerful term, capable of influencing the way we perceive a place and what expectations we have for a place designated as such. There have been relatively few but insistent calls over the past several decades for this evocative concept and label to be applied to MPAs. This study identifies some of the difficulties, consequences, and benefits that might result from the impact such a designation will have on public opinions and cognitions. As global oceans are faced with extraordinary pressures, marine resource managers, agencies, and others concerned about ocean health must not lose sight of the impact that public views can have on the ability of an MPA to achieve its social and ecological goals. Although marine wilderness designation might not be a panacea to ensure public support and attention to an MPA or MR, this study demonstrates that the label of 'marine wilderness' is also not likely to inspire public backlash in and of itself. Indeed, the findings that wilderness is seen as applicable to the ocean and that marine wilderness designation of an MPA or MR would have few negative effects on attitudes and visitation suggest general acceptance of the concept of marine wilderness, provided that expectations of purity attached to wilderness are addressed. Perhaps, then, marine wilderness designation is worthy of serious consideration. At the very least, fear of negative public reactions to using the powerful idea of wilderness in the marine context should not stand in the way of advancing marine conservation through the consideration of marine wilderness designation.

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CHAPTER 3
PUBLIC VALUES AND ATTITUDES TOWARD MARINE RESERVES AND MARINE WILDERNESS

Introduction

The establishment of marine protected areas (MPAs) is an ocean management strategy that is gaining popularity around the world (Boonzaier & Pauly, 2016; National Ocean Council, 2013; Wood, Fish, Laughren, & Pauly, 2008). An MPA is generally considered to be a spatially explicit portion of the ocean with legally enforceable protections in place (National Academy of Sciences, 2001). MPAs are increasingly designated and managed within the context of ecosystem based management (EBM), one of the dominant paradigms in marine resource management (Aswani et al., 2013; Christie, 2011; Lester et al., 2010; Long, Charles, & Stephenson, 2015). A goal of establishing MPAs within the framework of EBM is to preserve ocean resources and the human communities that depend on these resources (Rosenberg & Sandifer, 2009). In recognizing the inescapable links between humans and the marine environment, the EBM of MPAs is ideally informed equally by the biophysical and social sciences (McLeod & Leslie, 2009). In practice, however, EBM in the context of MPAs often falls short of the ideal parity between these disciplines. Numerous studies highlight the importance of incorporating social science research into MPA management and the relatively few instances when this is adequately achieved (e.g., Charles & Wilson, 2009; Christie, 2004; Christie 2011; Mascia, 2003; Mascia, 2004; Pomeroy, Mascia, & Pollnac, 2007; Sievanen, Campbell, & Leslie, 2012; Suman, Shivlani, & Milon, 1999; Thomassin, White, Stead, & Gilbert, 2010).

Values and attitudes toward MPAs are among the social science concepts shown to have a genuine impact on the ability of MPAs to realize management objectives (Jefferson et al., 2015; Pike, Johnson, Wright, & Lee, 2010; Pita, Pierce, Theodossiou, & Macpherson, 2011; Wolfenden, Cram, & Kirkwood, 1994). Values can be described as preferences for modes of being (Rokeach, 1973) or for one thing or attribute over another (Brown, 1984). Values inform more specific cognitions such as attitudes, which are positive or negative evaluations of an object or idea (Fishbein & Ajzen, 2010, Homer & Kahle, 1988). Values shape attitudes toward management regimes such as MPA designation and the enforcement of regulations, and these attitudes in turn can impact MPA management, success, and acceptability (Perry, Needham, & Cramer, 2016; Thomassin et al., 2010; Voyer, Gollan, Barclay, & Gladstone, 2015). Understanding the values and attitudes that people have toward MPAs, therefore, is essential as these concepts form foundational building blocks for MPA support, compliance with regulations in these areas, and the achievement of MPA management goals.

Most research investigating values and attitudes toward MPAs has focused on groups that are considered as traditional stakeholders, including commercial fishers, ocean recreationists, and communities living adjacent to MPAs (e.g., Cole, Holland, & Donohoe, 2015; Hoelting, Hard, Christie, & Pollnac, 2013; Klain & Chan, 2012; Pike et al., 2010; Pita et al., 2011; Suman et al., 1999; Thomassin et al., 2010; Voyer, et al., 2015a, 2015b). Crucial as these stakeholder groups are, their values and attitudes are not necessarily reflective of the general public or broader societal dynamics. Although the general public is not commonly the focus of social science research concerning MPAs (Barr & Lindholm, 2000; Börger, Hattam, Burdon, Atkins, & Austen, 2014), the public is an important stakeholder in the management of public resources, and

the thoughts and actions of the public can impact MPA success, particularly through democratic processes and political decisions (Fox et al., 2013). As countries such as the United States place more emphasis on ocean resource management (Boonzaier & Pauly, 2016; National Ocean Council, 2013), including the establishment of MPAs, the attitudes of the general public and values that shape them are increasingly important for MPA success.

Designation of marine wilderness areas is one example of an MPA management strategy that might be affected by public values and attitudes. Although there is no widely accepted definition of marine wilderness, the conceptualization by the North American Committee on Cooperation for Wilderness and Protected Areas Conservation (NAWPA) encompasses many themes common to most definitions: "marine and coastal areas that exist in a natural state or are capable of being returned to a natural state, are treasured for their intrinsic value, and offer opportunities to experience natural heritage places through activities that require few, if any, rudimentary facilities or services" (NAWPA, 2011, p. 1). Nationally, the American public is generally supportive of terrestrial wilderness areas such as those within national parks and forests (Cordell, Tarrant, & Green, 2003; Lutz, Simpson-Housley, & de Man, 1999; Watson, Cordell, Manning, & Martin, 2015). Wilderness can have multiple definitions and meanings (Nash, 2014; Williams, 2000), but terrestrial wilderness areas in the United States are generally defined in accordance with the 1964 Wilderness Act: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by an, where man himself is a visitor who does not remain." Despite widespread support for terrestrial wilderness in the United States, support is not unanimous and attitudes toward the concept can be polarized (Durrant & Shumway, 2004;

Yung, Freimund, & Chandler-Pepelnjak, 2008). Attitudes and values concerning marine wilderness have received comparatively little attention, despite the importance of public reactions to new or changing management regimes (Ballantine, 2014; Charles & Wilson, 2009; Wolfenden et al., 1994). This article explores public values and attitudes toward MPAs, and how these attitudes might change if these areas are designated as marine wilderness.

Conceptual Foundation

Attitudes

Given that attitudes offer insight into stakeholders' positive or negative views of protected areas and management decisions, they are a common subject of research in natural resources and marine management (e.g., Charles & Wilson, 2009; Jefferson et al., 2015; Manning, Valliere, & Minteer, 1999; Perry et al., 2016; Pita et al., 2011). Attitudes toward MPAs are wide-ranging and studies have shown they can be affected by a number of factors over which managers have varying degrees of control, including how long the MPA has been in existence (Pita et al., 2011), perceptions of marine ecosystem health (Thomassin et al., 2010), and the MPA establishment process (Suman et al., 1999; Wolfenden et al., 1994).

Although there have been a number of studies on attitudes toward MPAs, there has been comparatively little empirical work on attitudes toward marine wilderness areas, perhaps because relatively few of these areas have been designated. Studies conducted on views of marine wilderness have tended to focus instead on the appropriateness of applying wilderness as a label and concept to the ocean. Both Shafer and Benzaken (1998) and Barr & Kliskey (2014b) found that an overwhelming majority of respondents (80% and nearly 76%, respectively) deemed wilderness an appropriate term for portions of the ocean. Given that people may be willing to

extend the label of wilderness to the ocean, the sporadic but persistent consideration of marine wilderness among both academics and practitioners (e.g., Barr & Lindholm, 2000; Bohnsack 1989; Davis, 1999; Graham & McClanahan, 2013; NAWPA, 2011), and the effort to establish more MPAs worldwide (Boonzaier & Pauly, 2016; National Ocean Council, 2013), perhaps marine wilderness is an idea whose time has come. Public attitudes toward marine wilderness and how attitudes toward existing MPAs would change with this wilderness designation will be an important factor in determining whether or not this idea can be successfully implemented.

Marine reserves (MRs), also known as no-take areas (Lubchenco, Palumbi, Gaines, & Andelman, 2003; National Academy of Sciences, 2001), are a type of MPA similar to marine wilderness in a number of respects, especially given that both MRs and marine wilderness areas emphasize strict preservation of the natural environment and restrict harvest of marine resources (Sobel & Dahlgren, 2004). Some have even used these terms interchangeably (Brailovskaya, 1998; Davis, 1999; Rockefeller, 2008). Numerous studies have focused on attitudes toward MRs (e.g., Chaigneau & Daw, 2015; Perry et al., 2016; Pita et al., 2011; Suman et al., 1999; Thomassin et al., 2010; Voyer, Gladstone, & Goodall, 2015; Wolfenden et al., 1994). As with research on other MPAs, studies have found that attitudes toward MRs vary considerably among situations and populations. Despite the similarities between MRs and marine wilderness, existing MR research has not taken into account the special place of wilderness in American culture (Barr, 2008; Grant, 1994; Nash, 2014; Watson et al., 2015) or how attitudes toward MRs would change if these areas were designated as wilderness.

Attitudes toward MRs and attitudes toward marine wilderness designation may be related, however. Within the field of social psychology, both the rule of correspondence and the

principle of specificity suggest that general attitudes toward something such as MRs influence specific attitudes toward related issues (Fishbein & Manfredo, 1992; Vaske & Donnelly, 1999; Whittaker, Vaske, & Manfredo, 2006). Positive or negative attitudes toward an MR (general attitude), therefore, are likely related to more specific attitudes toward changes in MR management such as designating the area as a marine wilderness.

According to theories such as the Cognitive Hierarchy, both general and specific attitudes are influenced by more basic cognitions such as values (Fulton, Manfredo, & Lipscomb, 1996; Homer & Kahle, 1988; Vaske & Donnelly, 1999; Whittaker et al., 2006). To provide a more complete view of public perspectives and cognitions regarding MRs and marine wilderness areas, attitudes must be studied not in isolation, but within their relationships with other cognitions (Manfredo, Teel, & Bright, 2004). Examining connections among values, general attitudes, and specific attitudes provides an understanding of what is valued or desired in an MPA or MR, how positively or negatively the MPA is viewed, and how these attitudes might change with the implementation of new management decisions, such as designating the MPA or MR as a marine wilderness area.

Values

Values toward natural resources have received extensive research in environmental economics (e.g., De Groot, Wilson, & Boumans, 2002; Krutilla, 1967; Wainger & Boyd, 2009), social psychology (e.g., Inglehart, 1995; Ives & Kendal, 2014; Stephenson 2008; Winter & Lockwood, 2005), and marine resource management (e.g., Angulo-Valdes & Hatcher, 2010; Blasiak et al., 2015; Cole et al., 2015). One consequence of this attention is a diversity of conceptualizations of values (Aasetre & Gundersen, 2012; Seymour, Curtis, Pannell, Allan, &

Roberts, 2010). Although values are often interpreted in economic terms (Rolston, 1985), social science generally focuses on values that individuals and societies have, without translating them into monetary terms. This research has typically addressed two kinds of values that Brown (1984) described as "held" and "assigned." Held values (e.g., honesty, fairness, respect for life) are central to a person's worldview and constitute an enduring concept of what is good or preferable (Rokeach, 1973). The influence of held values over a person's general approach to life and the relatively unchanging nature of these values (Brown, 1984; Inglehart & Baker, 2000; Schwartz, 1992) led Kendal, Ford, Anderson, and Farrar (2015) to term them "core" values. These core or held values are frequently the subject of research from a social psychological perspective (Inglehart, 1995; Oreg & Katz-Gerro, 2006; Shultz & Zelezny, 1999; Stern, 2000).

Assigned values reflect comparative judgements that a person makes about things (i.e., the relative importance given to something in relation to other things; Brown, 1984), and are more situation-specific and changeable than held values (Brown, 1984; McIntyre, Moore, & Yuan, 2008). For example, a person may hold respect for other forms of life across many contexts (held values), but the relative importance that he or she places on habitat preservation versus non-consumptive recreation opportunities that protect species (assigned values) may vary among settings such as parks, wildlife sanctuaries, wilderness areas, and fisheries management areas.

The situation-specific nature of assigned values potentially makes them more useful to managers of protected areas such as MPAs (Kendal et al., 2015; McIntyre et al., 2008; Seymour et al., 2010). Not only are assigned values less abstract than held values (Kendal et al., 2015), assigned values also offer insight into attributes that are valued about a particular place (and to

what degree), and perhaps offer a clearer understanding of public perspectives on specific place (Seymour et al., 2010). Knowledge about public values for an MPA can help ensure that management objectives align with public values, which can help managers anticipate conflict when such an alignment is not possible (Angulo-Valdes & Hatcher, 2010; Pike et al., 2010; van Riper, Kyle, Sutton, Barnes, & Sherrouse, 2012). In addition, because assigned values deal with the relative importance of things, understanding these values assigned to MPAs is useful for informing decisions about tradeoffs that managers regularly make, particularly in the context of EBM (Barbier, 2009).

Assigned Values for Protected Areas

The utility of assigned values for examining characteristics of places has made these values frequent subjects of protected area research (Harmon & Putney, 2003; Kendal et al., 2015; McIntyre et al., 2008; Morrissey & Manning, 2000; van Riper et al., 2012 Winter & Lockwood, 2005). Assigned values related to terrestrial wilderness areas (i.e., "wilderness values") in the United States, for example, have received substantial attention (e.g., Cordell, Bergstrom, & Bowker, 2005; Haas, Herman, & Walsh, 1986; Manning et al., 1999; Watson et al., 2015). Frequently studied categories of values in these areas include aesthetic, recreational, scientific, ecological, and moral reasons why one might value a wild area (Brown & Alessa, 2005; Manning et al., 1999; Schuster, Cordell, & Green, 2007; Winter & Lockwood, 2005). Although similar value categories tend to appear across these studies, there is little consistency in how they are selected and measured.

Many studies have categorized wilderness values as direct use (e.g., recreation, research, tourism), indirect use (e.g., ecosystem services), and non-use values (e.g., intrinsic value,

pleasure from knowing wild places exist, option to visit in the future, bequests for future generations). Originating from environmental economics and used extensively in wilderness values research (e.g., Aasetre & Gundersen, 2012; Barnes, 2003; Haas et al., 1986; Johnson, Bowker, Bergstrom, & Cordell, 2004; Krutilla, 1967; Morton, 1999; Oelschlaeger, 1991; Rolston, 1985), this approach has been widely adopted and allows for fine-scale differentiation of specific values (e.g., protect water quality vs. protect biodiversity), while also enabling aggregation of assigned values into scales for broader value categories.

The dichotomy between use and non-use values appears to be consistent across time (Cordell, Tarrant, McDonald, & Bergstrom, 1998). People consistently consider some activities and benefits to be a "use" of wilderness areas, and they value these differently from benefits derived through non-use. What has changed over time is the relative importance of use, indirect use, and non-use values. Early studies of wilderness values tended to focus on recreation and demonstrated that Americans valued onsite use of wilderness areas most highly (Oelschleager, 1991; Walsh, Loomis, & Gillman, 1984; Watson & Cordell, 2014). Over time, studies have found that indirect and non-use values have become increasingly important, often eclipsing use values (e.g., Bowker et al., 2005; Brown & Alessa, 2005; Cordell et al., 1998, 2003; Johnson et al., 2004; Morrissey & Manning, 2000; Shultis, 1999). Intrinsic values (i.e., valuing wilderness in and of itself outside any human benefit that can be gained from it; Johnson et al., 2004), which are a subset of non-use values, are now often ranked among the most important values people ascribe to wilderness (Brown & Alessa, 2005; Harmon, 2004; Shultis, 1999; Winter & Lockwood, 2005). This represents a fundamental shift in societal relationships with wilderness (Nash, 2014).

The vast majority of studies examining assigned values for wilderness and other protected areas have been conducted exclusively in the terrestrial context. The number of studies on values ascribed to the ocean, wild or not, is immensely outweighed by those examining values for terrestrial areas (Barr, Ehler, & Wiley, 2003; Barr & Kliskey, 2014b; Börger et al., 2014; Cole et al., 2015). There is, however, a growing body of research on values connected with marine environments such as MPAs (Jefferson et al., 2015). Many values perceived as important in marine settings are similar to those identified in wilderness and other terrestrial protected areas. These include intrinsic values (Cole et al., 2015), preservation of biodiversity (Klain & Chan, 2012), spirituality (Pike et al., 2010), contributions to personal wellbeing (Voyer et al., 2015b), aesthetic beauty (Wynveen & Kyle, 2015), and conservation of charismatic marine species (Börger et al., 2014). Among the few studies investigating the concept of marine wilderness, Davey and Gillespie (2014) and Barr and Kliskey (2014b) found that marine areas were valued for the same indirect and non-use values accorded to terrestrial wilderness areas. In contrast, Cole et al. (2015) did not include "wilderness" as a distinct value in their coastal values typology because it was considered less relevant to coastal settings compared to ideas of "naturalness."

The majority of this research, however, has identified values associated with MPAs and other marine and coastal areas without investigating how these values relate to other cognitions such as general and specific attitudes, despite the importance of positive attitudes for protected area success (Charles & Wilson, 2009; Voyer et al., 2015a) and the relationships between values and attitudes (Ives & Kendal, 2014; Vaske & Donnelly, 1999; Vaske & Needham, 2007; Whittaker et al., 2006). With the exception of Börger et al. (2014), previous studies on assigned

values for MPAs have generally been conducted with direct users (e.g., Voyer et al., 2015b), invested stakeholders (e.g., Cole et al., 2015; Davey & Gillespie, 2014; Klain & Chan, 2012; Wynveen & Kyle, 2015), or managers or scientists (Barr & Kliskey, 2014b; Pike et al., 2010). Despite calls for research that is more representative of public or societal values for marine areas in general and MPAs in particular (Börger et al., 2014; Jefferson et al., 2015), the issue of whether members of the general public share similar values remains largely unexplored.

This article examines values that residents have for MRs in the state of Oregon (United States), how these values are related to attitudes toward the MRs, and whether attitudes would change if these MRs were ever to be designated as marine wilderness. Four research questions are explored: (a) what values do residents have for Oregon's MRs, (b) how might these values best be categorized, (c) what is the relationship between these values and attitudes toward Oregon's MRs, and (d) what is the relationship between these values and attitudes toward the MRs, and potential changes in these attitudes if the MRs were to be designated as wilderness?

Methods

Study Context

Oregon recently designated five MRs at Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks. These MRs are defined as "an area within Oregon's Territorial Sea or adjacent rocky intertidal area that is protected from all extractive activities, including the removal or disturbance of living and non-living marine resources, except as necessary for monitoring or research to evaluate reserve condition, effectiveness, or impact of stressors" (OPAC, 2008, p. 1). Restrictions in these MRs were implemented fully at the beginning of 2016. Although none of these areas are termed as wilderness, the emphasis on protection from

extractive use and limitations on human disturbance in the MRs is similar to guidelines for marine wilderness areas (Bohnsack et al., 1989; Day et al., 2012; Shields & Moore, 2014).

Prior human dimensions research concerning Oregon's MRs has focused on groups traditionally considered as direct stakeholders (e.g., commercial fishers, recreational anglers, non-consumptive recreationists, coastal businesses; Connor, Stauffer, & Harte, 2007; Eardley & Conway, 2011; Murphy 2010; Swearingen, Don, Murphy, Davis, & Polis, 2014). In addition, several interrelated studies have examined what Oregon's coastal residents think about these MRs (Needham, Cramer, and Perry 2013; Perry et al., 2016; Perry, Needham, Cramer, & Rosenberger 2014). Although these stakeholder groups and adjacent communities are likely to be the most directly affected by these reserves, data from these populations are not necessarily reflective of dynamics in other regions of the state or of broader societal relationships with the ocean, which is a common limitation of most social science research associated with MPAs (Barr & Lindholm, 2000; Börger et al., 2014).

As part of a larger project concerning perceptions of Oregon's marine reserves (Needham, Cramer, & Johnston, 2016), this article, therefore, investigated perspectives and cognitions of residents in the most heavily populated region of Oregon (i.e., Portland to Ashland between the Coast and Cascade Mountain Ranges). This non-coastal population is significant in that it constitutes the majority of Oregon's voting population and is more culturally and socio-economically diverse in comparison to the rest of the state. Research on this population provides managers of Oregon's MRs with more insight into views held by residents of other areas of the state, and adds a needed facet to the understanding of human-ocean relationships.

Data Collection

Data were obtained from a mixed-mode survey (i.e., internet, mail) of residents in this region in early 2016. The sample was drawn randomly from the most recent postal records delineated by census blocks. Questionnaires were administered using four mailings (Dillman, Smyth, & Christian, 2014). The first mailing consisted of a postcard pre-notification with an option to complete the questionnaire on the internet using individual access codes. Those who did not complete the questionnaire on the internet received the second mailing, which consisted of a letter, questionnaire, and postage-paid return envelope. This was followed by a postcard reminder (with the option to complete the questionnaire on the internet) and then a second full mailing (i.e., letter, questionnaire, return envelope) to those who had not responded. Of the 2,800 households contacted, 530 questionnaires were completed, yielding a response rate of 20% after accounting for undeliverables (e.g., incorrect address, moved).

A telephone nonresponse bias check was conducted with a sample of 75 residents who did not complete the questionnaire online or by mail (Bartlett, Kotrlick, & Higgins, 2001). No substantive differences were found between those who completed the full questionnaire and those who completed the telephone non-response bias check. Demographic data (e.g., age, sex) from respondents were also compared with the most recent Census data from the study area. Data were weighted by age and sex to ensure representativeness of the sample.

Analysis Variables

The questionnaire contained items measuring: (a) assigned values associated with Oregon's MRs, (b) attitudes toward Oregon's MRs, and (c) how attitudes would change if the MRs were ever to be designated as marine wilderness. To measure assigned values, respondents

were asked how important it is to them that Oregon's MRs provide 21 different values frequently examined in MPA and protected area research, including, among others, protection of water quality, provision of habitat for marine species, spiritual inspiration, and recreation opportunities. Responses were recorded on a nine point scale from 0 "not important" to 8 "extremely important" with an additional "I do not know" option. Unipolar importance scales have been used in studies assessing values associated with protected areas (e.g., Cordell et al., 2003; Haas et al., 1986; Kendal et al., 2015). This method was also used by the National Survey on Recreation and the Environment (NSRE), a nationwide survey that assessed wilderness values beginning in the mid-1990s. After using the scale to rate the importance of the value items, respondents were then asked to list up to three of these values they considered most important for Oregon's MRs to provide. Value items were selected for inclusion based on a review of literature concerning assigned values associated with MPAs, wilderness areas, and other protected areas.

Attitudes toward Oregon's MRs were assessed by asking respondents on five point semantic differential scales what they thought about MRs in Oregon. Opposing pairs of words on these scales included "dislike – like," "bad – good," and "negative – positive." Attitudinal change in response to potential designation of Oregon's MRs as marine wilderness areas was measured with two items on five-point scales. The first item addressed if opinions would become more negative (1 on scale), remain unchanged (3), or become more positive (5). The second item asked if respondents would like Oregon's MRs less (1 on scale), not change their attitudes (3), or like these reserves more (5) if they were ever to be designated as marine wilderness.

Data Analysis

Principal components exploratory factor analysis (EFA) with oblique rotation was conducted on the items measuring assigned values associated with Oregon's MRs to determine groups or factors of these values. Cronbach alpha reliability analysis tested the measurement reliability of these factors to determine if items could be combined into indices. Alpha coefficients of .65 or above indicate that items within a factor are measuring the same concept and may be combined into one index (Vaske, 2008). Descriptive and univariate statistics described the relative importance of the individual value items and groups of values identified by the EFA. Cronbach alpha reliability analysis was also conducted on the three items measuring attitudes toward Oregon's MRs and the two items measuring changes in attitudes toward the MRs if they were to be designated as marine wilderness to determine if these items can be combined into composite indices measuring attitudes and attitude change.

Ordinary least squares (OLS) regression path analysis was used for determining relationships among values for Oregon's MRs, attitudes toward these MRs, and how attitudes would change with marine wilderness designation. Mediation analysis was conducted to determine the extent that general attitudes toward to MRs partially or fully mediate relationships between values and attitude change with wilderness designation (Baron & Kenny, 1986).

Results

Among the 21 items assessing assigned values for Oregon's MRs, "Protect water quality" (*M* = 6.81), "Protect endangered species" (*M* = 6.75), and "Protect habitat for marine species" (*M* = 6.72) received the highest average importance (Table 3.1). The values with the lowest average importance were "Provide spiritual inspiration" (*M* = 3.28), "Provide income for the tourism industry" (*M* = 4.41) and "Provide opportunities to maintain or regain physical or mental health through contact with nature" (*M* = 4.69). However, when asked directly which values were the most important, "Protect marine species, water, or plants that have value even if humans do not benefit from them" was most frequently cited by respondents (29% of respondents), and "Protect symbols of America's heritage or culture" was cited least frequently as being the most important value provided by Oregon's marine reserves (2% of respondents) (Figure 3.1).

Table 3.1. Reliability analyses of the value factors described in Table 3.2 and attitude scales

	Mean	Standard Deviation	Item Total Correlation	Alpha if deleted	Cronbach Alpha
Environmental Protection values [a]					.97
Protect water quality	6.81	1.72	.87	.97	
Protect endangered species	6.75	1.83	.91	.97	
Protect habitat for marine species	6.72	1.70	.92	.97	
Preserve unique wild plants or animals	6.71	1.75	.91	.97	
Protect endangered places	6.58	1.84	.92	.97	
Protect marine species, water, or plants that have value even if humans do not benefit from them	6.53	1.84	.90	.97	
Preserve natural areas for scientific discovery or study	6.41	1.76	.80	.97	
Protect air quality	6.19	2.30	.85	.97	
Knowing that future generations will have marine reserves	6.15	2.21	.89	.97	
Foster a moral or ethical obligation to respect or protect nature or other living things	6.08	2.45	.88	.97	
Protect other natural resources that humans may have to use in the future	5.96	2.00	.76	.97	
Protect nature to ensure human well-being or survival	5.95	2.32	.82	.97	
Provide a place of minimal human impact or intrusion into the natural environment	5.61	2.16	.71	.97	
Emotional Well-Being values [a]					.90
Provide scenic beauty	5.90	2.10	.73	.88	
Knowing that I will have the ability to visit marine reserves in the future	5.54	2.17	.70	.88	
Protect places that provide a sense of place, community, or belonging	5.31	2.29	.83	.86	
Protect symbols of America's heritage or culture	5.17	2.49	.69	.88	
Provide opportunities to maintain or regain physical or mental health through contact with nature	4.69	2.38	.77	.87	
Provide spiritual inspiration	3.28	2.62	.64	.89	
Recreation values [a]					.67
Provide recreation opportunities	4.70	2.26	.50		
Provide income for the tourism industry	4.41	2.20	.50		
Attitude toward marine reserves in Oregon [b]					.97
Dislike to like	4.29	1.01	.92	.96	
Bad to good	4.28	.96	.93	.96	
Negative to positive	4.29	.96	.94	.95	
Attitude change with wilderness designation					.91
Opinion would be more negative/positive [c]	3.25	.89	.83		
Would like Oregon's marine reserves less/more [d]	3.21	.86	.83		

[a] Variables coded on 9-point scales from 0 "not important" to 8 "extremely important"

[b] Variables coded on 5-point semantic differential scales of 1 "dislike/bad/negative" to 5 "like/good/positive"

[c] Variable coded on a 5-point scale from 1 "my opinion of Oregon's marine reserves would be more negative if they were designated as wilderness" to 5 "my opinion of Oregon's marine reserves would be more positive if they were designated as wilderness"

[d] Variable coded on a 5-point scale from 1 "I would like Oregon's marine reserves less if they were designated as wilderness" to 5 "I would like Oregon's marine reserves more if they were designated as wilderness"

The EFA revealed three factors explaining the assessed values (Table 3.2). All factor loadings exceeded .40. The first factor included 13 values (e.g., "Protect water quality," "Protect endangered species"), the second factor contained six values (e.g., "Provide scenic beauty," "Provide spiritual inspiration"), and the final factor contained two values ("Provide recreation opportunities," Provide income for the tourism industry"). These factors were labeled "Environmental Protection values" (factor 1), "Emotional Well-Being values" (factor 2), and Recreation values (factor 3). These three factors explained 77% of the variance in values assigned to Oregon's MRs. Cronbach alpha coefficients for the three factors ranged from .67 (factor 3 – Recreation values) to .97 (factor 1 – Environmental Protection values; Table 3.1).[1]

[1] Principal components exploratory factor analysis (EFA) with varimax rotation of all variables in this article (values, attitudes, attitude change) produced separate factors reflecting basically identical concepts, and all loadings were ≥.40. In addition, a single EFA without rotation with the number of factors fixed to one showed the factor explained approximately 50% of the variance. These approaches represent Harman single factor tests (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and suggest that common method variance or bias was generally absent

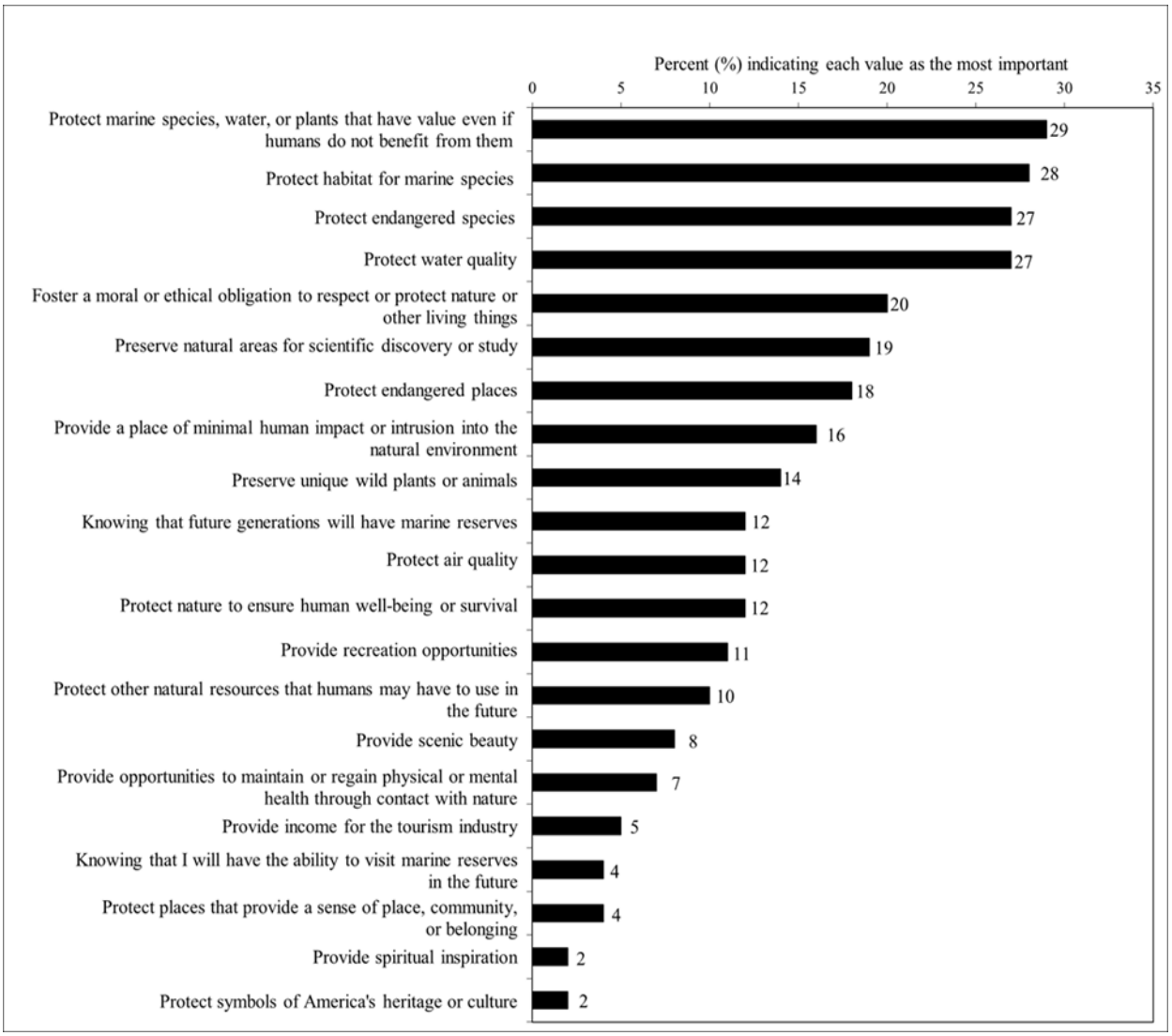

Figure 3.1. Percent (%) of respondents indicating that each of the values was the most important for Oregon's MRs to provide. Note: each respondent was given three opportunities to respond, so percentages do not add to 100%.

Table 3.2. Exploratory factor analysis of assigned values associated with Oregon's marine reserves.

Values [b]	Factor Loadings [a, c]		
	Factor 1: Environmental Protection Values	Factor 2: Emotional Well-Being Values	Factor 3: Recreation Values
Protect habitat for marine species	.99		
Protect marine species, water, or plants that have value even if humans do not benefit from them	.99		
Preserve unique wild plants or animals	.99		
Protect endangered species	.98		
Protect endangered places	.95		
Preserve natural areas for scientific discovery or study	.93		
Protect water quality	.83		
Knowing that future generations will have marine reserves	.79		
Foster a moral or ethical obligation to respect or protect nature or other living things	.79		
Protect air quality	.73		
Protect other natural resources that humans may have to use in the future	.71		
Protect nature to ensure human well-being or survival	.68		
Provide a place of minimal human impact or intrusion into the natural environment	.59		
Provide spiritual inspiration		.92	
Provide opportunities to maintain or regain physical or mental health through contact with nature		.72	
Protect places that provide a sense of place, community, or belonging		.59	
Knowing that I will have the ability to visit marine reserves in the future		.57	
Protect symbols of America's heritage or culture		.50	
Provide scenic beauty		.41	
Provide recreation opportunities			.92
Provide income for the tourism industry			.67
Eigenvalue	12.61	8.00	3.63

[a] Principle components factor analysis with Oblique rotation. Only factors with eigenvalues greater than 1 and items with factor loadings greater than .40 were retained in the final factor structure (Tabachnik & Fidell, 1996).
[b] Items coded on 9-point scales of 0 "not important" to 8 "extremely important"
[c] Total cumulative percent (%) variance explained = 77%

Attitudes toward Oregon's MRs were generally positive (M = 4.28 to 4.29), and respondents indicated that attitudes would not change or would change somewhat positively with

wilderness designation of the MRs (M = 3.21, 3.25; Table 3.1). Cronbach alpha reliabilities were high for the three items measuring general attitudes toward Oregon's MRs (α = .97) and the two items measuring attitude change in response to wilderness designation (α = .91; Table 3.1).

OLS regression path analysis tested the relationships among assigned values for Oregon's MRs, attitudes toward these areas, and attitude change with possible wilderness designation of the reserves. The three value factors had correlations ranging from .31 to .57 (Figure 3.3). Environmental Protection and Recreation values were both related to general attitudes toward Oregon's MRs, whereas no significant relationship existed between Emotional Well-Being values and general attitude (β = -.03, p = .657). Environmental Protection values were positively related to general attitude, and a stronger predictor (β = .71, p < .001) than Recreation values, which were negatively related to general attitude (β = -.28, p < .001). This means that respondents who considered protecting environmental attributes as important were more likely to have positive attitudes toward the MRs, whereas those who considered human recreation and tourism uses to be important had more negative attitudes toward the MRs. Together, Recreation values and Environmental Protection values explained 42% of the variance in general attitudes toward Oregon's MRs.

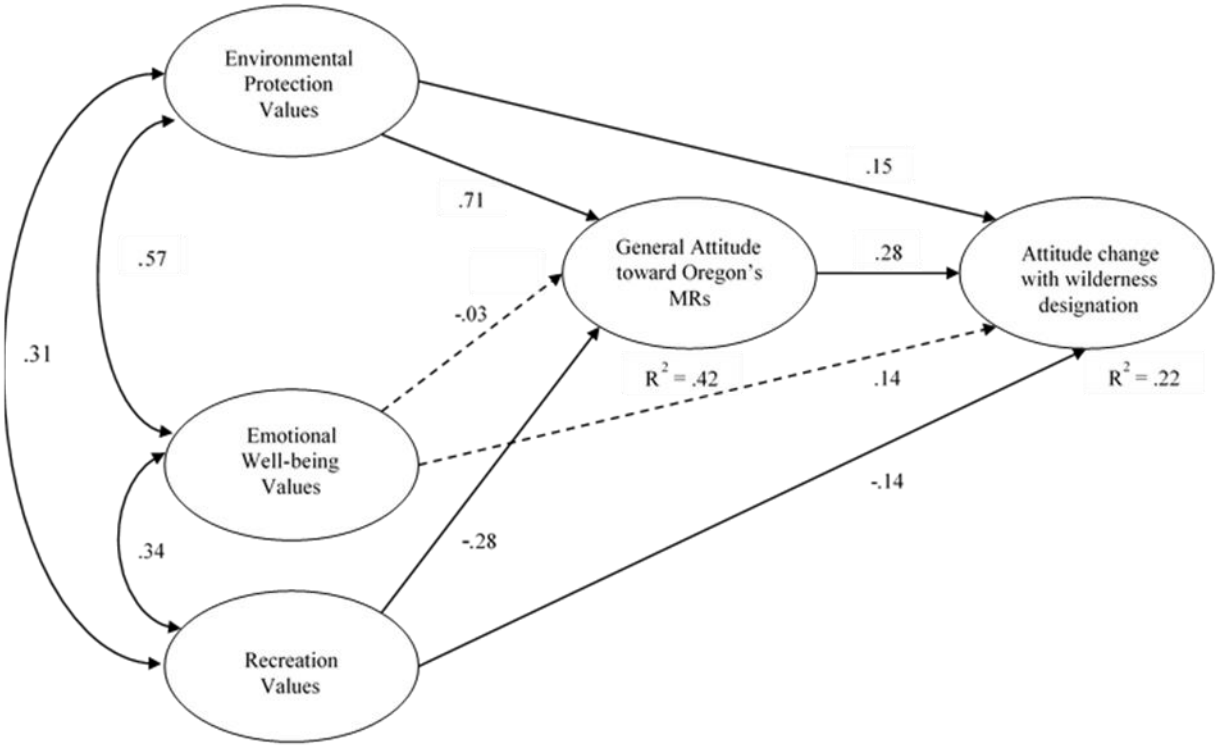

Figure 3.3. Final path model. Paths are standardized coefficients (β). Significant paths ($p < .05$) are shown with solid lines. Insignificant paths ($p > .05$) are shown with dashed lines. R^2 = variance explained.

These general attitudes were positively related to changes in attitudes with wilderness designation of Oregon's MRs (β = .28, $p < .001$). Environmental Protection values were also positively related to attitudinal change with wilderness designation, but to a lesser degree (β = .15, $p < .001$) than general attitudes. The relationship between Environmental Protection values and attitude change was partially mediated by general attitudes. Recreation values had a negative relationship with attitude change with wilderness designation (β = -.14, $p < .001$), and this relationship was also partially mediated by general attitude. In other words, those who most strongly valued Environmental Protection would be more likely to change their attitudes positively if the MRs were ever to be designated as wilderness, whereas those who most strongly

appreciated Recreation values of the MRs would be more likely to change their attitudes toward the MRs in a negative direction in response to possible wilderness designation. However, the relationships between values and attitude change with wilderness designation were not as strong as the relationship between general attitudes toward the MRs and this attitude change. There was no statistically significant relationship between Emotional Well Being values and attitude change ($\beta = .14$, $p = .052$). Environmental Protection values, Recreation values, and general attitudes collectively explained 22% of the variance in changes in attitudes toward Oregon's MRs with wilderness designation.

Discussion

Implications for Management

Results suggested a clear indication of the importance of Environmental Protection values associated with protected areas such as Oregon's MRs. These values were most important to respondents, and had a strong, positive relationship with attitudes toward these reserves. As Oregon's MRs were established with the goal to "conserve marine habitats and biodiversity" (OPAC, 2008), managers should be encouraged that this population values the very things that the MRs were designated to preserve. Given the importance placed on these values, this population may respond favorably to communication from mangers about the Environmental Protection aspects of Oregon's MRs (e.g., protecting endangered species, protecting water quality), rather than opportunities for activities that more directly benefit humans (e.g., receiving spiritual inspiration, experiencing scenic beauty, maintaining health, recreating).

Opponents of protected areas often cite restrictions on access and extractive use of the area as primary grievances (Durrant & Shumway, 2004; Voyer et al., 2015a; Wolfenden et al.,

1994). While the results from this study did not de-legitimize such concerns, they demonstrated that on-site uses of protected areas (e.g., recreation) were not of high importance to many members of the general public. It is worth noting, however, the negative relationships between Recreation values and both general and specific attitudes. Although Recreation values were not as important as Environmental Protection values, respondents who did place high importance on recreation tended to have more negative attitudes toward the MRs and would experience negative changes in those attitudes if these areas were ever to be designated as marine wilderness. Although many MPAs and MRs prohibit consumptive activities such as fishing, non-consumptive activities such as diving, boating, and swimming are often permitted, and could presumably be permitted in marine wilderness areas as well. Managers of MRs and those seeking to establish marine wilderness areas, therefore, may have to work diligently to counteract the possible public perception that such MPAs are a barrier to recreation.

Although managers of Oregon's MRs are not currently considering wilderness designation for these areas, such a change in designation could be considered in the future or in other locations. If action were ever taken on wilderness designation of Oregon's MRs, it would be important to note that existing attitudes about Oregon's MRs may inform how wilderness designation of the MRs would alter those attitudes. This study also demonstrates that attitudes would remain largely unchanged with wilderness designation, or experience slight positive change. Wilderness designation, therefore, is unlikely to inspire public backlash simply because of the formal title 'wilderness.' The nature (i.e., positive, negative) of relationships between values and attitudes toward the MRs would also likely remain unchanged if the MRs were to be designated as wilderness, as both Environmental Protection and Recreation values maintained

similar relationships with general attitudes as they did with attitude change associated with wilderness designation. That is, marine wilderness might be seen more as an extension of the protections and opportunities offered by an MR. Communication strategies utilized in the context of an MR that emphasize Environmental Protection values and attempt to mitigate concerns about impediments to Recreation values could also potentially be effective for a marine wilderness area. Although statistically insignificant, potential relationships between Emotional Well-Being values and marine wilderness ($\beta = .14$, $p = .052$), as opposed to MRs ($\beta = -.03$, $p = .657$) opens the possibility of managerial focus on the personal benefits that can be gleaned from contact with a marine wilderness area.

Implications for Research

Although respondents in this study differentiated between three categories of assigned values that could be broadly described as Environmental Protection, Emotional Well-Being, and Recreation values, they did not distinguish the full range of value types (e.g., non-use, indirect use, direct use, option and bequest) identified by theory (Krutilla, 1967; Rolston, 1985). There was some overlap, however, between the theoretically-derived value types and the value factors that emerged. The Environmental Protection value factor, for example, contained a number of values that would otherwise be described as non-use (e.g., "Foster a moral or ethical obligation to respect or protect nature or other living things," "Provide a place of minimal human impact or intrusion into the natural environment") or indirect use (e.g., "Protect nature to ensure human well-being or survival," "Protect water quality"). The Emotional Well-Being value factor contained elements of direct use values (e.g., "Provide opportunities to maintain or regain physical or mental health through contact with nature") and indirect use values (e.g., "Provide

spiritual inspiration"). Option and bequest values (e.g., "Knowing that future generations will have marine reserves," "Knowing that I will have the ability to visit marine reserves in the future") were distributed between the Environmental Protection and Emotional Well-Being value factors, and the Recreation value factor was focused on direct use related to recreation and tourism.

Rather than distinguish between types, timing, or location of use (e.g., direct use [onsite, present] vs. indirect use [off-site, present or future]), respondents seemed more focused on the implications or outcomes of the values. Respondents differentiated these outcomes as environmental health and protection, both for the sake of the environment and for humans (Environmental Protection values); positive impacts to human emotional or cultural well-being (Emotional Well-Being values); and use of the areas for recreation and tourism (Recreation values). Respondents showed a strong preference for Environmental Protection values, whereas they generally rated Emotional Well-Being and Recreation values as less important. In other words, respondents did not consider values that confer benefits predominantly to humans (Emotional Well-Being values, Recreation values) as important as values that are more focused on the protection and preservation of the natural environment (Environmental Protection values), regardless of any incidental benefits to humans. This finding was consistent with results of other studies (e.g., Börger et al., 2014; Cordell et al., 2003; Cordell et al., 1998; Manning et al., 1999; Voyer et al., 2015b) demonstrating that the public places less importance on direct uses of protected areas and the benefits to humans from these uses than has been assumed in the past. Results also reflected findings of previous research suggesting that intrinsic values are, in many instances, considered among the most important (Winter, 2005; Winter & Lockwood, 2005).

Although the value item "protect marine species, water, or plants that have value even if humans do not benefit from them" did not emerge as a distinct "intrinsic" value factor and did not receive the highest average importance, it was cited most frequently by respondents as the most important value that Oregon's MRs could provide (Figure 3.1).

Results also supported theoretical relationships among values, general attitudes, and specific attitudes (Vaske & Donnelly, 1999; Whittaker, et al., 2006). Consistent with theories such as the Cognitive Hierarchy (Fulton et al., 1996; Homer & Kahle, 1988; Vaske & Donnelly, 1999; Whittaker et al., 2006), values that people assign to Oregon's MRs were related to their attitudes toward these areas, and these general attitudes were, in turn, related to attitudinal change with possible wilderness designation. People who placed importance on the Environmental Protection values of the MRs were more likely to have positive attitudes toward the MRs, and were also more likely to specify positive attitude change with wilderness designation. Conversely, those who appreciated Recreation values of the MRs were more likely to have negative attitudes toward the MRs and specified negative attitude change if the MRs were designated as wilderness. It is possible that the negative relationship between Recreation values and both general attitude and attitude change existed because both the MRs and marine wilderness areas were seen as a constraint to some recreation activities because of their emphasis on environmental protection.

Although the Cognitive Hierarchy predicts the same relationships among cognitions (i.e., values, general attitudes, specific attitudes) found here, general attitudes toward the MRs only partially mediated the relationship between assigned values and specific attitudes associated with wilderness designation. A portion of the relationship between specific attitudes and

Environmental Protection and Recreation values existed independent from general attitudes toward the MRs. This is perhaps indicative of the special relationship (Grant, 1994; Nash, 2014; Oelschlaeger, 1991) that exists between Americans and the concept of wilderness, and the strong images and emotions that the term 'wilderness' can evoke. Regardless of general attitudes toward the MRs, attitudes associated with a simple name change to 'wilderness' had their own distinct associations with Environmental Protection and Recreation values.

The special place of wilderness is perhaps also demonstrated by the Emotional Well-Being values. The potential relationship between Emotional Well-being values and general attitudes was insignificant ($\beta = -.03$, $p = .657$), indicating that whether or not one feels that it is important that the MRs provide emotional well-being has minimal bearing on his or her attitudes toward the MRs, possibly indicating a belief that MRs will neither enhance nor impede the provision of Emotional Well-Being values. In contrast, the potential relationship between Emotional Well-Being values and attitude change with wilderness designation was nearly statistically significant and, in fact, as strong as the relationships that the other values had with attitude change ($\beta = .14$, $p = .052$). This suggests that respondents who rated Emotional Well-Being values (e.g., provision of spiritual inspiration) as important did not see MRs as more or less positive or negative. With wilderness designation, however, these respondents were somewhat more likely to experience positive attitude change, perhaps indicating a belief that a wilderness area, by virtue of that designation, would be more capable of providing the Emotional Well-Being values they consider important. In the future, when potentially more marine wilderness areas are designated, a direct comparison between assigned values for an MR and assigned values for a marine wilderness area might help to demonstrate whether this affinity

between wilderness designation and Environmental Protection, Emotional Well-Being, and Recreation values indeed exists, or if other categories of values are more salient to an MPA already designated as marine wilderness.

Results here also explained only 42% of the variance in general attitudes toward Oregon's MRs and 22% of the variance in attitude change with possible wilderness designation of the MRs. Other cognitions not measured in this study likely play a role in shaping these attitudes. Beliefs about whether or not MRs or marine wilderness can provide values that are considered important should be investigated, as evaluations such as beliefs form the foundation of attitudes (Eagly & Chaiken, 1993; Fulton et al., 1996). Research has also shown that trust in the managing agency has a strong relationship with attitudes toward MPAs (Perry et al., 2016), though this has yet to be demonstrated in the context of a marine wilderness area. Although results provide empirical evidence for the utility of assigned values in the Cognitive Hierarchy, held values and value orientations are also related to attitudes (Vaske & Needham, 2007; Whittaker et al., 2006). Further research could explore the interplay among these held values, assigned values associated with an MPA, and attitudes toward marine wilderness designation.

This article adds to the relatively small body of literature dedicated to empirically exploring the idea of marine wilderness, and is among the first to investigate the cognitions of a more general public concerning marine wilderness. Similar to the responses of managers and scientists studied by Barr and Kliskey (2014b), results suggested that intrinsic and non-use values of marine wilderness are important. However, respondents here seemed to place more emphasis on values that specifically protect or preserve the environment, whether or not these values were indirect use, direct use, or non-use. This article is also among the first to investigate

attitudes toward marine wilderness designation within the context of other cognitions. Although attitude change in response to potential marine wilderness designation is related to attitudes toward existing MPAs, wilderness designation has its own relationships with Environmental Protection, Recreation, and perhaps eventually Emotional Well-Being values. Future marine wilderness research should continue exploring how attitudes and values associated with wilderness designation differ from or relate to those for other MPAs.

Conclusion

These results shed light on public values, attitudes, and reactions related to MRs and the potential designation of marine wilderness, addressing some of the scientific and cultural uncertainty that, according to Sloan (2002), surrounds marine wilderness. Public appreciation of the preservation-oriented Environmental Protection values of Oregon's MRs reflects broad societal trends away from an emphasis on uses of protected areas that benefit humans more directly, such as Recreation or Emotional Well-Being values. Attitudes toward marine wilderness designation are specifically related to these Environmental Protection values as well as, to a lesser extent, Recreation values. Marine wilderness designation also appears to have a noteworthy, though statistically insignificant, relationship with values that foster Emotional Well-Being. Marine wilderness designation, then, is perhaps one way to tap into public support for the environmental protection and emotional benefits offered by protected areas, and wilderness areas in particular. As global oceans continue to decline in the face of limited public engagement, marine wilderness designation might be one way to serve both the most important values of the public and the marine ecosystems on which humans depend.

References – Chapter 3

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CHAPTER 4
CONCLUSION

In the coming years, marine spatial planning and the designation of MPAs will continue to be important tools for protecting marine environments (Lubchenco & Grorud-Colvert, 2015). If recent trends continue, it is possible that the pace of MPA designation will increase and the ambitious global marine protection goals (i.e., at least 10% of global coastal and marine areas protected) set by the Center for Biological Diversity (CBD) may eventually be met (Boonzaier & Pauly, 2016). As focus intensifies on MPAs and other ocean conservation efforts, increasingly broader segments of the population will be exposed to, and perhaps impacted by, these issues (Jefferson et al., 2015; Wood, 2014). As such, social science that informs MPA designation and the social acceptability that contributes to success of these areas must include those beyond traditional stakeholder groups (e.g., commercial fishers, recreationists), engaging broader and more representative segments of the population in the emerging frontiers of marine protection.

This thesis investigated perceptions of Oregon's general public regarding this state's MRs and the possibility of eventually designating these areas as marine wilderness. The idea of designating marine wilderness areas has been debated periodically in academic and policy circles for at least 30 years, with relatively few applications and a general lack of empirical studies informing the discussion. Previous research on marine wilderness has assessed the acceptability of this idea and identified what physical characteristics might constitute marine wilderness (Barr & Kliskey 2014a, 2014b; Shafer & Benzaken, 1998). This previous research has generally neglected to thoroughly examine what marine wilderness designation might mean to people and the impact it might have on their values, attitudes, and other cognitions. This thesis added to the existing literature by focusing on members of the general public and empirically examining the

interplay between their cognitions and meanings associated with marine wilderness. As MPA designation receives more global attention, the results presented in this thesis address critical human dimensions associated with applying the familiar, resonant, and controversial idea of wilderness to the marine context, and what this might mean for the public's relationship with MPAs.

The portion of the Oregon public studied in this thesis (i.e., most populous region of the state from Portland and Ashland between the Coast and Cascade mountain ranges) was generally willing to extend the label and concept of wilderness to marine environments. Although wilderness was seen as more applicable to land areas than to ocean areas, most respondents agreed that ocean areas could be called wilderness. In addition, most respondents also reported that designating Oregon's MRs as wilderness would either not have an impact on their attitudes toward these areas or would improve their attitudes. Many respondents indicated that an MR would receive more respect and attention, and would be valued more if it were called marine wilderness.

It is clear, however, that applying the concept and label of wilderness to an MPA is not without complications. The special place of wilderness in American culture imbues the term with meanings that are distinct from those typically associated with other designations, and many of these distinctive meanings carry over when 'wilderness' is used in the marine context. Wilderness is strongly associated with pristine, untouched nature, and the term maintains these associations when used in the designation 'marine wilderness.' Similarly, respondents felt that wilderness, and hence marine wilderness, implies a place protected by the strictest regulations – legally and almost mystically unassailable by human influence. Other designations, such as

marine protected area or marine reserve did not evoke these associations, and did not inspire the emotional terms used in connection with both wilderness and marine wilderness.

Despite these substantial differences between reactions to wilderness and marine wilderness in contrast to other MPA designations, simply applying the term 'wilderness' to an MPA or MR is not likely to completely change the way members of the public feel about the area. In fact, existing attitudes toward Oregon's MRs are related to what attitudes might be if a reserve were to be designated as wilderness. In other words, although 'wilderness' carries specific meanings with it, how someone already feels about an MPA is an indicator of how they would feel about the MPA as a marine wilderness. Pre-existing attitudes toward MPAs, however, do not fully explain attitude change with wilderness designation. Both pre-existing attitudes and attitude change are separately driven in part by the values that people consider most important.

Given choices among values commonly used in literature on protected areas, members of the public in this region of Oregon most preferred that this state's MRs provide environmental protection. These environmental protection values were strongly and positively related to attitudes toward Oregon's MRs and attitude change with possible wilderness designation of these areas. Conversely, respondents who had strong recreation values had negative opinions of Oregon's MRs and specified negative attitude change with possible wilderness designation. Wilderness designation may actively suppress recreation visits to marine areas, perhaps due to the public's desire to avoid despoiling such a supposedly "pristine" place.

Although not statistically significant, it is the possible connection between these attitudes and emotional well-being values (e.g., spiritual inspiration, maintaining health through contact with nature) that is possibly the most indicative of how wilderness designation may affect

perceptions of MPAs. Attitudes toward Oregon's MRs had no relationship with emotional well-being values, but the potential connection between these values and attitude change with wilderness designation was almost statistically significant and just as strong as relationships between attitude change and other value types ($\beta = .14$, $p = .052$). This potential independent connection suggests that the label and concept of wilderness, in and of itself, speaks to those desiring spiritual and social nourishment from MPAs. In a reflection of this, respondents used emotional and personal language (e.g., "God's gift," "Happiness," "Peace of mind") in association with both 'wilderness' and 'marine wilderness,' language that did not appear in connection with other designations.

Taken together, the results of this thesis suggest that wilderness is indeed a label and concept with a special place in American minds, even when applied in the relatively novel marine context. Both 'wilderness' and 'marine wilderness' were described in expressive, emotive terms and thought of as places uniquely free from human interference. The environmental protection, recreation, and emotional well-being values that are most important to people have their own independent relationships with attitudes associated with wilderness designation of an MPA, irrespective of pre-existing attitudes toward that MPA. Given these deep connections that respondents had with the concept and label of wilderness, perhaps designating marine areas as wilderness would be a way to reach out to and connect with a general public that is largely unknowledgeable and disengaged from marine issues (Perry, Needham, Cramer, & Rosenberger, 2014; Steel, Smith, Opsommer, Curiel, & Warner-Steel, 2005). The segment of the Oregon public studied here certainly seemed at least receptive to the idea of wilderness designation for portions of Oregon's marine areas.

The presence of a generally receptive public does not, however, necessarily indicate a need for marine wilderness designation. Given that few marine wildernesses have been formally established, it remains uncertain whether these areas could provide ecological or socioeconomic benefits to a greater extent than other MPA designations. Rather than providing different kinds or a greater amount of these benefits, this thesis suggested that application of the resonant label and concept of wilderness to marine areas may be able to provide "a kind of common perception of what that place represents to us, what we value about that place, and what we, as a society, envision as a framework for its use and appreciation" (Barr & Kliskey, 2014b, p. 2). In other words, wilderness designation carries symbolic importance not typically accorded to MPAs (Cole, 2005). When contemplating marine wilderness, Oregon residents studied here envisioned "inspiring," "powerful" places that are "protected from human contamination" and that foster the environmental protection values they considered most important. Despite the uncertainty surrounding the ecological and socioeconomic impacts of marine wilderness designation, if these public perceptions and values are what the State of Oregon would like its MPAs and MRs to encourage, perhaps experimenting with marine wilderness designation would be worthwhile.

Oregon and other states may, in fact, be in an ideal position to attempt designating marine wilderness areas. In addition to any federal environmental leadership efforts in the United States, state-level initiatives can also innovate new approaches to environmental challenges. Much as California has pioneered in carbon policy (Yeh, Witcover, & Kessler, 2013) and states across the western United States have devised new ways for addressing endangered species habitat preservation (e.g., sage grouse; Range-wide Interagency Sage-grouse Conservation Team, 2012), there may be opportunities for coastal states such as Oregon to try formal marine wilderness

designation. It is possible that the animosity toward federal environmental action throughout western states (including Oregon) provides increased room for conservation leadership at the state, rather than federal, level (Durrant & Shumway, 2004; Hernandez, 2016; Marsh, 2007; Richard, 2015).

This is not to say that marine wilderness designation, either at the federal or state level, would be easy or politically expedient. It took nearly a decade of contentious public debate before Oregon decided to commit to spatially explicit marine conservation with the establishment of five MRs totaling less than 100 mi^2. It is unlikely that the public or government officials would want to reignite those battles over marine wilderness designation, especially so soon after the effort to establish MRs. This thesis indicated the possibility of further difficulties that may arise with marine wilderness designation. Results showed that members of the Oregon public have an expectation that wilderness and marine wilderness areas be free from human impact – unaltered and pristine. In an era of global anthropogenic change, it is uncertain whether any area on Earth, including Oregon's coastal waters, could accurately be called "untouched" or meet the expectations for pristineness that members of Oregon's public seem to have for wilderness and marine wilderness areas. Anticipating and managing these expectations would be of paramount importance for any manager wishing to pursue the establishment of marine wilderness areas.

Similarly, results indicated that marine wilderness designation may be viewed as an impediment to recreation and tourism for some members of the Oregon public. Until there is a conclusive definition of marine wilderness, it remains to be seen what, if any, impact marine wilderness may have on recreation opportunities and access. For example, motorized use in

terrestrial wilderness areas is forbidden by the Wilderness Act of 1964. If this prohibition were applied to marine areas, it could severely curtail visitation. Recreational fishing, meanwhile, is generally allowed in terrestrial wilderness areas, but is typically not allowed in many MPAs, including areas that self-identify as marine wilderness. Resolving the tension between recreation expectations and reality in marine wilderness will be of utmost importance for the acceptability and success of marine wilderness areas in Oregon and elsewhere.

Indeed, achieving social acceptability for marine wilderness might be one of the easier challenges for those who seek marine wilderness designation. Results in this thesis corroborated findings of previous research where most stakeholders had neutral to positive attitudes toward applicability of the wilderness concept to the ocean, and toward formal marine wilderness designation (Barr & Kliskey, 2014a, 2014b; Shafer & Benzaken, 1998). These previous studies outlined, among other things, the physical aspects that might comprise a marine wilderness area, and this thesis expanded on this body of literature by examining the cognitive responses to marine wilderness designation. In concert, this research provides a sense of the general acceptability of the idea of marine wilderness, as well as the expectations, associations, and other cognitions associated with marine wilderness designation.

Given the neutral to positive views toward marine wilderness designation expressed both by the public in this thesis and other stakeholders in previous studies, a greater challenge for marine wilderness than social acceptability may be finding the political and administrative space for such a new designation. If marine wilderness designation is to avoid adding to the confusion surrounding MPA labels (Christie & White, 2007; Davis, 1998; Ehler, 2008), its purpose and distinction from other MPA designations must be made clear. This research provides insight into

the values, attitudes, and associations that members of Oregon's public have with respect to marine wilderness in contrast to other MPA designations. Such information could be useful for guiding creation of a comprehensive definition of marine wilderness and a framework for its eventual implementation and management. Even so, integrating marine wilderness into existing marine resource management and the increasingly crowded seascape could present many challenges. As debate over marine wilderness designation continues, more research will be needed to determine what constitutes marine wilderness, what its ecological and socioeconomic impacts are, and how it affects public policy (D'agata et al., 2016, Kormos et al., 2016). By examining public reactions to and associations with marine wilderness, this thesis provided a foundation for further research into the potential place of marine wilderness designation in the constantly evolving human-environment relationship.

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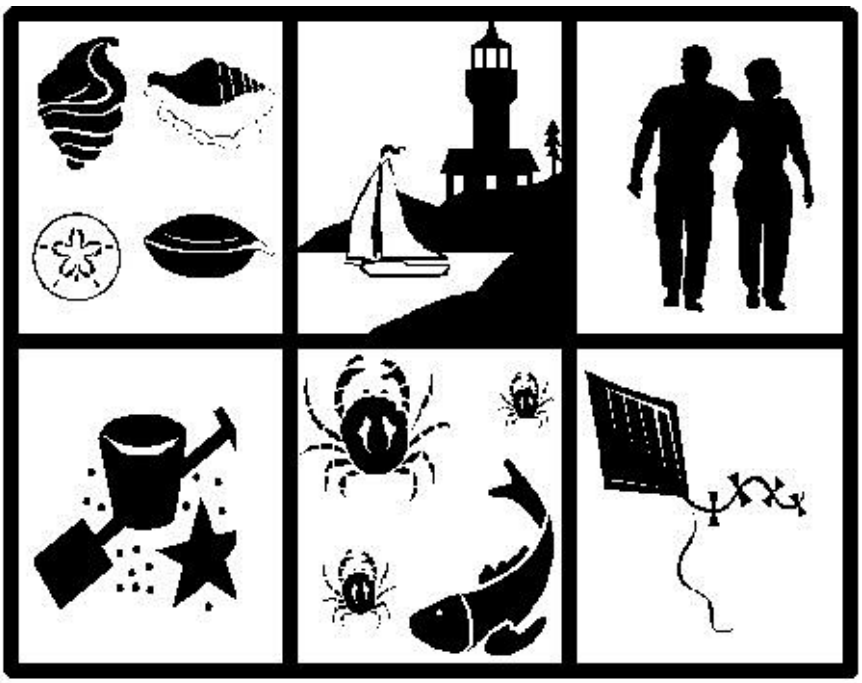
APPENDIX
THE QUESTIONNIARE

Your Opinions About Marine Areas in Oregon

Important Questions for Oregon Residents



Please Complete this Survey and Return it in the Envelope as Soon as Possible

Participation is Voluntary and Responses are Confidential

Thank You for Your Participation

A Study Conducted by:

OSU Oregon State University

OREGON Fish & Wildlife

We are conducting this survey to learn about your opinions regarding marine areas and their management in Oregon.
Marine areas are primarily *offshore* consisting of *ocean / sea, but not land*. Your input is important and will assist managers.
Please complete this survey and return it in the addressed postage-paid envelope as soon as possible.

1. Have you ever visited marine areas in Oregon? **(check *ONE*)**
   - ☐ Yes
   - ☐ No → if no, skip to question 4 below

2. Please check the activities in which you have ever participated at marine areas in Oregon. **(check *ALL THAT APPLY*)**
   - ☐ ***A.*** Sightseeing
   - ☐ ***B***. Swimming
   - ☐ ***C***. Viewing marine animals (e.g., birds, whales, sea lions)
   - ☐ ***D***. Exploring tidepools
   - ☐ ***E***. Surfing / boogie boarding
   - ☐ ***F.*** Scuba diving / snorkeling
   - ☐ ***G***. Non-charter recreational fishing
   - ☐ ***H***. Charter recreational fishing
   - ☐ ***I***. Commercial fishing
   - ☐ ***J***. Non-motorized boating (e.g., canoe, kayak)
   - ☐ ***K***. Motorized boating
   - ☐ ***L***. Other (write response) _____

3. From Question 2 above, what ***ONE activity*** have you participated in most often at marine areas in Oregon? **(write the letter)**
   Letter for activity _____

4. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
The condition of marine areas in Oregon has improved in recent years.	1	2	3	4	5
The government should do more to help protect marine areas in Oregon.	1	2	3	4	5
Laws protecting marine areas in Oregon are already too strict.	1	2	3	4	5
Managers are doing everything they can to protect marine areas in Oregon.	1	2	3	4	5
Fishing is *not* harming marine areas in Oregon.	1	2	3	4	5
People who fish recreationally are harming marine areas in Oregon.	1	2	3	4	5
People who fish commercially are harming marine areas in Oregon.	1	2	3	4	5
People who purchase / consume seafood are harming marine areas in Oregon.	1	2	3	4	5

5. How much ***influence*** do you believe each of the following individuals or groups ***should have*** in contributing to management
   of marine areas in Oregon? **(circle one number for *EACH*)**

	No Influence		Some Influence		Moderate Influence			Strong Influence	
People who recreate in marine areas.	0	1	2	3	4	5	6	7	8
People who fish recreationally.	0	1	2	3	4	5	6	7	8
People who fish commercially.	0	1	2	3	4	5	6	7	8
People who live along the Oregon coast.	0	1	2	3	4	5	6	7	8
People who *do not* live along the Oregon coast.	0	1	2	3	4	5	6	7	8
Environmental organizations.	0	1	2	3	4	5	6	7	8
University researchers.	0	1	2	3	4	5	6	7	8
Local governments.	0	1	2	3	4	5	6	7	8
Oregon Department of Fish and Wildlife.	0	1	2	3	4	5	6	7	8
Oregon Parks and Recreation Department.	0	1	2	3	4	5	6	7	8
US Fish and Wildlife Service.	0	1	2	3	4	5	6	7	8
National Oceanic and Atmospheric Administration.	0	1	2	3	4	5	6	7	8

6. How much ***trust*** do you have in each of the following individuals or groups to positively contribute to management of marine areas in Oregon? **(circle one number for *EACH*)**

	No Trust		Some Trust		Moderate Trust			High Trust	
People who recreate in marine areas.	0	1	2	3	4	5	6	7	8
People who fish recreationally.	0	1	2	3	4	5	6	7	8
People who fish commercially.	0	1	2	3	4	5	6	7	8
People who live along the Oregon coast.	0	1	2	3	4	5	6	7	8
People who *do not* live along the Oregon coast.	0	1	2	3	4	5	6	7	8
Environmental organizations.	0	1	2	3	4	5	6	7	8
University researchers.	0	1	2	3	4	5	6	7	8
Local governments.	0	1	2	3	4	5	6	7	8
Oregon Department of Fish and Wildlife.	0	1	2	3	4	5	6	7	8
Oregon Parks and Recreation Department.	0	1	2	3	4	5	6	7	8
US Fish and Wildlife Service.	0	1	2	3	4	5	6	7	8
National Oceanic and Atmospheric Administration.	0	1	2	3	4	5	6	7	8

7. What words or short phrases would you associate with the phrase "***marine protected area***?" **(write up to three responses)**

_____ _____ _____

8. What words or short phrases would you associate with the phrase "***marine reserve***?" **(write up to three responses)**

_____ _____ _____

Some places around the world have protected certain marine areas by designating them as **marine reserves. A marine reserve is an area of the marine environment that is protected from specific uses, especially those that remove or disturb marine life**. Around the world, marine reserves have been designated for different purposes such as for research, rebuilding fish populations, protecting habitat, and promoting sightseeing and recreation. Concerns about marine reserves include potential negative impacts to the fishing industry and costs for management and enforcement. The following questions ask your opinions of marine reserves.

9. Indicate on each of the following scales how you feel about the idea of marine reserves ***in general***. **(circle one number for *EACH*)**

Dislike	1	2	3	4	5	Like
Bad	1	2	3	4	5	Good
Negative	1	2	3	4	5	Positive
Harmful	1	2	3	4	5	Beneficial

10. Indicate on each of the following scales how you feel about the idea of establishing marine reserves ***in Oregon***. **(circle for *EACH*)**

Dislike	1	2	3	4	5	Like
Bad	1	2	3	4	5	Good
Negative	1	2	3	4	5	Positive
Harmful	1	2	3	4	5	Beneficial

11. If you were to be given an opportunity to vote for or against establishing marine reserves in Oregon, how would you vote? **(check *ONE*)**

☐ I would vote **for** establishing marine reserves in Oregon

☐ I would vote **against** establishing marine reserves in Oregon

12. How certain are you that you would vote this way? **(check *ONE*)**

☐ Not Certain ☐ Slightly Certain ☐ Moderately Certain ☐ Extremely Certain

13. To what extent do you disagree or agree that marine reserves in Oregon would cause each of the following outcomes? **(circle one number for *EACH*)**

On the Oregon coast, marine reserves would …	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
… benefit marine areas in general.	1	2	3	4	5
… not be effective in conserving marine areas.	1	2	3	4	5
… protect the diversity of marine species.	1	2	3	4	5
… increase marine species populations.	1	2	3	4	5
… allow depleted marine species populations to recover.	1	2	3	4	5
… cause some species to become overpopulated.	1	2	3	4	5
… improve the economy.	1	2	3	4	5
… increase tourism.	1	2	3	4	5
… benefit people in local communities.	1	2	3	4	5
… prevent people from using the reserve areas.	1	2	3	4	5
… reduce recreational fishing.	1	2	3	4	5
… reduce commercial fishing.	1	2	3	4	5
… improve scientific understanding of marine areas.	1	2	3	4	5
… allow scientists to monitor marine areas over time.	1	2	3	4	5
… improve our understanding of marine areas.	1	2	3	4	5
… be difficult to enforce.	1	2	3	4	5
... cost a lot to manage.	1	2	3	4	5
… improve the ability to manage marine areas.	1	2	3	4	5

14. To what extent do you believe each of the following possible outcomes of marine reserves in Oregon would be bad or good? **(circle one number for *EACH*)**

	Very Bad	Bad	Neither	Good	Very Good
Benefitting marine areas in general would be…	1	2	3	4	5
Not being effective in conserving marine areas would be…	1	2	3	4	5
Protecting the diversity of marine species would be…	1	2	3	4	5
Increasing marine species populations would be…	1	2	3	4	5
Allowing depleted marine species populations to recover would be…	1	2	3	4	5
Causing some species to become overpopulated would be…	1	2	3	4	5
Improving the economy would be…	1	2	3	4	5
Increasing tourism would be…	1	2	3	4	5
Benefitting people in local communities would be…	1	2	3	4	5
Preventing people from using the reserve areas would be…	1	2	3	4	5
Reducing recreational fishing would be…	1	2	3	4	5
Reducing commercial fishing would be…	1	2	3	4	5
Improving scientific understanding of marine areas would be…	1	2	3	4	5
Allowing scientists to monitor marine areas over time would be…	1	2	3	4	5
Improving our understanding of marine areas would be…	1	2	3	4	5
Difficult enforcement would be…	1	2	3	4	5
Costly management would be…	1	2	3	4	5
Improving the ability to manage marine areas would be…	1	2	3	4	5

15. Before receiving this survey, were you familiar with the topic of marine reserves in Oregon? **(check *ONE*)** ☐ No ☐ Yes

16. How well informed do you feel about the topic of marine reserves in Oregon? **(check *ONE*)**

☐ Not Informed ☐ Slightly Informed ☐ Moderately Informed ☐ Extremely Informed

17. How knowledgeable do you feel about the topic of marine reserves in Oregon? **(check *ONE*)**

☐ Not Knowledgeable ☐ Slightly Knowledgeable ☐ Moderately Knowledgeable ☐ Extremely Knowledgeable

18. Do you believe that each of the following statements related to marine reserves in Oregon is true or false? Circle "U" for "unsure" if you are not sure if the statement is true or false. **(circle one letter for *EACH*)**

In Oregon …	True	False	Unsure
… the government has been considering marine reserves for the past several years.	T	F	U
… the government has approved marine reserves for this state.	T	F	U
… commercial fishing would be allowed in all marine reserves.	T	F	U
… all marine reserves would include coastal lands such as beaches and coastlines.	T	F	U
… the government has established five marine reserve sites.	T	F	U
… new developments such as wave energy or fish farms would be allowed in all marine reserves.	T	F	U
… non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) would be allowed in all marine reserves.	T	F	U
… keeping fish caught in marine reserves would be allowed in all reserves.	T	F	U
… only scientists and no other people would be allowed in all marine reserves.	T	F	U
… there have been opportunities for public involvement in agency discussions about marine reserves.	T	F	U

19. How often have you done each of the following related to marine reserves in Oregon? **(circle one number for *EACH*)**

	Never		Sometimes		Often
A. Read newspaper articles about marine reserves in Oregon.	0	1	2	3	4
B. Listened to radio news / programs about marine reserves in Oregon.	0	1	2	3	4
C. Watched television news / programs about marine reserves in Oregon.	0	1	2	3	4
D. Read magazine articles or books about marine reserves in Oregon.	0	1	2	3	4
E. Read about marine reserves in Oregon on government agency websites.	0	1	2	3	4
F. Read about marine reserves in Oregon on social websites (e.g., Facebook, Twitter).	0	1	2	3	4
G. Read about marine reserves in Oregon on any other websites.	0	1	2	3	4
H. Read about marine reserves in Oregon fishing regulations brochures.	0	1	2	3	4
I. Discussed marine reserves in Oregon with government agency employees.	0	1	2	3	4
J. Learned about marine reserves in Oregon from environmental or community groups.	0	1	2	3	4
K. Learned about marine reserves in Oregon from work or school.	0	1	2	3	4
L. Discussed marine reserves in Oregon with friends or family members.	0	1	2	3	4
M. Attended meetings or presentations about marine reserves in Oregon.	0	1	2	3	4

20. From the list in Question 19 (above), please choose the ***ONE*** **source** from which you would ***prefer*** to obtain information about marine reserves in Oregon. **(write the letter)**

Letter for source _____

21. What ***ONE*** agency or organization do you think is currently responsible for marine reserves in Oregon? **(check *ONE*)**

- ☐ National Oceanic and Atmospheric Administration
- ☐ US Fish and Wildlife Service
- ☐ US Coast Guard
- ☐ Pacific Fishery Management Council
- ☐ Oregon Parks and Recreation Department
- ☐ Oregon Department of Fish and Wildlife
- ☐ Oregon Marine Board
- ☐ Unsure

22. How much do you feel that you understand about each of the following? **(circle one number for *EACH*)**

	Do Not Understand		Slightly Understand		Moderately Understand			Fully Understand	
Purpose of marine reserves in Oregon.	0	1	2	3	4	5	6	7	8
How marine reserves would be managed in Oregon.	0	1	2	3	4	5	6	7	8
Rules / regulations of marine reserves in Oregon.	0	1	2	3	4	5	6	7	8
Where marine reserves are located in Oregon.	0	1	2	3	4	5	6	7	8
Role of science in marine reserves in Oregon.	0	1	2	3	4	5	6	7	8
Role of public involvement in marine reserves in Oregon.	0	1	2	3	4	5	6	7	8

23. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Commercial fishing should be allowed in marine reserves in Oregon.	1	2	3	4	5
Recreational fishing should be allowed in marine reserves in Oregon.	1	2	3	4	5
Non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) should be allowed in marine reserves in Oregon.	1	2	3	4	5
Scientific research should be allowed in marine reserves in Oregon.	1	2	3	4	5

24. To what extent do you believe that each of the following groups could be impacted by marine reserves in Oregon? **(circle one number for *EACH*)**

	Strongly Harmed by Reserves	Slightly Harmed by Reserves	Not Impacted by Reserves	Slightly Benefit from Reserves	Strongly Benefit from Reserves
People who recreate in marine areas.	1	2	3	4	5
People who fish recreationally.	1	2	3	4	5
People who fish commercially.	1	2	3	4	5
Local businesses.	1	2	3	4	5
People who live along the Oregon coast.	1	2	3	4	5
People who *do not* live along the Oregon coast.	1	2	3	4	5
Government agencies.	1	2	3	4	5
Scientists / researchers.	1	2	3	4	5

25. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I intend to support having marine reserves in Oregon.	1	2	3	4	5
Managers have done a good job communicating with the public about marine reserves in Oregon.	1	2	3	4	5
I am against establishing marine reserves in Oregon.	1	2	3	4	5
It is easy to access / find information about marine reserves in Oregon.	1	2	3	4	5
I would likely be in favor of implementing marine reserves in Oregon.	1	2	3	4	5

26. How important is it to you that each of the following be provided by Oregon's marine reserves? **(circle one number for *EACH*)**

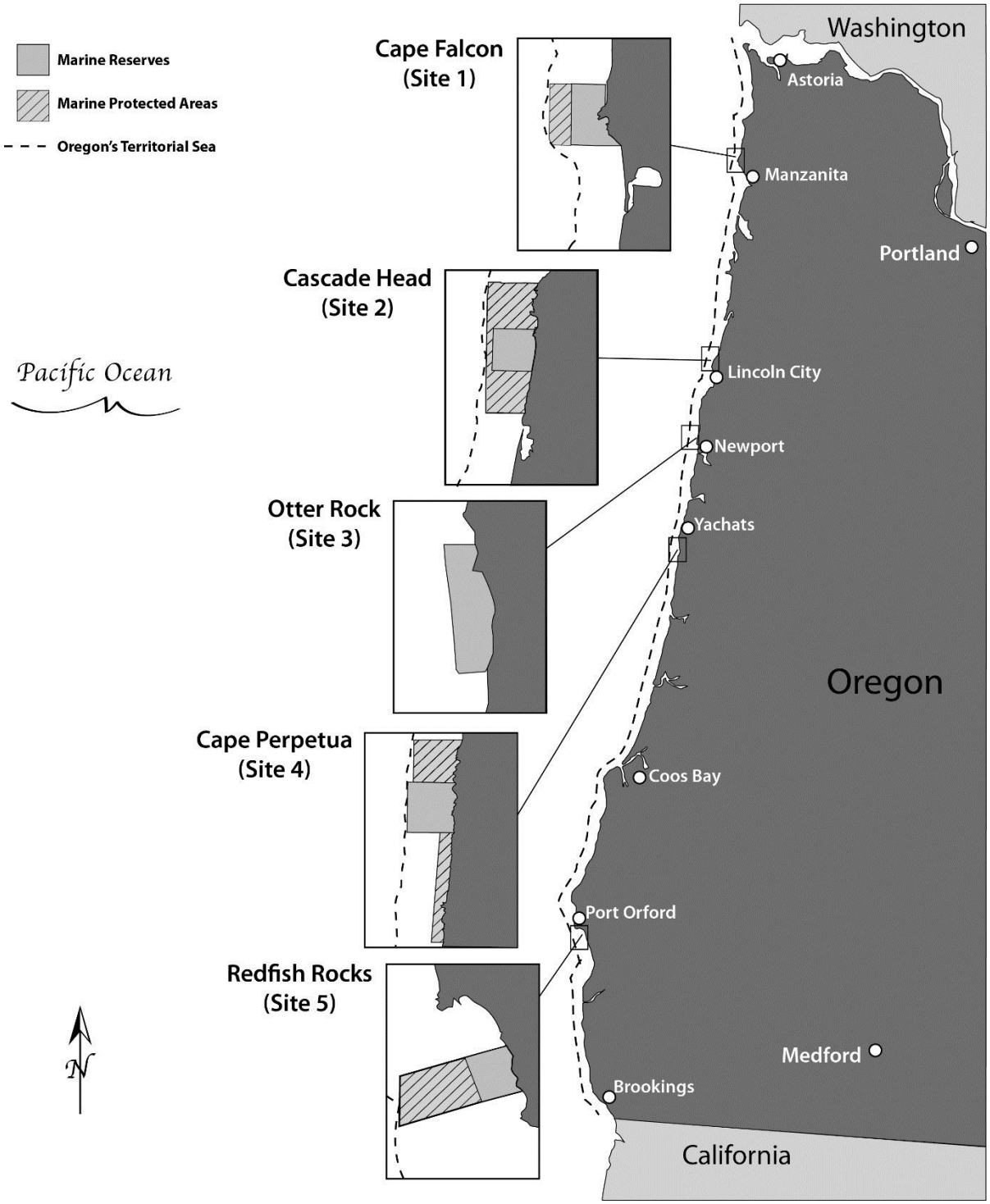
	Not Important		Slightly Important		Moderately Important			Extremely Important		I do not know
A. Provide recreation opportunities.	0	1	2	3	4	5	6	7	8	☐
B. Provide spiritual inspiration.	0	1	2	3	4	5	6	7	8	☐
C. Provide opportunities to maintain or regain physical or mental health through contact with nature.	0	1	2	3	4	5	6	7	8	☐
D. Provide a place of minimal human impact or intrusion into the natural environment.	0	1	2	3	4	5	6	7	8	☐
E. Just knowing that marine reserves exist.	0	1	2	3	4	5	6	7	8	☐
F. Protect species to be used by the fishing industry in the future.	0	1	2	3	4	5	6	7	8	☐
G. Protect other natural resources that humans may have to use in the future.	0	1	2	3	4	5	6	7	8	☐
H. Knowing that I will have the ability to visit marine reserves in the future.	0	1	2	3	4	5	6	7	8	☐
I. Provide income for the tourism industry.	0	1	2	3	4	5	6	7	8	☐
J. Foster a moral or ethical obligation to respect or protect nature or other living things.	0	1	2	3	4	5	6	7	8	☐
K. Knowing that future generations will have marine reserves.	0	1	2	3	4	5	6	7	8	☐
L. Protect air quality.	0	1	2	3	4	5	6	7	8	☐
M. Protect nature to ensure human well-being or survival.	0	1	2	3	4	5	6	7	8	☐
N. Protect symbols of America's heritage or culture.	0	1	2	3	4	5	6	7	8	☐
O. Protect water quality.	0	1	2	3	4	5	6	7	8	☐
P. Protect endangered species.	0	1	2	3	4	5	6	7	8	☐
Q. Preserve natural areas for scientific discovery or study.	0	1	2	3	4	5	6	7	8	☐
R. Protect places that provide a sense of place, community, or belonging.	0	1	2	3	4	5	6	7	8	☐
S. Protect endangered places.	0	1	2	3	4	5	6	7	8	☐
T. Preserve unique wild plants or animals.	0	1	2	3	4	5	6	7	8	☐
U. Protect marine species, water, or plants that have value even if humans do not benefit from them.	0	1	2	3	4	5	6	7	8	☐
V. Protect habitat for marine species.	0	1	2	3	4	5	6	7	8	☐
W. Provide scenic beauty.	0	1	2	3	4	5	6	7	8	☐

27. From the list in Question 26 (above), please choose up to ***three*** that you think are most important for Oregon's marine reserves to provide. **(write up to *three letters* from the question above)**

Letter(s) _____ _____ _____

28. What is your opinion regarding the protection or human utilization (use) of marine areas in Oregon? **(check *ONE*)**

- ☐ We should fully utilize marine areas with almost no protection
- ☐ We should mostly utilize marine areas with just a little protection
- ☐ We should mostly protect marine areas with just a little utilization
- ☐ We should fully protect marine areas with almost no utilization


Marine Reserves
Marine Protected Areas
Oregon's Territorial Sea
Pacific Ocean
Cape Falcon
(Site 1)
Cascade Head
(Site 2)
Otter Rock
(Site 3)
Cape Perpetua
(Site 4)
Redfish Rocks
(Site 5)
N
Washington
Astoria
Manzanita
Portland
Lincoln City
Newport
Yachats
Oregon
Coos Bay
Port Orford
Medford
Brookings
California

On the previous page is a map of five marine sites in Oregon. ***These sites are shown as boxes that are lightly shaded or with lines, and are primarily offshore consisting of ocean / sea, but NOT LAND***. Answer the next few questions based on these sites.

29. Have you ever visited one or more of the five marine sites identified on the map on the previous page **(*areas offshore that are lightly shaded or with lines, as shown on the map*)**? **(check *ONE*)**

☐ No → if no, skip to question 31 below

☐ Yes → if yes, how many trips have you made to the site(s) ***in the past 12 months***? **(write number)** _____ trip(s)

30. Which of the five marine sites identified on the map on the previous page have you ever visited **(*areas offshore that are lightly shaded or with lines, as shown on the map*)**? **(check *ALL THAT APPLY*)**

☐ Site 1 ☐ Site 2 ☐ Site 3 ☐ Site 4 ☐ Site 5

31. If one or more of the five marine sites identified on the map on the previous page **(*areas offshore that are lightly shaded or with lines, as shown on the map*)** was designated as a marine reserve, what would you want to do? **(circle one number)**

1	2	3	4	5
I would want to visit the marine site(s) ***less often***		I would want to visit the marine site(s) the ***same amount***		I would want to visit the marine site(s) ***more often***

32. What words or short phrases would you associate with the word "***wilderness***?" **(write up to three responses)**

_____ _____ _____

33. What words or short phrases would you associate with the phrase "***marine wilderness***?" **(write up to three responses)**

_____ _____ _____

Although Oregon's marine reserves are not officially designated as "wilderness," some people believe wilderness exists on not only land, but also in the ocean. However, other people believe wilderness only exists on land and does not include the ocean. **Wilderness has many possible definitions, but for the purposes of the rest of this survey, it can generally be considered as places where natural processes dominate and intentional human modification of the environment is minimal**. The next few questions ask about what you think of the term "wilderness" and what areas of the world you consider to be wilderness.

34. If one or more of the five marine sites identified on the map on the previous page **(*areas offshore that are lightly shaded or with lines, as shown on the map*)** was designated as wilderness, what would you want to do? **(circle one number)**

1	2	3	4	5
I would want to visit the marine site(s) ***less often***		I would want to visit the marine site(s) the ***same amount***		I would want to visit the marine site(s) ***more often***

35. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

I believe…	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
…there are areas of the ocean in the world that could be called wilderness.	1	2	3	4	5
…there are areas of the ocean along Oregon's coast that could be called wilderness.	1	2	3	4	5
…Oregon's marine reserves could be called wilderness.	1	2	3	4	5

36. How would your opinion change if Oregon's marine reserves were designated as wilderness? **(circle one number**)

1	2	3	4	5
My opinion of Oregon's marine reserves would be ***more negative*** if they were designated as wilderness		My opinion would not change		My opinion of Oregon's marine reserves would be ***more positive*** if they were designated as wilderness

37. What would you think if Oregon's marine reserves were designated as wilderness? **(circle one number**)

1	2	3	4	5
I would like Oregon's marine reserves less if they were designated as wilderness		My opinion would not change		***I would like Oregon's marine reserves more*** if they were designated as wilderness

38. If designating Oregon's marine reserves as wilderness would change your opinion about these reserve areas, how would your opinion change? **(write response)**

_____

_____

39. To what extent do you think Oregon's marine reserves should or should not be designated as wilderness? **(circle one number)**

1	2	3	4	5
Oregon's marine reserves ***should not*** be designated as wilderness		Neither		Oregon's marine reserves ***should*** be designated as wilderness

40. The Oregon Department of Fish and Wildlife is currently responsible for marine reserves in Oregon. To what extent do you disagree or agree with each of the following statements about this agency? **(circle a number for *EACH*)**

I trust the Oregon Department of Fish and Wildlife to …	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
… provide the best available information about marine reserves.	1	2	3	4	5
… provide timely information about marine reserves.	1	2	3	4	5
… provide truthful information about marine reserves.	1	2	3	4	5
… provide me with enough information to decide what actions I should take regarding marine reserves.	1	2	3	4	5
… manage marine reserves using the best available information about non-human species in these areas (e.g., fish, birds).	1	2	3	4	5
… manage marine reserves using the best available information about human uses of these areas.	1	2	3	4	5
… work with other organizations to inform management of marine reserves.	1	2	3	4	5
… use public input to inform management of marine reserves.	1	2	3	4	5
… make good decisions regarding management of marine reserves.	1	2	3	4	5

41. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
The needs of humans are more important than those of marine areas.	1	2	3	4	5
The primary value of marine areas is to provide benefits for humans.	1	2	3	4	5
Marine areas exist primarily to be used by humans.	1	2	3	4	5
The economic values that marine areas provide for humans are more important than the rights of species in these marine areas.	1	2	3	4	5
Marine areas should be protected for their own sake rather than to simply meet the needs of humans.	1	2	3	4	5
Marine areas have value whether humans are present or not.	1	2	3	4	5
Marine areas should have rights similar to the rights of humans.	1	2	3	4	5
I object to fishing, harvesting, or collecting species from marine areas because it violates the rights of these species.	1	2	3	4	5

Most of this survey has been about marine areas, but now we are going to ask a few questions about wilderness areas ***on land***.

42. How important is it to you that each of the following be provided by wilderness areas ***on land***? **(circle one number for *EACH*)**

	Not Important			Slightly Important		Moderately Important			Extremely Important		I do not know
A. Provide recreation opportunities.	0	1	2	3	4	5	6	7	8		☐
B. Provide spiritual inspiration.	0	1	2	3	4	5	6	7	8		☐
C. Provide opportunities to maintain or regain physical or mental health through contact with nature.	0	1	2	3	4	5	6	7	8		☐
D. Provide a place of minimal human impact or intrusion into the natural environment.	0	1	2	3	4	5	6	7	8		☐
E. Just knowing that wilderness areas on land exist.	0	1	2	3	4	5	6	7	8		☐
F. Protect species to be used by industry in the future.	0	1	2	3	4	5	6	7	8		☐
G. Protect other natural resources that humans may have to use in the future.	0	1	2	3	4	5	6	7	8		☐
H. Knowing that I will have the ability to visit wilderness areas on land in the future.	0	1	2	3	4	5	6	7	8		☐
I. Provide income for the tourism industry.	0	1	2	3	4	5	6	7	8		☐
J. Foster a moral or ethical obligation to respect or protect nature or other living things.	0	1	2	3	4	5	6	7	8		☐
K. Knowing that future generations will have wilderness areas on land.	0	1	2	3	4	5	6	7	8		☐
L. Protect air quality.	0	1	2	3	4	5	6	7	8		☐
M. Protect nature to ensure human well-being or survival.	0	1	2	3	4	5	6	7	8		☐
N. Protect symbols of America's heritage or culture.	0	1	2	3	4	5	6	7	8		☐
O. Protect water quality.	0	1	2	3	4	5	6	7	8		☐
P. Protect endangered species.	0	1	2	3	4	5	6	7	8		☐
Q. Preserve natural areas for scientific discovery or study.	0	1	2	3	4	5	6	7	8		☐
R. Protect places that provide a sense of place, community, or belonging.	0	1	2	3	4	5	6	7	8		☐
S. Protect endangered places.	0	1	2	3	4	5	6	7	8		☐
T. Preserve unique wild plants or animals.	0	1	2	3	4	5	6	7	8		☐
U. Protect wildlife, water, or plants that have value even if humans do not benefit from them.	0	1	2	3	4	5	6	7	8		☐
V. Protect habitat for wildlife.	0	1	2	3	4	5	6	7	8		☐
W. Provide scenic beauty.	0	1	2	3	4	5	6	7	8		☐

43. From the list in Question 42 (above), please choose up to ***three*** that you think are most important for wilderness areas on land to provide. **(write up to *three letters* from the question above)**

Letter(s) _____ _____ _____

44. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

I believe…	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
…there are areas of land in the world that could be called wilderness.	1	2	3	4	5
…there are protected areas of land in Oregon that could be called wilderness.	1	2	3	4	5
…there are other areas of land in Oregon that could be called wilderness.	1	2	3	4	5

45. How ecologically healthy do you believe each of the following is in Oregon? **(circle one number for *EACH*)**

	Not Healthy		Slightly Healthy		Moderately Healthy			Very Healthy	
Rivers and streams in Oregon.	0	1	2	3	4	5	6	7	8
Bays and estuaries in Oregon.	0	1	2	3	4	5	6	7	8
Marine areas (ocean) in Oregon.	0	1	2	3	4	5	6	7	8
Marine fish in Oregon.	0	1	2	3	4	5	6	7	8
Other marine animals in Oregon.	0	1	2	3	4	5	6	7	8
Wildlife in Oregon.	0	1	2	3	4	5	6	7	8
Forests in Oregon.	0	1	2	3	4	5	6	7	8

46. To what extent do you disagree or agree with each of the following statements? **(circle one number for *EACH*)**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5
Humans were meant to rule over the rest of nature.	1	2	3	4	5
The so-called ecological crisis facing humankind has been greatly exaggerated.	1	2	3	4	5
The earth has plenty of natural resources if we just learn how to develop them.	1	2	3	4	5
The balance of nature is very delicate and easily upset.	1	2	3	4	5
When humans interfere with nature, it often produces disastrous consequences.	1	2	3	4	5
Plants and animals have as much right as humans to exist.	1	2	3	4	5
Humans are severely abusing the environment.	1	2	3	4	5

47. Are you: **(check *ONE*)** ☐ Male ☐ Female ☐ Other (e.g., Transgender Person)

48. What is your age? **(write age)** _____ years old

49. Approximately how many years have you lived ***in Oregon***? **(write the number)** _____ year(s)

50. Approximately how many years have you lived ***at this current address***? **(write the number)** _____ year(s)

51. How would you describe the community where you live? **(check *ONE*)**

☐ Large city (250,000 or more people) ☐ Small city (25,000 to 99,999 people) ☐ Small town (less than 5,000 people)
☐ City (100,000 to 249,999 people) ☐ Town (5,000 to 24,999 people) ☐ Farm or rural area with few people

52. Do you own a second home on the Oregon coast? **(check *ONE*)**

☐ No
☐ Yes → if yes, what is the main purpose of this second home? **(check *ONE*)**
☐ Retirement ☐ Property investment ☐ Recreation ☐ Other **(write response)** _____

53. Are you or anyone else in your household employed in the commercial fishing industry? **(check *ONE*)** ☐ No ☐ Yes

54. In general, do you consider your political orientation to be: **(check *ONE*)**

☐ Very Conservative ☐ Somewhat Conservative ☐ Moderate ☐ Somewhat Liberal ☐ Very Liberal

55. What is the ***highest*** level of education that you have achieved? **(check *ONE*)**

☐ Less than high school diploma
☐ High school diploma or GED
☐ 2-year associates degree or trade school
☐ 4-year college degree (e.g., bachelors degree)
☐ Advanced degree beyond 4-year degree (e.g., masters, Ph.D., medical doctor, law degree)

56. Where do you live? **(write responses)** City / town _____ County _____ Zipcode _____

THANK YOU! PLEASE RETURN THIS SURVEY AS SOON AS POSSIBLE IN THE ENVELOPE PROVIDED