


Resident Perceptions of the Oregon Marine Reserve System

Final Report

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EXECUTIVE SUMMARY

Objectives

In 2012, the State of Oregon designated five marine reserves in its waters (Otter Rock, Redfish Rocks, Cape Falcon, Cape Perpetua, Cascade Head) to advance scientific research, assess impacts of reserve implementation, and conserve habitats and biodiversity. Studies have examined biological issues and impacts associated with these reserves. Evaluations of social and economic impacts, however, mainly involved information from community evaluation teams consisting of small groups of stakeholders (e.g., commercial anglers, conservation groups, watershed councils, scientists). Additional data for evaluating social and economic impacts of these reserves were collected from town hall meetings with select residents, questionnaires given to specific industries or interest groups (e.g., commercial and recreational anglers), and other observational data. Taken together, these efforts involved economic stakeholders and vocal residents thought to be most directly affected by these reserves.

What was lacking, however, was a comprehensive, systematic, and representative assessment of resident perceptions of these marine reserves. Scientifically grounded random and representative samples of residents are required for generalizing information beyond select stakeholders. This project, therefore, addressed this knowledge gap by utilizing representative samples of residents (i.e., the voting public): (a) along the Oregon coast (Phase 1; Needham, Cramer, & Perry, 2013), and (b) in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]; Phase 2). The Oregon Department of Fish and Wildlife (ODFW) is responsible for overseeing management and monitoring of these marine reserves, and pursuant to this mandate, the purpose of this project was to continue socioeconomic monitoring by developing a profile of state resident knowledge, attitudes, and behaviors regarding this reserve system. Project objectives were to understand resident:

- Awareness of these marine reserves and sources of information for learning about the areas.
- Knowledge of the characteristics, benefits, and constraints of these marine reserves.
- Attitudes of support and opposition toward these reserves (i.e., favor, disfavor, like, dislike).
- Perceptions about the future effectiveness of these reserves in meeting management goals.
- Activities that residents believe should and should not be allowed to occur in these reserves.
- Behaviors in response to these reserves and how residents may change their use of these areas in the future (e.g., increase or displace any visitation / recreation use).
- Sociodemographic characteristics.

Methods

Data were collected in two phases. Phase 1 involved administering questionnaires by mail in late 2012 and early 2013 to residences along the Oregon coast selected randomly from postal records. A sample of 2,600 addresses was equally divided into two subpopulations: (a) residents near the five marine reserves (i.e., communities of place), and (b) residents along the rest of the coast (i.e., general coastal sample). The 1,300 addresses in the communities of place were distributed equally among five areas corresponding to each marine reserve location (i.e., 260 addresses each). A 10-mile radius was drawn around the land point nearest to the center of each reserve and communities within this radius were included in the communities of place delineation. The other half of the sample addresses (i.e., 1,300) was spread throughout the rest of the coast and included areas seaward of the Coast Range excluding those in the five communities of place. Three separate mailings were implemented (full mailing, postcard reminder, full mailing). In total, 357 questionnaires were undeliverable (e.g., incorrect address, vacant, moved) and n = 595 completed questionnaires were returned, yielding a 27% response rate (595 / 2,600 – 357). The sample size for residents in the communities of place was n = 326 (30% response rate) and the sample for those along the rest of the coast (i.e., general coastal sample) was n = 269 (23% response rate). The combined sample size of n = 595 allows generalizations about the population of Oregon coastal residents at a margin of error of ± 4% at the 95% confidence level, which is better than the conventional standard of ± 5% that is widely accepted and adopted in human dimensions of natural resources research. To check for potential

nonresponse bias, coastal residents who completed a mail questionnaire were compared against those who did not (i.e., nonrespondents). A sample of n = 202 nonrespondents was telephoned and asked 10 questions from the questionnaire. There were no substantive differences in responses between those who responded to the mail survey and those who did not (i.e., completed the telephone nonresponse bias check), so the data did not need to be weighted based on this nonresponse bias check. The data were, however, weighted by population proportions based on the most recent US Census information for number of households in the sampling areas to ensure that the sample and questionnaire responses were statistically representative of the broader target population. Detailed results of Phase 1 were reported in Needham et al. (2013), but some of these results are statistically examined in relation to Phase 2 data in this report here for comparison purposes.

Phase 2 involved administering questionnaires using a mixed-mode (i.e., mail, internet) survey in early 2016 to residences in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]). A sample of 2,800 addresses was selected randomly from postal records. Four mailings were implemented (postcard pre-notification with option to complete questionnaire on the internet using individual access codes, full mailing, postcard reminder with option to complete questionnaire on the internet, full mailing). In total, 206 questionnaires were undeliverable (e.g., incorrect address, vacant, moved) and n = 530 completed questionnaires were returned, yielding a 20% response rate (530 / 2,800 – 206). This sample size allows generalizations about the population of residents in this region at a margin of error of ± 4% at the 95% confidence level. To check for potential nonresponse bias, a sample of n = 75 nonrespondents was telephoned and asked 11 questions from the questionnaire. There were no substantive differences between those who responded to the mail survey and those who did not (i.e., completed telephone nonresponse check), so the data were not weighted based on this nonresponse bias check. The data were, however, weighted by demographics (e.g., age; male, female, transgender) based on the most recent US Census for this region to ensure that the sample and questionnaire responses were statistically representative of the target population.

Results

Given that results of Phase 1 (coast) were already reported in Needham et al. (2013), the following results are from Phase 2 (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]). Some of these Phase 2 results are, however, statistically examined in relation to Phase 1 data for comparison purposes.

Oregon Marine Areas in General

- Among Phase 2 respondents (I-5 corridor), 88% have visited marine areas in Oregon and only 12% have never visited these areas.
- Phase 2 respondents (I-5 corridor) have participated in a range of activities in Oregon's marine areas, especially sightseeing (89%), viewing marine animals (80%), and exploring tidepools (76%). Phase 1 respondents (coast) were more likely than Phase 2 respondents to view marine animals (86% vs. 80%) and participate in motorized boating (43% vs. 26%), non-motorized boating (28% vs. 21%), non-charter recreational fishing (55% vs. 32%), charter recreational fishing (32% vs. 23%), and commercial fishing (10% vs. 2%).
- Sightseeing (45%), exploring tidepools (17%), non-charter recreational fishing (13%), and viewing marine animals (11%) were the most popular main activities among Phase 2 (I-5 corridor) respondents. Compared to Phase 1 (coast) respondents, more Phase 2 (I-5 corridor) respondents considered sightseeing (45% vs. 35%) and exploring tidepools (17% vs. 8%) as their main activities. Conversely, those on the coast (Phase 1) were more likely to specify non-charter recreational fishing (22% vs. 13%) as their main activity.
- Phase 2 (I-5 corridor) respondents overwhelmingly perceived marine areas and other natural resources in Oregon to be moderately or very healthy. These respondents perceived wildlife to be the most healthy (78%), and bays and estuaries as the least healthy (65%). Approximately three-quarters of these residents perceived Oregon's forests (74%), marine animals (71%), marine areas (i.e.,

ocean; 71%), rivers and streams (70%), and marine fish (69%) as healthy. There were no differences between respondents on the coast (Phase 1) and those living along the I-5 corridor (Phase 2).

- In total, 69% of Phase 2 (I-5 corridor) respondents agreed that the government should do more to help protect marine areas in Oregon, with these residents indicating significantly stronger agreement than those on the coast (50%, Phase 1).
- A minority of Phase 2 (I-5 corridor) respondents agreed that people who fish commercially (39%) or recreationally (15%) are harming marine areas in Oregon. There were no differences between respondents on the coast (Phase 1) and along the I-5 corridor (Phase 2).
- Less than one-third of Phase 2 (I-5 corridor) respondents agreed the condition of marine areas in Oregon has improved in recent years (31%), managers are doing everything they can to protect these areas (21%), and laws protecting these marine areas are too strict (8%). Phase 1 (coast) respondents were more likely than Phase 2 (I-5 corridor) respondents to agree that managers are doing everything they can to protect Oregon's marine areas (30% vs. 21%) and laws protecting marine areas in the state are too strict (22% vs. 8%).
- The majority of Phase 2 (I-5 corridor) respondents (64% to 94%) believed that a number of federal, state, and local groups and organizations (e.g., Oregon Parks and Recreation Department, US Fish and Wildlife Service, National Oceanic and Atmospheric Administration, university researchers, people who live along the Oregon coast, local governments, environmental organizations) should have an influence in managing marine areas in Oregon. The only group that less than the majority of respondents (44%) felt should have an influence were people who do not live on the Oregon coast. The organization these residents believed should have the greatest influence was the Oregon Department of Fish and Wildlife (94%). Phase 2 (I-5 corridor) respondents were more likely than those on the coast (Phase 1) to think most of these groups and organizations should influence management of marine areas in Oregon.
- The majority of Phase 2 (I-5 corridor) respondents trust many of these groups and organizations to contribute to management of marine areas in Oregon. Groups most strongly trusted were Oregon Department of Fish and Wildlife (87%), university researchers (87%), Oregon Parks and Recreation Department (84%), National Oceanic and Atmospheric Administration (83%), and US Fish and Wildlife Service (81%). Groups who were trusted the least included people who do not live on the coast (31%), those who fish commercially (43%), and people who recreate in marine areas (45%). Phase 2 (I-5 corridor) respondents had more trust in university researchers, environmental organizations, people who do not live on the coast, and most federal, state, and local agencies (e.g., Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, local governments). Respondents on the coast (Phase 1) had higher trust in people who live along the Oregon coast and people who fish commercially.

Oregon Marine Reserves

- In total, 60% of Phase 2 (I-5 corridor) respondents had visited at least one of the five Oregon marine reserves. By comparison, Phase 1 (coast) respondents were slightly more likely (67%) to have visited. Among Phase 2 (I-5 corridor) respondents who had visited, equal proportions had either visited the site(s) before but not in the past 12 months (25%) or visited just once during this time (25%). The largest percentage of these respondents had visited the site(s) two or three times (33%), and visited Otter Rock (43%) followed by Cascade Head (39%), Cape Perpetua (26%), Cape Falcon (23%), and Redfish Rocks (10%). Phase 2 (I-5 corridor) respondents were more likely than those on the coast (Phase 1) to have visited Cascade Head (39% vs. 33%), whereas coastal residents (Phase 1) were more likely to have visited Cape Perpetua (38% vs. 26%) and Redfish Rocks (24% vs. 10%).
- Half (50%) of Phase 2 (I-5 corridor) respondents felt they understood the purpose of these reserves. However, only 40% understood the role of science in these reserves, 35% were familiar with these reserves, 25% understood the role of public involvement, 23% felt informed about the topic of marine reserves in Oregon, and 21% felt knowledgeable about these reserves. Only 17% understood

where the reserves were located and rules / regulations associated with the reserves, and only 15% understood how the reserves would be managed. Across all of these self-assessed knowledge questions, Phase 2 (I-5 corridor) respondents reported lower familiarity, understanding, and knowledge compared to Phase 1 (coast) residents. For example, 71% of Phase 1 (coast) residents versus only 35% of Phase 2 (I-5 corridor) respondents felt familiar with the reserves, and 44% of Phase 1 (coast) versus 23% of Phase 2 (I-5 corridor) residents felt informed about these reserves.

- Residents answered 11 true / false and multiple choice questions measuring their factual knowledge about Oregon's marine reserves. This knowledge was low among Phase 2 (I-5 corridor) respondents, with an average score of only 36% of questions answered correctly, which was lower compared to Phase 1 (coast) respondents (47% correct). The only two items answered correctly by the majority of Phase 2 (I-5 corridor) respondents were that scientists would not be the only people allowed in these reserves (52%) and commercial fishing would not be allowed in all of the reserves (50%). The question answered correctly by the fewest residents was that the government has established five marine reserves (14%). Only 47% of these residents correctly identified ODFW as the agency responsible for these reserves, 44% knew there have been opportunities for public involvement in decisions about these areas, 43% knew keeping fish caught would not be allowed in all marine reserves, and 42% knew the government has been considering marine reserves in Oregon for several years. Less than 30% of these respondents, however, answered the other factual knowledge questions correctly. These Phase 2 (I-5 corridor) respondents correctly answered 10 of these 11 factual knowledge questions less often compared to Phase 1 (coast) respondents. For example, 71% of Phase 1 (coast) residents and only 42% of Phase 2 (I-5 corridor) respondents knew that the government has been considering marine reserves for the past several years, and 30% of Phase 1 (coast) residents versus only 14% of Phase 2 (I-5 corridor) respondents knew that the government has established five marine reserves.
- Only 17% of Phase 2 (I-5 corridor) respondents agreed it is easy to access and find information about the marine reserves in Oregon. There were no differences in agreement between Phase 2 (I-5 corridor; 17%) and Phase 1 (coast; 18%) respondents. Only 7% of Phase 2 (I-5 corridor) respondents agreed that managers have done a good job communicating with the public about these marine reserves, which was slightly lower compared to Phase 1 (coast) respondents (13%).
- Respondents have used various sources to obtain information about marine reserves in Oregon, but no one source was used by the majority (over 50%) of Phase 2 (I-5 corridor) respondents. Newspapers (49%) and television news / programs (47%) were the most often sources used by these respondents, whereas attending meetings or presentations (11%) and discussing the reserves with government agency employees (12%) were the least cited sources. More than 30% of these residents indicated they had discussed Oregon's marine reserves with friends or family (44%), listened to radio news or programs about the reserves (40%), and read magazine articles or books about these areas (38%). Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were less likely to have used 11 of 13 sources. For example, 80% of Phase 1 (coast) residents compared to only 49% of Phase 2 (I-5 corridor) respondents read newspaper articles about these reserves. The only sources used by statistically similar proportions of Phase 1 (coast) and Phase 2 (I-5 corridor) respondents were reading about the reserves on general websites (30% and 31%, respectively), government agency websites (28% and 23%, respectively), and social media (e.g., Facebook, Twitter; 20% and 22%, respectively).
- The greatest proportions of Phase 2 (I-5 corridor) respondents would prefer to receive information about these reserves from newspaper articles (21%) or television news and related programs (20%). The least preferred sources included friends or family (1%), government agency employees (1%), and work or school (3%). Phase 2 (I-5 corridor) respondents were more likely than those on the coast (Phase 1) to prefer radio news and programs (14% vs. 5%) and social media websites (8% vs. 1%). Phase 1 (coast) residents were more likely than Phase 2 (I-5 corridor) respondents to prefer to obtain information from meetings or presentations (12% vs. 4%).

- In total, 82% of Phase 2 (I-5 corridor) respondents believed in protecting Oregon's marine areas with little or no human utilization, whereas 19% believed in utilizing these areas with little or no protection. Most (70%) of these respondents believed marine areas should mostly be protected with just a little utilization. Coastal residents (Phase 1, 37%) were more likely than Phase 2 (I-5 corridor) respondents (18%) to believe that marine areas should be mostly utilized with just a little protection, whereas Phase 2 (I-5 corridor) respondents (70%) were more likely than coastal residents (Phase 1, 48%) to believe marine areas should mostly be protected with just a little utilization.
- Phase 2 (I-5 corridor) respondents overwhelmingly agreed (89%) that scientific research should be allowed in these marine reserves. In addition, 52% of these respondents agreed that non-extractive recreation and tourism activities should also be allowed (e.g., surf, swim). Only 27%, however, agreed that recreational fishing should be allowed, and the fewest thought that commercial fishing should be allowed (8%). Compared to these Phase 2 (I-5 corridor) respondents, Phase 1 (coast) residents were more likely to agree that recreation and tourism activities (59% vs. 52%), recreational fishing (39% vs. 27%), and commercial fishing (22% vs. 8%) should be allowed.
- The only groups the majority of Phase 2 (I-5 corridor) respondents believed could benefit from these reserves are scientists / researchers (90%), people who live on the Oregon coast (58%), and government agencies (57%). Fewer than the majority believed that people recreating in marine areas (38%), local businesses (38%), people who do not live on the coast (36%), and people who fish recreationally (23%) or commercially (14%) would benefit. Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents perceived greater benefits to scientists / researchers, people on the coast, government agencies, people recreating in marine areas, local businesses, and people who do not live on the coast.
- Conversely, the only groups that the majority of Phase 2 (I-5 corridor) respondents believed would be harmed by these reserves are people who fish commercially (77%) or recreationally (57%). Compared to these Phase 2 (I-5 corridor) respondents, those living on the coast (Phase 1) were significantly more likely to believe that people who recreate in marine areas, local businesses, and people who live along the coast could be harmed.
- The majority of Phase 2 (I-5 corridor) respondents held positive attitudes toward marine reserves in general. These residents believed that marine reserves are beneficial (84%), thought these areas are generally good (84%), believed that marine reserves are positive (84%), and liked the idea of marine reserves (79%). These residents living along the I-5 corridor (Phase 2) were significantly more likely than those along the coast (Phase 1) to report positive attitudes toward marine reserves in general.
- Respondents also held positive attitudes toward the specific topic of marine reserves in Oregon. Phase 2 (I-5 corridor) respondents believed that these reserves are beneficial (82%) and positive (81%), thought these areas are good (81%), and liked the idea of these reserves (79%). Residents of the I-5 corridor (Phase 2) were more likely than those on the coast (Phase 1) to have positive attitudes toward marine reserves in Oregon.
- There was strong agreement among Phase 2 (I-5 corridor) respondents that marine reserves in Oregon would allow scientists to monitor these areas (91%), allow depleted populations to recover (86%), improve understanding of marine areas (85%), improve scientific understanding of marine areas (85%), protect the diversity of marine species (85%), benefit marine areas in general (85%), and increase species populations (80%). These residents were least likely to agree that these reserves would improve the economy (27%), benefit local communities (49%), and increase tourism (54%). Compared to residents living on the coast (Phase 1), those along the I-5 corridor (Phase 2) were more likely to agree with almost all of these potential advantages of marine reserves in Oregon.
- In terms of potential disadvantages of marine reserves in Oregon, 59% of Phase 2 (I-5 corridor) respondents agreed the reserves would reduce commercial fishing and 50% agreed these areas would reduce recreational fishing. More than 40% also agreed the reserves would be difficult to enforce (49%), cost a lot to manage (46%), and prevent people from using these areas (44%). These residents were least likely to agree that the reserves would not be effective in conserving marine

areas (7%) and may cause some species to become overpopulated (31%). Phase 1 (coast) residents were more likely than Phase 2 (I-5 corridor) respondents to agree that these marine reserves would cost a lot to manage, prevent people from using the areas, and not be effective in conservation.

- In total, 90% of Phase 2 (I-5 corridor) respondents would vote in support of establishing marine reserves in Oregon if they were to be given an opportunity to vote on this issue. Phase 2 (I-5 corridor) respondents (90%) would be significantly more likely than Phase 1 (coast) residents (69%) to vote in favor of these reserves. Almost all Phase 2 (I-5 corridor) respondents were also extremely (49%) or moderately certain (40%) in these voting intentions. There were no differences in this certainty between Phase 1 (coast) residents and Phase 2 (I-5 corridor) respondents.
- In terms of future behaviors at these marine reserve sites, the largest percentage of Phase 2 (I-5 corridor) respondents (67%) would likely still visit these marine sites the same amount, whereas 23% would likely visit these sites more often. Only 10% of these respondents would visit less often. Those living along the I-5 corridor (Phase 2) indicated higher likelihood of visiting the same amount (67% vs. 45%), but there were no differences between these two samples in the proportions visiting more or less often.
- In total, 69% of Phase 2 (I-5 corridor) respondents agreed they trusted ODFW to provide truthful information about these marine reserves, 67% trusted this agency to manage the reserves using the best available information about non-human species, and 65% trusted ODFW to manage these reserves using the best available information about human uses of these areas. The lowest proportion of these respondents trusted ODFW to use public input to inform management of marine reserves (51%). Phase 2 (I-5 corridor) respondents were more likely to trust ODFW to manage marine reserves using the best available information about human uses of these areas (65% vs. 57%) and make good decisions regarding management of marine reserves (64% vs. 54%).
- Among Phase 2 (I-5 corridor) respondents, the most important values assigned to Oregon's marine reserves were "protect habitat for marine species" (94% important [73% extremely]), "protect endangered species" (93% important [74% extremely]), "preserve unique wild plants or animals" (93% important [71% extremely]), "protect water quality" (92% important [74% extremely]), "preserve natural areas for scientific discovery or study" (92% important [63% extremely]), "protect endangered places" (92% important [67% extremely]), and "protect marine species, water, or plants that have value even if humans do not benefit from them" (91% important [67% extremely]). The least important values were "provide spiritual inspiration" (45% important [14% extremely]), "provide income for the tourism industry" (66% important [20% extremely]), "provide opportunities to maintain or regain physical or mental health through contact with nature" (72% important [28% extremely]), and "provide recreation opportunities" (72% important [24% extremely]). The most important values for reserves to provide were "protect marine species, water, or plants that have value even if humans do not benefit from them" (29%), "protect habitat for marine species" (28%), "protect endangered species" (27%), and "protect water quality" (27%). Least important were "provide spiritual inspiration" (2%), "just knowing that marine reserves exist" (2%), and "protect symbols of America's heritage or culture" (2%).
- In total, 80% of Phase 2 (I-5 corridor) respondents believed there are areas of the ocean in the world that could be called wilderness, and 72% thought there are areas of the ocean along Oregon's coast that could be called wilderness. Although still a majority, fewer (60%) believed that Oregon's marine reserves could be called wilderness.
- In addition, 41% of Phase 2 (I-5 corridor) respondents believed that Oregon's marine reserves should be designated as wilderness and 16% believed they should not be designated as wilderness. The largest proportion (43%), however, had a neutral opinion.
- The majority of Phase 2 (I-5 corridor) respondents (61%) would not change their opinion of Oregon's marine reserves if they were ever to be designated as wilderness, whereas 28% would have a more positive opinion about these areas and 11% would have a more negative opinion. Similarly,

28% of these residents would like Oregon's marine reserves more if they were ever designated as wilderness, only 10% would like them less, and the majority (63%) would not change their opinion.

- The majority of Phase 2 (I-5 corridor) respondents (64%) would want to visit Oregon's marine reserves the same amount as they do now if these areas were ever to be designated as wilderness, whereas 21% would visit these areas more often and 15% would visit less often.

Perceptions of Marine Areas and the Environment

- The largest proportion of Phase 2 (I-5 corridor) respondents had a strong biocentric (nature oriented) general value orientation toward the environment (38%) and the smallest proportion had an anthropocentric orientation (human oriented, 8%). Another 26% of these respondents had a moderate biocentric orientation and 29% had a mixed anthropocentric – biocentric orientation. These Phase 2 (I-5 corridor) respondents (38%) were slightly more likely than Phase 1 (coast) residents (34%) to have a strong biocentric orientation, whereas Phase 1 residents (12%) were slightly more likely than Phase 2 respondents (8%) to have an anthropocentric orientation. These differences, however, were not statistically significant.
- The largest proportion of Phase 2 (I-5 corridor) respondents had a strong protectionist specific value orientation toward marine areas (42%) and the smallest proportion had a use related orientation toward these areas (human oriented, 10%). Another 28% of these residents had a moderate protectionist orientation toward marine areas and 21% had a mixed protection – use orientation. Phase 2 (I-5 corridor) respondents were significantly more likely than Phase 1 (coast) residents to have a strong protectionist orientation toward marine areas (42% vs. 26%), whereas Phase 1 residents were more likely to have mixed protection – use (28% vs. 21%) or just use orientations (16% vs. 10%) toward these areas.

Demographic and Residential Characteristics

- In total, 51% of Phase 2 (I-5 corridor) respondents were female and 49% were male, the average age was 48 years old with 39% of the sample under 40 years of age and 61% 40 years of age and older (48% over 50 years), and the majority (62%) had a four-year college degree or an advanced degree (e.g., MS, PhD, Law, Medical). Only 2% of these respondents had someone in their household who was employed in the commercial fishing industry. Compared to Phase 1 (coast) residents, these Phase 2 (I-5 corridor) respondents were younger, more likely to be female, more highly educated, and less likely to have someone in their household employed in the commercial fishing industry.
- The majority of Phase 2 (I-5 corridor) respondents had a liberal political orientation (51%), whereas 26% considered themselves to be moderate and 23% to be conservative.
- Phase 2 (I-5 corridor) respondents had lived an average of 30 years in Oregon and 11 years at their current residence. Compared to Phase 1 (coast) residents, these Phase 2 (I-5 corridor) residents spent slightly less time living in Oregon and at their current residence.
- The largest proportion of Phase 2 (I-5 corridor) respondents lived in large cities of 250,000 or more people (32%), followed by cities of 100,000 to 249,999 people (23%) or 25,000 to 99,999 people (21%), towns of 5,000 to 24,999 people (15%), and farm or rural areas with few people (6%). Few of these respondents (6%) owned a second home on the Oregon coast with these individuals using this home mainly for recreation and property investment.
- The majority of Phase 2 (I-5 corridor) respondents lived in Portland region counties, such as Multnomah (31%), Washington (16%), and Clackamas (12%). An additional 11% lived in Lane county (e.g., Eugene), 8% lived in Marion county (e.g., Salem), 6% lived in Jackson county (e.g., Medford), 4% lived in Benton (e.g., Corvallis) and Polk counties (e.g., Dallas), and 2% lived in Linn county (e.g., Albany). In terms of cities, the largest proportion of Phase 2 (I-5 corridor) respondents lived in Portland (32%), followed by Eugene (8%), Beaverton (7%), Salem (4%), Corvallis (4%), and Hillsboro (3%).

Predicting Support and Knowledge Associated with the Marine Reserves

- Phase 2 (I-5 corridor) respondents who were more likely to vote in support of the marine reserves in Oregon had more favorable attitudes toward these reserves, had more biocentric or environmentally oriented value orientations, were more trusting of the managing agency (i.e., ODFW), and believed they were more knowledgeable of these reserves. The strongest predictor of intentions to vote in support of these marine reserves was attitudes toward the reserves (β = .67) followed by value orientations (β = .20), self-assessed knowledge (β = .08), and trust (β = .07). Taken together, these four concepts predicted 70% of the variance in intentions to vote in support for marine reserves in Oregon (R^2 = .70). With the exception of self-assessed knowledge, these results from Phase 2 (I-5 corridor) respondents were identical to Phase 1 (coast) residents, as attitudes, value orientations, and trust were also significant predictors for Phase 1 (coast) residents.
- Phase 2 (I-5 corridor) respondents who communicated with community or environmental groups about these reserves were more likely to support these areas. This result is consistent with Phase 1 (coast) residents. Fishing regulations brochures and discussions with government agency employees both had significant negative relationships with support for the reserves. This result, however, is not consistent with Phase 1 (coast) respondents. It is possible that the fishing regulations brochures are most predominately used by anglers, and these individuals are likely most concerned about limitations on fishing imposed by these marine reserves, so the negative relationship could be explained more by user group (i.e., anglers) than how individuals learn about the reserves. The strongest significant predictor of support for Phase 2 (I-5 corridor) respondents was community or environmental groups (β = .27) and the weakest predictor was discussions with government agency employees (β = -.15). Taken together, these three sources only predicted 10% of the variance in intentions to support (R^2 = .10), so clearly there are other information sources that predict support.
- Phase 2 (I-5 corridor) respondents who learned about the marine reserves through newspapers, magazines / books, government agency websites, other websites, fishing regulations brochures, and work or school were more likely to believe they were more knowledgeable about these reserves (i.e., self-assessed knowledge). Both newspaper articles and government agency websites were also significant predictors for Phase 1 (coast) residents. The strongest significant predictor of self-assessed knowledge among Phase 2 (I-5 corridor) respondents was newspaper articles (β = .22). This is also consistent with Phase 1 (coast) residents. The weakest significant predictor was websites other than social media and government websites (β = .11). Taken together, these six sources of information predicted 48% of the variance in self-assessed knowledge about the reserves (R^2 = .48).
- Phase 2 (I-5 corridor) respondents who learned about the marine reserves through newspaper articles, other websites, and friends or family were more likely to be more factually knowledgeable about these reserves. One variable, social websites (e.g., Facebook, Twitter), had a significant negative relationship with factual knowledge, suggesting that these respondents who learned about the reserves through social websites were less factually knowledgeable about these reserves. These results are identical to those for Phase 1 (coast) residents. The strongest significant predictor of factual knowledge among Phase 2 (I-5 corridor) respondents was friends or family members (β = .29) and the weakest significant predictor was social websites (β = -.18). These four sources of information predicted 25% of the variance in factual knowledge (R^2 = .25).
- Phase 2 (I-5 corridor) respondents who were more likely to trust ODFW had more favorable attitudes toward these marine reserves, had more biocentric or environmentally oriented values, and were more likely to perceive ecological resources in the state as healthy. The strongest significant predictor of trust was attitudes toward the reserves (β = .31) followed by ecological concern (β = .23) and environmental value orientations (β = .13). These results are identical to those for Phase 1 (coast) residents. Taken together, these four concepts collectively predicted 15% of the variance in trust in ODFW for Phase 2 (I-5 corridor) respondents (R^2 = .15).

Implications and Recommendations

- Although residents overwhelmingly perceived Oregon's marine areas and resources (e.g., ocean, animals, fish) to be moderately or very healthy, fewer than one-third agreed that conditions have improved in recent years. These findings were consistent across both Phase 1 (coast) and Phase 2 (I-5 corridor) respondents. It is clear that residents are concerned about Oregon's marine areas and are an important constituency for agencies to work with, inform, and educate about these areas and efforts that agencies and others are taking to address threats in the areas.
- The majority of residents, especially those in the I-5 corridor (Phase 2), believed that the government should do more to help protect marine areas in Oregon. In addition, less than one-third of respondents agreed that laws protecting these marine areas are too strict or that managers are already doing everything they can to protect these areas. It appears that a large percentage of residents, especially those in the I-5 corridor (Phase 2), believe there is room for improvement in agency management and policies associated with marine conservation in Oregon.
- The organization that almost all residents believed should have the greatest influence in managing Oregon's marine areas was the Oregon Department of Fish and Wildlife (ODFW), but the majority thought that a variety of other groups should also have a major influence (e.g., US Fish and Wildlife Service, Oregon Parks and Recreation Department, National Oceanic and Atmospheric Administration). Residents also trusted most of these groups to contribute to managing this state's marine areas. Phase 2 (I-5 corridor) respondents were more likely than those on the coast (Phase 1) to trust most of these groups and organizations, and believe they should influence management of marine areas in Oregon. Regardless, residents clearly believe that ODFW should be the lead agency for managing these areas, but should also collaborate with several other agencies and organizations in these efforts. These groups should also work together and strive to build and foster trust among residents both along the coast and elsewhere in the state.
- Although more than 60% of respondents have visited at least one of the five marine reserve sites in Oregon and the majority reported understanding the purpose of these reserves, fewer than 50% felt informed and knowledgeable about these reserves, knew where the reserves are located, and understood the role of science and public involvement in these reserves. Fewer than 30% understood how these reserves are managed, including rules and regulations associated with these areas. Factual knowledge about these reserves was also extremely low with an average of only 36% (Phase 2, I-5 corridor) and 43% (Phase 1, coast) of the factual questions about these reserves answered correctly (i.e., failing grades). In addition, only 17% of I-5 corridor (Phase 2) and 18% of coastal (Phase 1) residents agreed that it was easy to access and find information about the reserves, and only 7% of I-5 corridor (Phase 2) and 13% of coastal (Phase 1) residents agreed that managers have done a good job educating the public about these areas. Although coastal residents (Phase 1) were slightly more knowledgeable of these reserves compared to residents along the I-5 corridor (Phase 2), it is clear that resident knowledge about these reserves is minimal and much more is needed to inform and educate citizens about these areas. Major information campaigns are needed and most residents would prefer this information to be disseminated through conventional channels such as newspapers and television. Education and engagement catering to different audiences and settings, however, may not be needed because of the consistently low self-assessed and factual knowledge across settings. Managers may want to pinpoint messages and facts about the marine reserves and convey these to the entire public, as there are clearly some facts that are understood by few individuals. For example, fewer than 35% of Phase 1 (coast) residents and fewer than 25% of Phase 2 (I-5 corridor) respondents knew: (a) that five marine reserves have been established and where these reserves are located, (b) how these areas are managed and any rules and regulations at these reserves, and (c) that non-extractive recreation and tourism activities are allowed in these reserves. These topic areas should offer a starting point for improving resident knowledge of these reserves.
- The majority of residents believed that scientific research and non-extractive recreation activities should be allowed in Oregon's marine reserves, but did not think that recreational or commercial fishing should be allowed in these areas. Although both types of fishing are not currently permitted

in Oregon's marine reserves, they are allowed in some of the adjacent marine protected areas. To avoid public confusion and contention, therefore, it is important for managers to clearly articulate to residents the differences between reserves and protected areas, activities that are allowed within each designation, and the rationale for these different allowances.

- The group that residents believed would benefit most from Oregon's marine reserves is scientists / researchers. Fewer than the majority believed that recreationists, businesses, people who do not live on the coast, and recreational and commercial anglers would benefit. In fact, many residents believed that these other groups, especially recreational and commercial fishing, would be harmed by the reserves. It is important, therefore, for agencies to inform and educate residents about potential benefits of these reserves for all groups, such as the potential for more tourism revenue and its impacts on local businesses, as well as the ability of fish populations to recover thereby enhancing long-term sustainability of the recreational and commercial fishing industries.
- An overwhelming majority of residents had strong positive attitudes toward marine areas in general and marine reserves in Oregon in particular. In addition, almost 70% of coastal residents (Phase 1) and 90% of those along the I-5 corridor (Phase 2) would vote in support of these reserves. There was also strong agreement that these marine reserves would provide advantages (e.g., improve understanding, allow populations to recover, protect species diversity). There was significantly less agreement, however, regarding potential disadvantages associated with these reserves, such as reduced commercial fishing, increased management costs, difficulties with enforcement, and increased restrictions on people using the areas. Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were more likely to agree with these advantages of the reserves and disagree with several of these disadvantages. These disadvantages, however, are still important and realistic because there will always be costs associated with placing sites under protected area designation. When informing and educating residents about these marine reserves, therefore, managers should strive for a transparent and balanced perspective emphasizing not only the potential advantages of these reserves, but also the realistic challenges, disadvantages, and costs likely to be encountered with these areas.
- The majority of both Phase 1 (coast) and Phase 2 (I-5 corridor) residents agreed they trusted the managing agency (ODFW) to manage marine reserves in Oregon. This is important for several reasons. First, trust can influence support of agency goals and objectives. Residents who trust ODFW, for example, may be more likely to support future management actions associated with these reserves. Second, persuasion models (e.g., elaboration likelihood, heuristic systematic) suggest that perceived similarity and trust are important determinants of effective information and education campaigns (Eagly & Chaiken, 1993). Residents who trust an agency are often more motivated to attend to its informational and educational efforts. Campaign effectiveness may be lower with residents who are less trusting of the managing agency. Third, agencies should strive to understand constituent opinions, values, and goals because to preserve trust and a strong constituent base, management should be tailored to reflect these views whenever practical and feasible. If constituent views are not reflected in management, reasons for inconsistencies should be shared so they can be weighed in relation to considerations of trust. The public now demands and expects involvement in natural resource decision making and, if ignored, may resort to administrative appeals, court cases, and ballot initiatives. Managers, therefore, should seek positive relationships with residents and actively generate and maintain trust by fostering dialogue with citizens.
- The largest proportions of both Phase 1 (coast) and Phase 2 (I-5 corridor) residents had biocentric (i.e., nature-oriented) value orientations toward the environment in general and protectionist orientations toward marine areas in particular. In addition, 60% of Phase 1 (coast) and 82% of Phase 2 (I-5 corridor) respondents believed in protecting Oregon's marine areas with little or no human utilization. Taken together, these results suggest that activities and management strategies encouraging deleterious effects on marine areas are unlikely to be supported by a large number of residents. Multivariate analyses also showed that value orientations can predict attitudes about marine reserves, behavioral intentions toward these areas, and trust in the agency responsible for

managing these reserves, so knowing value orientations of residents can be useful for estimating possible reactions to potentially controversial management actions. In addition, value orientations are stable and resistant to change, so attempts to inform individuals with biocentric or protectionist value orientations to consider adopting attitudes and supporting actions that may be harmful to marine areas are unlikely to be successful.

- Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were less knowledgeable of Oregon's marine reserves, but had more positive attitudes and were more supportive of the reserves, more likely to agree with advantages of the reserves, and less likely to agree with disadvantages of the reserves. Despite these differences, both Phase 1 (coast) and Phase 2 (I-5 corridor) residents were highly supportive of these reserves, suggesting relatively widespread support of Oregon's marine reserve system.
- Among Phase 2 (I-5 corridor) respondents, the most important values they assigned to Oregon's marine reserves focused on environmental and scientific attributes such as protecting habitat, species, and water quality, and preserving areas for scientific discovery or study. Their least important values were associated with human uses such as tourism and recreation activities. This is important because these values reported by residents align with the fundamental agency missions of these reserves to "conserve marine habitats and biodiversity" and "serve as scientific reference sites to learn about marine reserves and inform nearshore management."
- Phase 2 (I-5 corridor) respondents were also asked about the idea of marine wilderness. Over 60% of these respondents believed that Oregon's marine reserves could possibly be called marine wilderness in the future, but fewer than the majority believed these reserves should be called marine wilderness and even fewer would change their visitation to these areas or their opinions about these areas if they were ever called marine wilderness. Designating these reserves as marine wilderness, therefore, may not likely provide major appreciable benefits to residents, at least in the short-term. In addition, marine wilderness designation would not likely inspire any major public backlash. If Oregon ever wanted to move in this direction, reactions from this population would tend to be neutral to positive.
- Both Phase 1 (coast) and Phase 2 (I-5 corridor) respondents who were more likely to vote in support of the marine reserves in Oregon had more favorable attitudes toward these reserves, had more biocentric or environmentally oriented value orientations, and were more trusting of the managing agency (i.e., ODFW). These attitudes, value orientations, and trust explained approximately 70% of the variance in support for these marine reserves. From a management perspective, this suggests that it is critically important to take steps toward increasing citizen – agency trust even more, educating residents about these reserves to improve knowledge and foster positive attitudes toward these areas, and connecting agency outreach and communication efforts with residents' value systems.
- Both Phase 1 (coast) and Phase 2 (I-5 corridor) respondents who were most factually knowledgeable of these marine reserves were most likely to learn about these reserves through newspaper articles, friends and family, and internet websites other than social media (e.g., Facebook, Twitter) and government websites. In fact, social media websites had a significant negative relationship with factual knowledge, suggesting that respondents who learned about the reserves through social media were less knowledgeable about the reserves. These sources of information, however, only explained less than 40% of the variance in factual knowledge across Phase 1 (coast) and Phase 2 (I-5 corridor) respondents, suggesting that there are other predictors and sources that inform factual knowledge associated with these reserves. Regardless, this is important for informing managing agencies about avenues for disseminating communication campaigns about the Oregon marine reserve system.
- Finally, this project used cross-sectional data at two points in time (coastal residents in 2013, I-5 corridor residents in 2016) to provide baseline snapshots of resident perceptions of marine reserves in Oregon at relatively early stages in the implementation of these areas. Although most residents would vote in favor of these reserves, had positive attitudes toward the benefits of these areas, and trusted ODFW to manage these reserves, cognitions can change over time. It is critically important, therefore, for managers to cultivate and maintain this support and trust, and monitor these social conditions over time (e.g., every 5-10 years) to ensure they do not deteriorate.

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INTRODUCTION

Background and Rationale

In 2012, the State of Oregon designated five marine reserves in its waters with the goals of advancing scientific research, assessing impacts of reserve implementation, and conserving habitats and biodiversity in areas "large enough to allow scientific evaluation of ecological effects, but small enough to avoid significant adverse social and economic impacts on ocean users and coastal communities" (OPAC, 2008a, 2008b). These reserves are Otter Rock north of Newport, Redfish Rocks near Port Orford, Cape Falcon near Manzanita, Cape Perpetua south of Yachats, and Cascade Head north of Lincoln City (Figure 1). The Oregon Department of Fish and Wildlife (ODFW) is the lead agency for evaluating biological and social impacts associated with these marine reserves, as well as overseeing management and monitoring of these areas.

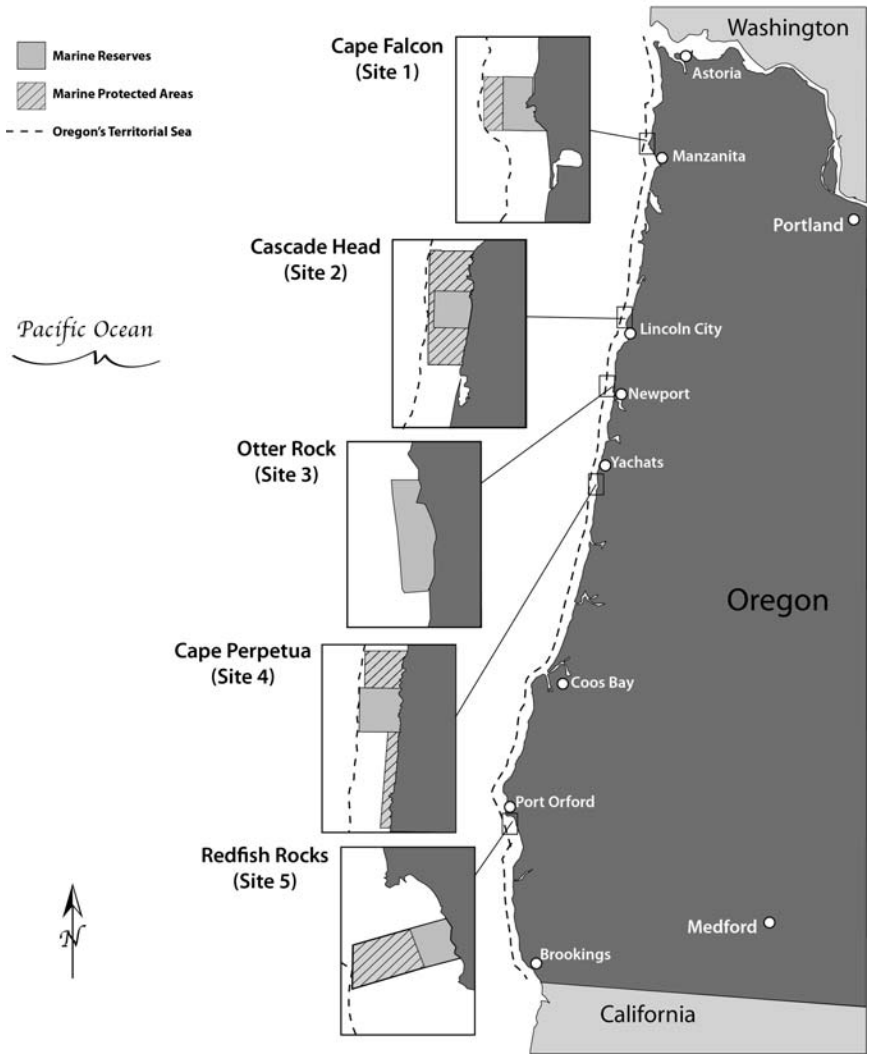

Figure 1. Current marine reserve sites in Oregon

Prior to the establishment of these marine reserves, research had examined biological issues and impacts associated with these areas. Several studies, for example, examined patterns in home ranges of rockfish and other species at the marine reserve sites to determine if these reserves help protect habitats and areas important to marine fisheries, and how large the reserves should be for optimal effectiveness (e.g., Gallagher & Heppell, 2010; Heppell, Barth, & Reiff, 2008). Other studies mapped seafloor structure, oceanographic conditions, habitat, and the presence, abundance, and distribution of other species at these reserve sites (e.g., Amolo, 2010; Laferriere, Matteson, & Johnson, 2011; Lanier, Romsos, & Goldfinger, 2007).

Conversely, the process for evaluating social and economic impacts associated with these marine reserves primarily involved information from community evaluation teams made up of a small number of stakeholders representing different interest groups (e.g., commercial anglers, conservation groups, watershed councils, scientists; Murphy, 2010). Most additional data for evaluating social and economic impacts of these reserves have been collected from town hall meetings with residents, questionnaires given to specific industries or stakeholder groups (e.g., commercial and recreational anglers), interviews with community members, and observational data (e.g., Norman et al., 2007; Oregon Sea Grant, 2008; Package & Conway, 2010). Taken together, many of these efforts involved economic interest groups and vocal community residents thought to be most directly affected by these marine reserves, which is beneficial as a starting point for issue identification and clarification.

What has been lacking in the process of establishing and implementing the marine reserve system in Oregon, however, is a comprehensive, systematic, and representative assessment of resident perceptions regarding these reserves. A scientifically grounded and representative selection of residents is required for generalizing information beyond select interest groups. This scientifically grounded social science is needed for fulfilling the primary goal of the Oregon marine reserves process of utilizing ecosystem based management (EBM) as its initial guiding principle (OPAC, 2008a). EBM is an integrated approach to planning and management that considers the entire ecosystem including humans, as opposed to approaches focusing on a single species, activity, site, or community (McLeod & Leslie, 2009). The EBM process emphasizes not only understanding interrelationships among ecosystem structure and functioning, but also integrating representative social, economic, and institutional data and perspectives.

Establishing and implementing marine reserves based on EBM should be supported by planning and management approaches such as integrated coastal zone management (ICZM) and marine spatial planning (MSP; Dalton, 2005; McLeod & Leslie, 2009). Integrating both sound biological information and comprehensive social science research into these approaches offers the best opportunity for reserves to provide scientific, ecological, and social benefits, as well as equitable inputs into the planning and management of marine resources (Clark, 1996). These approaches also represent opportunities for plans and management to be informed by various community interests, and provide for broad participation and the resolution of any potential areas of conflict (Crowfoot & Wondolleck, 1990; Decker, Krueger, Baer, Knuth, & Richmond, 1996; Lück, 2008; Needham & Szuster, 2011; Perry, Needham, Cramer, & Rosenberger, 2014).

As a result of this emphasis on EBM for the Oregon marine reserves, a number of agencies have emphasized the need for comprehensive and representative information about public knowledge, attitudes, and behavior in response to these reserves. According to the initial OPAC Marine Reserve Policy Guidelines (2008a), for example, opinions from the broader public, including ocean users and other local communities, must be integrated into the selection, implementation, regulation, and monitoring of Oregon's marine reserves.

Project Goals and Objectives

This project, therefore, utilized comprehensive and representative samples of residents (i.e., the voting public): (a) along the Oregon coast (Phase 1; Needham et al., 2013; Perry et al., 2014), and (b) in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]; Phase 2) to understand their knowledge, attitudes, and behaviors in response to the reserves. With these reserves still in their infancy, understanding resident perceptions of these areas is crucial. This project, therefore: (a) generated information that will allow planners and policy makers to predict likely impacts of these reserves on residents; (b) yielded data about how much these individuals know about the reserves, which can guide information and education to inform citizens about these areas; and (c) provided empirical information that can be used for guiding decisions associated with managing these reserves that are within public tolerance limits. Specific objectives of this project were to understand resident:

- Awareness of these marine reserves and sources of information used for learning about these areas.
- Knowledge of the characteristics, benefits, and constraints of these marine reserves.

- Attitudes of support and opposition toward these reserves (i.e., favor, disfavor, like, dislike).
- Perceptions about the future effectiveness of these reserves in meeting management goals.
- Activities that residents believe should and should not be allowed to occur in these reserves.
- Behaviors in response to these reserves and how residents may change their use of these areas in the future (e.g., increase or displace any visitation / recreation use).
- Sociodemographic characteristics.

Conceptual Foundation

These objectives necessitated examining several cognitive concepts including public knowledge, norms, and attitudes regarding these reserves. It is important to measure and understand these cognitions because they can influence behavior, including support of and receptivity toward specific planning and management actions such as designating and monitoring marine reserves. These concepts are integrated and build on each other in a number of theories such as the cognitive hierarchy, theory of reasoned action, and theory of planned behavior (Eagly & Chaiken, 1993; Fishbein & Ajzen, 2010; Fulton, Manfredo, & Lipscomb, 1996; Manfredo, Teel, & Bright, 2004; Needham, Haider, & Rollins, 2016; Vaske & Donnelly, 1999).

The foundations of some of these theories are *values*. 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 abstract and enduring cognitions concerned with desirable end states (e.g., freedom, success) and modes of conduct (e.g., honesty, politeness). Held values are basic modes of thinking shaped early in life by family or other peers, few in number, relatively stable over time, change slowly, guide life decisions, and transcend situations and objects (Rokeach, 1973). *Assigned values* reflect comparative judgements that a person makes about things (i.e., relative importance given to something in relation to other things; Brown, 1984). Also called benefits (e.g., Angulo-Valdes & Hatcher, 2010), assigned values are more situation-specific and changeable than held values (McIntyre, Moore, & Yuan, 2008). For example, a person may respect other forms of life across many contexts (held values), but the relative importance that he or she places on habitat preservation and non-consumptive recreation opportunities that protect species (assigned values) may vary among settings. The situation-specific nature of assigned values potentially makes them more useful to managers of protected areas such as marine reserves. Not only are assigned values less abstract than held values (Kendal, Ford, Anderson, &

Farrar, 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 perceptions toward a specific place (Seymour, Curtis, Pannell, Allan, & Roberts, 2010).

Value orientations reflect an expression of more general held values and are revealed through the pattern and direction of multiple basic beliefs that an individual holds regarding a situation or issue. Fulton et al. (1996), for example, asked individuals how strongly they disagreed or agreed with statements such as "humans should manage wild animal populations so that humans benefit" and "wildlife should have equal rights as humans." Taken together, these items measured values and beliefs related to wildlife use and protection. Patterns in responses can then be combined into a value orientation scale called the protection – use continuum. Other value orientations such as the anthropocentric – biocentric continuum, domination (utilitarianism), and mutualism (social affiliation, caring) have also been examined for fisheries, forests, coral reefs, and the broader environment (Dunlap, Van Liere, Mertig, & Jones, 2000; Manfredo et al., 2004; Vaske & Manfredo, 2012 for reviews). These values and orientations can be used for identifying groups with divergent preferences for management, informing attitudes toward management, and anticipating receptivity to and polarization over prevention and mitigation strategies. In the context of this project, resident value orientations toward the environment in general and marine areas in particular could serve as a foundation for their attitudes toward marine reserves and activities they feel should and should not be allowed to occur in these areas. Residents with biocentric or nature oriented values, for example, may be more supportive of protecting marine areas in the form of designated reserves (Needham, 2010).

Individuals hold values and beliefs regarding a particular object, situation, or issue, and these cognitions tend be related to *knowledge* about the topic. There are two common types of knowledge (Perry et al., 2014; Wann & Branscombe, 1995). First, self-assessed or perceived knowledge is where a person believes he or she is knowledgeable and providing the correct answer. This could be measured, for example, by asking "how aware do you feel about this issue?" Second, factual knowledge is more concrete where the person either does or does not know the information and there is a factually correct answer. Questions measuring factual knowledge may take the form of true / false or multiple choice answers, with only one answer being correct at the time. Studies have examined public knowledge of natural resource issues with most finding that the public often lacks detailed knowledge of many resource issues and concerns (e.g., Needham & Little, 2013; Perry et al., 2014; Sutton & Ditton, 2001; Teel, Bright,

Manfredo, & Brooks, 2006; Vaske, Needham, Stafford, Green, & Petchenik, 2006). This project examined resident self-assessed and factual knowledge of the marine reserve system in Oregon, sources of information used for learning about these reserves, and knowledge about marine reserve characteristics, benefits, and concerns.

These types of knowledge can inform *attitudes*, which are tendencies to evaluate a specific object, situation, or issue with some degree of favor or disfavor, or like or dislike (Eagly & Chaiken, 1993; Fishbein & Ajzen, 2010; Fishbein, & Manfredo, 1992). Unlike values and value orientations, humans have many attitudes that are often specific to particular topics. This project examined general attitudes of residents toward marine reserves (i.e., favor, disfavor) and also their specific attitudes regarding the perceived effectiveness of these areas in meeting management goals. These attitudes can influence *intentions* to engage in a behavior, and these intentions can subsequently influence actual *behaviors* (Eagly & Chaiken, 1993; Fishbein & Ajzen, 2010; Fishbein, & Manfredo, 1992). This project measured intentions of residents in relation to the marine reserves by asking if they would vote for or against these reserves, and also whether designation of these reserves could alter their visitation behavior.

Understanding cognitions such as knowledge, attitudes, and behaviors in the context of marine reserves is important because it improves understanding of how the public responds to these reserves, as well as possibly predicts future behavior associated with these areas. Individuals with biocentric or mutualistic values (i.e., nature oriented) and high knowledge of marine reserves, for example, may have more positive attitudes toward these areas and therefore be likely to vote in support of these reserves. Conversely, those who are less aware of benefits of these reserves may have more negative attitudes and vote against these areas. These cognitions can also be targeted for change, which is important when designing and evaluating informational and educational outreach efforts and campaigns. For example, if individuals have negative attitudes toward marine reserves and these attitudes are largely shaped by a lack of knowledge of the benefits and rationale of these areas, agencies such as ODFW can target communication and education campaigns to increase knowledge and potentially change attitudes.

METHODS

Data for measuring these cognitions and addressing this project's objectives were collected in two phases. Phase 1 focused on residents along the Oregon coast, whereas Phase 2 focused on

residents in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]). Detailed results of Phase 1 were reported in Needham et al. (2013), but some of these results are statistically examined in relation to Phase 2 data in this report here for comparison purposes.

Phase 1 (Coastal Residents)

Data for Phase 1 were obtained from questionnaires administered by mail in late 2012 and early 2013 to a sample of residences along the Oregon coast selected randomly from postal records. This sample was obtained from Marketing Systems Group (MSG) in Pennsylvania, which uses the most recent US Postal Service delivery sequence files to compile sampling lists. Respondents were adult residents who were 18 years of age and older. A sample of 2,600 addresses was equally divided into two main subpopulations: (a) residents living near the five marine reserves (i.e., communities of place), and (b) residents along the rest of the coast (i.e., general coastal sample). The 1,300 addresses in the communities of place were distributed equally among five specific areas corresponding to each current marine reserve location (i.e., 260 addresses for each). A 10-mile radius was drawn around the land point nearest to the center of each reserve and communities within this radius were included in the communities of place delineation. The exact size and location of these areas were adjusted slightly in cases where they would split communities inside and outside of the sample, and in cases where they overlapped with another reserve's community of place so that communities were not split or overlapping. The other half of the sample addresses (i.e., 1,300) was spread throughout the rest of the coast and included areas seaward of the Coast Range excluding those in the five communities of place.

Three separate mailings were implemented to collect data. Multiple mailings are standard for social science studies and necessary for increasing response rates and ensuring generalizability and representativeness of samples (Dillman, Smyth, & Christian, 2014; Vaske, 2008). Residents were first sent on November 9, 2012 a mail packet containing a questionnaire booklet (Appendix A), postage paid business reply envelope, and letter requesting their participation. On November 30, 2012, a postcard reminder was sent to those who had not yet completed the questionnaire requesting their participation. On January 11, 2013, a final full mailing (i.e., letter, questionnaire, reply envelope) was sent to those who had still not completed and mailed back the questionnaire. No further mailings were sent, so residents were considered a nonresponse if they did not complete the questionnaire following these three contacts. To ensure that respondents did not

complete the questionnaire more than once, each residence that was sampled was given a unique identification (ID) code that was printed on the questionnaire. This is a standard approach for avoiding duplicate responses (i.e., people completing the questionnaire more than once), which could make the sample nonrandom and bias the representativeness and generalizability of results (Vaske, 2008). This ID code also allowed the researchers to identify who completed the questionnaire so that respondents were not contacted again in any additional correspondence.

In total, 357 questionnaires were undeliverable (e.g., incorrect address, vacant household, moved) and n = 595 completed questionnaires were returned, yielding a 27% overall response rate (595 / 2,600 – 357; Table 1). This response rate is relatively consistent with many other recent mail surveys asking the public about natural resource issues (see Connelly, Brown, & Decker, 2003; Vaske, 2008 for reviews). The sample size for residents living in the communities of place was n = 326 (30% response rate) and the sample size for those living along the rest of the coast (i.e., general coastal sample) was n = 269 (23% response rate). The combined sample size of n = 595 allows generalizations about the population of Oregon coastal residents at a margin of error of ± 4% at the 95% confidence level, which is better than the conventional standard of ± 5% that has been widely accepted and adopted in human dimensions of natural resources research (Vaske, 2008). Margins of error for each subpopulation were ± 5.4% at the 95% confidence level for residents of the communities of place and ± 6% at the 95% confidence level for those living along the rest of the coast.

To check for potential nonresponse bias, residents who completed a mail questionnaire were compared against those who did not (i.e., nonrespondents). A sample of n = 202 nonrespondents was telephoned in March 2013 and asked 10 specific questions from the questionnaire. There were no substantive differences in responses between those who responded to the mail survey and those who did not (i.e., completed telephone nonresponse bias check), so the data did not need to be weighted based on this nonresponse bias check. The data did, however, need to be weighted by population proportions based on the most recent US Census information for number of households to ensure that the samples and questionnaire responses were statistically representative of the broader target populations (see Needham et al., 2013 for weighting details).

Table 1. Final sample sizes and response rates

Site	Mailed Questionnaires	Undeliverable Questionnaires	Completed Questionnaires (*n*)	Response Rate (%)
Phase 1 (Coastal Residents)				
Cape Falcon	260	30	70	30
Cascade Head	260	54	50	24
Otter Rock	260	34	69	31
Cape Perpetua	260	44	63	29
Redfish Rocks	260	51	74	35
Rest of the Coast	1300	144	269	23
Total	2600	357	595	27
Phase 2 (I-5 Corridor Residents)				
Total	2800	206	530	20

Phase 2 (I-5 Corridor Residents)

Data for Phase 2 were obtained from questionnaires administered using a mixed-mode (i.e., mail, internet) survey in early 2016 to a sample of 2,800 residential addresses in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]). This sample was selected randomly from postal records and obtained from MSG. Respondents were adult residents who were 18 years of age and older.

Four separate mailings were implemented to collect data. First, residents were sent on January 20, 2016 a postcard pre-notification with the option to complete the questionnaire on a Qualtrics internet website using individual access codes. Second, those who had not completed the questionnaire on the website were sent on February 24, 2016 a mail packet containing a questionnaire booklet (Appendix B), postage paid business reply envelope, and letter requesting their participation. Third, a postcard reminder (with the option to complete the questionnaire on the website) was sent on March 18, 2016 to those who had not yet completed the questionnaire requesting their participation. Fourth, a final full mailing (i.e., letter, questionnaire, reply envelope) was sent on April 20, 2016 to those who had still not completed the questionnaire. No further mailings were sent, so residents were considered a nonresponse if they did not complete the questionnaire following these four contacts. A unique identification (ID) code was given to each sample member to ensure they did not complete the questionnaire more than once and also allow the researchers to identify who completed the questionnaire so that respondents were not contacted again in any additional correspondence.

Overall, 206 questionnaires were undeliverable (e.g., incorrect address, vacant household, moved) and $n = 530$ questionnaires were completed, yielding a 20% overall response rate (530 /

2,800 – 206; Table 1). This sample size allows generalizations about the population of residents in this most heavily populated region of Oregon at a margin of error of ± 4% at the 95% confidence level. To check for potential nonresponse bias, a sample of n = 75 nonrespondents was telephoned in May 2016 and asked 11 specific questions from the questionnaire. There were no substantive differences in responses between those who responded to the survey via mail or the internet versus those who did not (i.e., completed telephone nonresponse bias check), so the data did not need to be weighted based on this nonresponse bias check. The data did, however, need to be weighted by demographics (e.g., age; male, female, transgender) based on the most recent US Census information for this region to ensure that the sample and questionnaire responses were statistically representative of the broader target population.

Results in this report are grouped into subsections according to the project objectives and questionnaire items. Within each subsection, analyses are conducted to reveal results from Phase 2 (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]) respondents and also compare these results to those from Phase 1 (coast) respondents where applicable. Phase 1 results were reported in Needham et al. (2013). Comparisons between Phase 1 and Phase 2 respondents are not possible for every questionnaire item, as some items in the Phase 1 questionnaire were removed and replaced with different items in Phase 2.

Percentages, crosstabulations, and bivariate and multivariate inferential statistical tests were used for analyzing and presenting these results. Many of these tests produce p-values and when a p-value associated with any test (i.e., χ^2, t, F) presented in this report is $p \leq .05$, a statistically significant relationship or difference was observed. In addition to these tests of significance, effect size statistics (e.g., phi ϕ, Cramer's V, eta η) were used for examining the strength of relationships. Effect sizes of .10 typically suggest "minimal" (Vaske, 2008) or "weak" (Cohen, 1988) relationships or differences. Effect sizes of .30 are usually considered "medium" or "typical," and .50 or greater are "large" or "substantial" relationships or differences; larger effect sizes imply stronger relationships or differences. To highlight findings, data were recoded into major response categories (e.g., agree, disagree), but descriptive results of all uncollapsed questions (e.g., strongly, slightly agree) for Phase 2 (I-5 corridor) are in Appendix C. Descriptive results of all uncollapsed questions for Phase 1 (coast) were reported in Needham et al. (2013).

RESULTS

Oregon Marine Areas in General

Activity Participation in Oregon Marine Areas. In total, 88% of Phase 2 respondents (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]) have visited marine areas in Oregon, whereas only 12% have never visited these areas. Residents were then asked to select all of the activities in which they have ever participated at marine areas in Oregon. Table 2 shows that sightseeing (89%), viewing marine animals (80%), and exploring tide pools (76%) were the most common activities in this state's marine areas among Phase 2 (I-5 corridor) respondents. The least popular activities were commercial fishing (2%), scuba diving or snorkeling (6%), and surfing or boogie boarding (13%). There were a few statistically significant differences between Phase 1 (coast) and Phase 2 (I-5 corridor) respondents with coastal residents being significantly more likely to view marine animals (86% vs. 80%) and participate in boating and fishing activities such as motorized boating (43% vs. 26%), non-motorized boating (28% vs. 21%), non-charter recreational fishing (55% vs. 32%), charter recreational fishing (32% vs. 23%), and commercial fishing (10% vs. 2%).

Table 2. All activities participated in Oregon marine areas [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Sightseeing	88	89	.48	.488	.02
Viewing marine animals (whales, seals)	86	80	7.28	.007	.09
Exploring tide pools	77	76	.08	.776	.01
Swimming	38	36	.45	.501	.02
Non-charter recreational fishing	55	32	51.39	< .001	.23
Motorized boating	43	26	27.78	< .001	.17
Charter recreational fishing	32	23	10.66	.001	.10
Non-motorized boating (canoe, kayak)	28	21	6.28	.012	.08
Surfing / boogie boarding	13	13	.04	.842	.01
Other [b]	14	9	6.99	.008	.08
Scuba diving / snorkeling	6	6	.23	.635	.02
Commercial fishing	10	2	29.09	< .001	.16

[a] Cell entries are percentages (%) of respondents who have ever participated in the activity in Oregon's marine areas.
[b] Most common "other" activities listed include: beachcombing, clamming, crabbing, and hiking / walking.

Respondents were then asked to select the one main activity in which they participated the most at marine areas in Oregon. Table 3 shows that sightseeing (45%), exploring tidepools (17%), non-charter recreational fishing (13%), and viewing marine animals (11%) were the most

popular main activities among Phase 2 (I-5 corridor) respondents. The least popular activities were scuba diving or snorkeling (0%), motorized boating (1%), commercial fishing (1%), and charter recreational fishing (1%). There were a few statistically significant differences between Phase 1 (coast) and Phase 2 (I-5 corridor) respondents with more Phase 2 respondents considering sightseeing (45% vs. 35%) and exploring tidepools (17% vs. 8%) as their main activities, whereas those living on the coast (Phase 1) were more likely to specify non-charter recreational fishing (22% vs. 13%) as their main activity.

Table 3. Main activity participation in Oregon marine areas [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Sightseeing	35	45
Exploring tide pools	8	17
Non-charter recreational fishing	22	13
Viewing marine animals (whales, seals)	16	11
Other	6	4
Surfing / boogie boarding	2	3
Swimming	1	3
Non-motorized boating (canoe, kayak)	2	2
Motorized boating	4	1
Commercial fishing	3	1
Charter recreational fishing	2	1
Scuba diving / snorkeling	1	0

[a] Cell entries are percentages (%) of respondents who indicated this was their main activity in Oregon's marine areas. $\chi^2(11, N = 940) = 61.30, p < .001, V = .25$.

Ecological Health of Oregon Natural Resources. Respondents were asked to rate how ecologically healthy they believed seven different natural resources were in Oregon on 9-point scales of 0 "not healthy" to 8 "very healthy." For analysis purposes, answers were recoded into dichotomous responses of "not at all or slightly healthy" (0 – 3 on scale) and "moderately or very healthy" (4 – 8 on scale). Table 4 shows that two-thirds or more of Phase 2 (I-5 corridor) respondents believed that wildlife (78%), forests (74%), other marine animals (71%), marine areas (i.e., ocean; 71%), rivers and streams (70%), marine fish (69%), and bays and estuaries (65%) were moderately or very healthy in this state. There were no statistically significant differences between respondents on the coast (Phase 1) and those living from Portland to Ashland between the Coast and Cascade Mountain Ranges (i.e., I-5 corridor, Phase 2).

Table 4. Perceived ecological health of marine areas and other natural resources in Oregon [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Wildlife in Oregon	77	78	.10	.758	.01
Forests in Oregon	75	74	.17	.681	.01
Other marine animals in Oregon	75	71	1.11	.292	.03
Marine areas (ocean) in Oregon	73	71	.33	.568	.02
Rivers and streams in Oregon	71	70	.05	.822	.01
Marine fish in Oregon	72	69	.94	.333	.03
Bays and estuaries in Oregon	66	65	.03	.872	.01

[a] Cell entries are percentages (%) of respondents who perceived the resource to be "moderately or very healthy" (4 – 8 on scale).

Beliefs about Oregon Marine Areas. Respondents were asked the extent they disagreed or agreed with eight statements about marine areas in Oregon. Table 5 shows that the highest proportion of Phase 2 (I-5 corridor) respondents (69%) believed the government should do more to help protect marine areas in Oregon. In addition, 39% agreed that people who fish commercially are harming marine areas in Oregon, whereas 27% agreed fishing is not harming marine areas in Oregon. Overall, 31% agreed that the condition of marine areas in Oregon has improved in recent years, followed by 21% who agreed that managers are doing everything they can to protect marine areas in this state. Furthermore, 15% agreed that people fishing recreationally are harming Oregon's marine areas. Finally, only 8% agreed that laws protecting marine areas in Oregon are too strict.

Table 5. Beliefs about Oregon marine areas [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
The government should do more to help protect marine areas in Oregon	50	69	37.63	< .001	.19
People who fish commercially are harming marine areas in Oregon	41	39	.25	.619	.02
The condition of marine areas in Oregon has improved in recent years	34	31	1.01	.315	.03
Fishing is *not* harming marine areas in Oregon	38	27	14.31	< .001	.12
Managers are doing everything they can to protect marine areas in Oregon	30	21	8.99	.003	.09
People who purchase / consume seafood are harming marine areas in Oregon	16	16	.02	.884	.01
People who fish recreationally are harming marine areas in Oregon	14	15	.07	.796	.01
Laws protecting marine areas in Oregon are already too strict	22	8	39.49	< .001	.19

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

Phase 2 (I-5 corridor) respondents were significantly more likely (69%) than those on the coast (Phase 1, 50%) to agree the government should do more to help protect marine areas in Oregon. Conversely, Phase 1 (coast) respondents were significantly more likely than Phase 2 (I-5 corridor) respondents to agree that fishing is not harming marine areas in Oregon (38% vs. 27%), managers are doing everything they can to protect Oregon's marine areas (30% vs. 21%), and laws protecting marine areas in the state are too strict (22% vs. 8%).

Influence and Trust of Groups to Manage Oregon Marine Areas. Respondents were asked how much influence they believed 12 different individuals, groups, and organizations *should have* in contributing to the management of marine areas in Oregon. These questions were asked on 9-point scales of 0 "no influence" to 8 "strong influence," which were recoded into dichotomous responses of "no or some influence" (0 – 3 on scale) and "moderate or strong influence" (4 – 8 on scale). Results in Table 6 show that for nearly all groups listed, more than 50% of Phase 2 (I-5 corridor) respondents believed that each should have moderate or strong influence. Respondents believed the strongest influence should be from the Oregon Department of Fish and Wildlife (94%), followed by the Oregon Parks and Recreation Department (89%), US Fish and Wildlife Service (88%), National Oceanic and Atmospheric Administration (87%), university researchers (87%), people who live along the Oregon coast (80%), local governments (78%), and environmental organizations (74%). These respondents believed the least influence should be from people who *do not* live on the Oregon coast (44%). There were a number of differences in these perceptions between the two phases, as Phase 2 respondents living from Portland to Ashland between the Coast and Cascade Mountain Ranges (I-5 corridor) were significantly more likely than those on the coast (Phase 1) to think that nine of these 12 individuals, groups, and organizations should have more influence in contributing to the management of marine areas in Oregon (Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, US Fish and Wildlife Service, National Oceanic and Atmospheric Administration, university researchers, local governments, environmental organizations, people who recreate in marine areas, people who do not recreate in marine areas).

Table 6. Influence that groups should have in managing marine areas in Oregon [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Oregon Department of Fish and Wildlife	84	94	31.17	< .001	.17
Oregon Parks and Recreation Department	78	89	27.77	< .001	.16
US Fish and Wildlife Service	79	88	15.17	< .001	.12
National Oceanic and Atmospheric Administration	77	87	20.10	< .001	.14
University researchers	72	87	32.89	< .001	.18
People who live along the Oregon coast	77	80	.88	.347	.03
Local governments	71	78	7.42	.006	.09
Environmental organizations	55	74	44.24	< .001	.21
People who fish commercially	73	68	3.57	.060	.06
People who fish recreationally	62	66	1.77	.183	.04
People who recreate in marine areas	58	64	3.94	.047	.06
People who *do not* live on the Oregon coast	25	44	39.07	< .001	.20

[a] Cell entries are percentages (%) of respondents who believed the group should have "moderate or strong influence" (4 – 8 on scale).

Respondents were also asked how much trust they had in each of these individuals, groups, and organizations to positively contribute to the management of marine areas in Oregon. These questions were asked on 9-point scales of 0 "no trust" to 8 "high trust." For analysis purposes, responses were recoded into dichotomous responses of "no or some trust" (0 – 3 on scale) and "moderate or high trust" (4 – 8 on scale). Table 7 shows the groups receiving the highest trust from Phase 2 (I-5 corridor) respondents were Oregon Department of Fish and Wildlife (87%), university researchers (87%), Oregon Parks and Recreation Department (84%), National Oceanic and Atmospheric Administration (83%), and US Fish and Wildlife Service (81%). Groups trusted the least were people who do not live on the Oregon coast (31%), those who fish commercially (43%), and people who recreate in marine areas (45%). Phase 2 (I-5 corridor) respondents had statistically higher trust in university researchers, environmental organizations, people who do not live on the Oregon coast, and most federal, state, and local agencies (e.g., Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, local governments). In contrast, respondents on the coast (Phase 1) had higher trust in people who live along the Oregon coast and fish commercially.

Table 7. Trust in groups to contribute to managing marine areas in Oregon [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Oregon Department of Fish and Wildlife	76	87	20.33	< .001	.14
University researchers	74	87	28.33	< .001	.16
Oregon Parks and Recreation Department	69	84	34.41	< .001	.18
National Oceanic and Atmospheric Administration	72	83	19.54	< .001	.14
US Fish and Wildlife Service	76	81	3.95	.047	.06
People who live along the Oregon coast	78	71	4.76	.029	.07
Environmental organizations	49	68	39.23	< .001	.19
Local governments	57	67	10.01	.002	.10
People who fish recreationally	51	50	.04	.836	.01
People who recreate in marine areas	43	45	.59	.440	.02
People who fish commercially	54	43	12.17	< .001	.11
People who *do not* live on the Oregon coast	18	31	23.12	< .001	.15

[a] Cell entries are percentages (%) of respondents who have "moderate or high trust" (4 – 8 on scale) in the group.

Oregon Marine Reserves

Visitation and Activity Participation in Oregon Marine Reserves. The questionnaires contained a detailed map of the five marine reserve sites in Oregon (see Figure 1 and Appendices A and B) and asked respondents questions about their visitation and activities at these sites. First, respondents were asked if they had ever visited at least one of these five reserve sites identified on the map. Table 8 shows that 60% of Phase 2 (I-5 corridor) respondents had visited at least one of the reserve sites, whereas 40% had not visited. By comparison, Phase 1 (coast) respondents were slightly more likely (67%) to have visited at least one of these reserve sites.

Table 8. Previous visitation to the Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Yes (visited at least one reserve)	67	60
No (not visited any reserve)	33	40

[a] Cell entries are percentages (%). $\chi^2(1, N = 1034) = 4.16$, $p = .041$, $\phi = .06$.

The Phase 2 (I-5 corridor) questionnaire then asked how many trips these visitors had made to the marine reserve site(s) in the past 12 months. This question was not asked in the Phase 1 (coast) questionnaire. Among Phase 2 (I-5 corridor) respondents who had visited at least one of these reserve sites before, equal proportions had either visited the site(s) but not in the past 12 months (25%) or visited just once during this time (25%). The largest percentage of these

previous visitors had visited the site(s) two or three times (33%). Fewer had visited four to six times (10%) or more than six times (7%). The average was 2.5 visits in the past 12 months.

Respondents were then asked which of these sites they had visited. Results in Table 9 show that among *all* Phase 2 (I-5 corridor) respondents (i.e., not just those who had visited at least one of these reserves), the largest proportion had previously visited Otter Rock (43%), followed by Cascade Head (39%), Cape Perpetua (26%), Cape Falcon (23%), and Redfish Rocks (10%). Phase 2 (I-5 corridor) respondents were significantly more likely than those on the coast (Phase 1) to have visited Cascade Head (39% vs. 33%), whereas coastal residents (Phase 1) were more likely to have visited Cape Perpetua (38% vs. 26%) and Redfish Rocks (24% vs. 10%). There were no statistical differences between these two sample populations in their visitation to Otter Rock and Cape Falcon marine reserve sites.

Table 9. Oregon marine reserve sites previously visited [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Otter Rock	45	43	2.16	.340	.05
Cascade Head	33	39	12.91	.002	.11
Cape Perpetua	38	26	15.81	< .001	.12
Cape Falcon	23	23	2.99	.225	.05
Redfish Rocks	24	10	39.87	< .001	.19
Total (visited at least one of these sites)	67	60	4.16	.041	.06

[a] Cell entries are percentages (%) of *all* respondents who have previously visited the site.

Self-Assessed Knowledge about Oregon Marine Reserves. Nine questions measured respondent self-assessed knowledge about the marine reserves in Oregon. Respondents were asked "before receiving this survey, were you familiar with the topic of marine reserves in Oregon?" Residents were also asked both how well informed and how knowledgeable they felt about the topic of marine reserves in this state. In addition, the questionnaire asked respondents how much they felt they understood about a number of issues associated with these reserves (e.g., their purpose, how they would be managed, where they are located). Results in Table 10 show that half (50%) of Phase 2 (I-5 corridor) respondents felt they understood the purpose of these reserves. However, only 40% felt they understood the role of science in these reserves, 35% were familiar with these reserves, 25% understood the role of public involvement in these reserves, 23% felt informed about the topic of marine reserves in Oregon, and 21% felt knowledgeable about these reserves. Furthermore, only 17% understood where the reserves were located and rules and regulations associated with these reserves, and only 15% understood how the reserves would be managed.

Across all of these self-assessed knowledge questions, Phase 2 (I-5 corridor) respondents reported lower familiarity, understanding, and knowledge compared to Phase 1 (coast) respondents, and this difference was statistically significant for six of the nine questions. For example, 71% of Phase 1 (coast) residents and only 35% of Phase 2 (I-5 corridor) respondents felt familiar with these marine reserves, and 44% of Phase 1 (coast) residents versus 23% of Phase 2 (I-5 corridor) respondents felt informed about these reserves.

Table 10. Self-assessed knowledge about Oregon marine reserves

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Understand the purpose of these reserves [a]	56	50	3.54	.060	.06
Understand the role of science in these reserves [a]	44	40	1.71	.191	.04
Familiarity with these reserves [b]	71	35	132.93	< .001	.35
Understand the role of public involvement in these reserves [a]	30	25	3.86	.049	.06
Informed about these reserves [c]	44	23	51.83	< .001	.22
Knowledgeable about these reserves [d]	40	21	42.72	< .001	.20
Understand where these reserves are located [a]	34	17	41.55	< .001	.20
Understand rules / regulations of these reserves [a]	22	17	3.11	.078	.06
Understand how these reserves would be managed [a]	26	15	21.57	< .001	.14

[a] Cell entries are percentages (%) of respondents who felt they "moderately or fully understand" these issues about marine reserves in Oregon.

[b] Cell entries are percentages (%) of respondents who said "yes" they were familiar with the topic of marine reserves in Oregon.

[c] Cell entries are percentages (%) of respondents who felt "moderately or extremely informed" about the topic of marine reserves in Oregon.

[d] Cell entries are percentages (%) of respondents who felt "moderately or extremely knowledgeable" about the topic of marine reserves in Oregon.

Factual Knowledge about Oregon Marine Reserves. The questionnaires also contained multiple statements about marine reserves in Oregon designed for measuring factual knowledge about these reserves. Ten true / false (and unsure) questions about these reserves were asked: "In Oregon: (a) the government has been considering marine reserves for the past several years (true), (b) the government has approved marine reserves for this state (true), (c) commercial fishing would be allowed in all marine reserves (false), (d) all marine reserves would include coastal lands such as beaches and coastlines (false), (e) the government has established five marine reserve sites (true), (f) new developments such as wave energy or fish farms would be allowed in all marine reserves (false), (g) non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) would be allowed in all marine reserves (true), (h) keeping fish caught in marine reserves would be allowed in all reserves (false), (i) only scientists and no other people would be allowed in all marine reserves (false), and (j) there have been opportunities for public involvement in agency discussions about marine reserves (true)." In addition, respondents

were asked "what one agency or organization do you think is currently responsible for marine reserves in Oregon" with the following choices: 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 (i.e., correct answer), Oregon Marine Board, and Unsure. All of these factual knowledge questions were recoded into dichotomous "correct" and "not correct" responses. Then, a standardized score was computed for each respondent representing the percent of correctly answered questions out of 11 (i.e., 0 to 100% correct).

Results in Table 11 show responses to these variables measuring factual knowledge. The only two items answered correctly by the majority of Phase 2 (I-5 corridor) respondents were that scientists would not be the only people allowed in these reserves (52%) and commercial fishing would not be allowed in all of the reserves (50%). The question answered correctly by the fewest of these residents was that the government has established five marine reserve sites (14%). Only 47% of these respondents correctly identified ODFW as the agency or organization currently responsible for these marine reserves, 44% knew there have been opportunities for public involvement in decisions about these areas, 43% knew keeping fish caught would not be allowed in all marine reserves, and 42% knew the government has been considering marine reserves in Oregon for several years. Less than 30% of these respondents, however, answered the other factual knowledge questions correctly. Phase 2 (I-5 corridor) respondents correctly answered 10 of these 11 factual knowledge questions less often compared to Phase 1 (coast) respondents, and this difference was statistically significant for eight of these questions. For example, 71% of Phase 1 (coast) residents and only 42% of Phase 2 (I-5 corridor) respondents knew that the government has been considering marine reserves for the past several years, and 30% of Phase 1 (coast) residents versus only 14% of Phase 2 (I-5 corridor) respondents knew that the government has established five marine reserve sites.

The total factual knowledge score out of 11 questions showed that this knowledge was low among Phase 2 (I-5 corridor) respondents, with an average score of only 36% of questions answered correctly. This factual knowledge score was significantly lower compared to Phase 1 (coast) respondents (47% correct), although both of these sample populations had low factual knowledge associated with Oregon's marine reserve system.

Table 11. Factual knowledge about Oregon marine reserves

	Correct Response [a]	Percent answered correctly (%) Phase 1 (Coast)	Percent answered correctly (%) Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Only scientists and no other people would be allowed in all marine reserves	False	54	52	.41	.524	.02
Commercial fishing would be allowed in all marine reserves	False	67	50	28.14	< .001	.17
What agency organization is currently responsible for marine reserves in Oregon	ODFW	34	47	16.82	< .001	.13
There have been opportunities for public involvement in agency discussions about marine reserves	True	58	44	23.41	< .001	.15
Keeping fish caught in marine reserves would be allowed in all reserves	False	58	43	19.18	< .001	.14
The government has been considering marine reserves for the past several years	True	71	42	60.08	< .001	.24
The government has approved marine reserves for this state	True	46	29	28.72	< .001	.17
All marine reserves would include coastal lands such as beaches and coastlines	False	34	29	2.65	.104	.05
New developments such as wave energy or fish farms would be allowed in all marine reserves	False	36	25	14.75	< .001	.12
Non-extractive recreation / tourism activities (e.g., surfing, swimming) would be allowed in all marine reserves	True	34	24	12.34	< .001	.11
The government has established five marine reserve sites	True	30	14	39.69	< .001	.19
Total factual knowledge score (average percent correct [%] out of 11) [b]	--	47	36	6.37	< .001	.20

[a] All questions also included an "Unsure" response category coded as "incorrect" in the analysis.
[b] Tests of statistical significant are *t*-tests with point-biserial correlation effect sizes.

Sources of Information to Learn about Oregon Marine Reserves. Respondents were asked the extent they disagreed or agreed that: (a) it is easy to access and find information about the marine reserves in Oregon, and (b) managers have done a good job communicating with the public about these reserves. Table 12 shows extremely low levels of agreement with these statements among Phase 2 (I-5 corridor) respondents, with only 17% agreeing it is easy to access and find information about marine reserves in Oregon. There were no differences in agreement with this statement between Phase 2 (I-5 corridor) respondents (17%) and Phase 1 (coast) respondents (18%). Only 7% of Phase 2 (I-5 corridor) respondents agreed that managers have done a good job communicating with the public about these marine reserves, which was significantly lower

agreement compared to Phase 1 (coast) respondents (13%), although both of these sample populations had extremely low agreement with this statement.

Table 12. Beliefs about current information regarding Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
It is easy to access / find information about marine reserves in Oregon	18	17	.04	.840	.01
Managers have done a good job communicating with the public about marine reserves in Oregon	13	7	10.54	< .001	.10

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

Residents were also asked what sources they used for obtaining information and learning about marine reserves in Oregon. The questionnaires listed 13 potential sources with responses on 5-point scales of 0 "never" to 4 "often." For analysis purposes, responses were recoded to "never" (0 on scale) and "at least once" (1 to 4 on scale). Table 13 shows that none of these sources were used by the majority (over 50%) of Phase 2 (I-5 corridor) respondents to obtain information about these reserves. Newspapers (49%) and television news / programs (47%) were the most often cited sources by these respondents, whereas attending meetings or presentations (11%) and discussing the reserves with government agency employees (12%) were the least cited sources. More than one-third of these respondents also indicated they had discussed Oregon's marine reserves with friends or family (44%), listened to radio news or programs about the reserves (40%), and read magazine articles or books about these areas (38%).

Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were less likely to have used 11 of these 13 sources for obtaining information about these marine reserves, and these differences between sample populations were statistically significant for 10 of the 13 sources. For example, 80% of Phase 1 (coast) residents compared to only 49% of Phase 2 (I-5 corridor) respondents read newspaper articles about these marine reserves. The only sources used by statistically similar proportions of Phase 1 (coast) and Phase 2 (I-5 corridor) respondents were reading about marine reserves on general websites (30% and 31%, respectively), government agency websites (28% and 23%, respectively), and social media websites such as Facebook and Twitter (20% and 22%, respectively).

Table 13. Sources of information to learn about Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Read newspaper articles about marine reserves in Oregon	80	49	108.65	< .001	.32
Watched television news / programs about marine reserves in Oregon	65	47	36.36	< .001	.19
Discussed marine reserves in Oregon with friends or family members	68	44	58.03	< .001	.24
Listened to radio news / programs about marine reserves in Oregon	63	40	53.33	< .001	.23
Read magazine articles or books about marine reserves in Oregon	64	38	70.99	< .001	.26
Read about marine reserves in Oregon on any other websites	30	31	.23	.629	.02
Read about marine reserves in Oregon fishing regulations brochures	48	30	36.27	< .001	.19
Learned about marine reserves in Oregon from environmental or community groups	45	28	29.10	< .001	.17
Learned about marine reserves in Oregon from work or school	33	27	4.53	.033	.07
Read about marine reserves in Oregon on government agency websites	28	23	3.24	.072	.06
Read about marine reserves in Oregon on social websites (e.g., Facebook, Twitter)	20	22	.48	.490	.02
Discussed marine reserves in Oregon with government agency employees	25	12	32.20	< .001	.17
Attended meetings or presentations about marine reserves in Oregon	29	11	51.38	< .001	.22

[a] Cell entries are percentages (%) of respondents who have used the information source at least once to learn about these reserves.

The questionnaires then asked respondents to specify the one primary source from which they would most prefer to obtain information about marine reserves in Oregon. Results in Table 14 show that the greatest proportions of Phase 2 (I-5 corridor) respondents would prefer to receive information about these reserves from newspaper articles (21%) or television news and related programs (20%). The least preferred sources of information included friends or family (1%), government agency employees (1%), and work or school (3%). Phase 2 (I-5 corridor) respondents were significantly more likely than those on the coast (Phase 1) to prefer radio news and programs (14% vs. 5%) and social media websites (8% vs. 1%). Phase 1 (coast) residents were more likely than Phase 2 (I-5 corridor) respondents to prefer to obtain information from meetings or presentations (12% vs. 4%).

Table 14. Preferred source of information about Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Newspaper articles	26	21
Television news / programs	25	20
Radio news / programs	5	14
Government agency websites	7	8
Social websites (e.g., Facebook, Twitter)	1	8
Magazine articles or books	7	6
Fishing regulations brochures	6	6
Other websites	4	6
Meetings or presentations	12	4
Environmental or community groups	3	4
Work or school	1	3
Government agency employees	2	1
Friends or family members	1	1

[a] Cell entries are percentages (%) of all respondents who indicated this would be their preferred source of information about Oregon's marine reserves. $\chi^2(12, N = 797) = 64.85, p < .001, V = .28$.

Beliefs about Oregon Marine Reserves. The questionnaires contained several questions measuring beliefs about marine reserves and protection in Oregon. Respondents were asked their opinion regarding the protection versus human utilization (i.e., use) of marine areas in this state. Table 15 shows 82% of Phase 2 (I-5 corridor) respondents believed in protecting Oregon's marine areas with little or no human utilization, whereas 19% believed in utilizing these marine areas with little or no protection. Most (70%) of these respondents believed marine areas should mostly be protected with just a little utilization, whereas only 18% believed these areas should be mostly utilized with just a little protection and even fewer believed Oregon's marine areas should be either fully protected with no utilization (12%) or fully utilized with no protection (1%). Coastal residents (Phase 1, 37%) were more likely than Phase 2 (I-5 corridor) respondents (18%) to believe that marine areas should be mostly utilized with just a little protection, whereas Phase 2 (I-5 corridor) respondents (70%) were more likely than coastal residents (Phase 1, 48%) to believe marine areas should mostly be protected with just a little utilization.

Table 15. Opinions about protection versus utilization of Oregon marine areas [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Should fully protect marine areas with almost no utilization	12	12
Should mostly protect marine areas with just a little utilization	48	70
Should mostly utilize marine areas with just a little protection	37	18
Should fully utilize marine areas with almost no protection	3	1

[a] Cell entries are percentages (%). $\chi^2(3, N = 996) = 59.58, p < .001, V = .24$.

Respondents were also asked the extent that they disagreed or agreed with four statements about activities that should be allowed in marine reserves in Oregon. Results in Table 16 show that Phase 2 (I-5 corridor) respondents overwhelmingly agreed (89%) that scientific research should be allowed in these marine reserves. In addition, 52% of these respondents agreed that non-extractive recreation and tourism activities should also be allowed (e.g., surf, swim). Only 27% of these respondents, however, agreed that recreational fishing should be allowed, and the fewest thought that commercial fishing should be allowed (8%). Compared to these Phase 2 (I-5 corridor) respondents, however, Phase 1 (coast) residents were significantly more likely to agree that recreation and tourism activities (59% vs. 52%), recreational fishing (39% vs. 27%), and commercial fishing (22% vs. 8%) should be allowed in these marine reserves.

Table 16. Beliefs about what should be allowed in Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Scientific research should be allowed in marine reserves in Oregon	88	89	.01	.986	.01
Non-extractive recreation / tourism activities (e.g., surfing, swimming) should be allowed in marine reserves in Oregon	59	52	5.15	.023	.07
Recreational fishing should be allowed in marine reserves in Oregon	39	27	15.60	< .001	.12
Commercial fishing should be allowed in marine reserves in Oregon	22	8	40.16	< .001	.19

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

In addition, the questionnaire asked respondents the extent they believed several groups could either be harmed by or benefit from the marine reserves in Oregon (e.g., recreationists, anglers, local businesses, government agencies). Table 17 shows resident opinions about groups that could *benefit* from these reserves, whereas Table 18 shows resident opinions about groups that could be *harmed* by these reserves. Results in Table 17 show the only groups the majority of Phase 2 (I-5 corridor) respondents believed could benefit from these reserves are scientists / researchers (90%), people who live along the Oregon coast (58%), and government agencies (57%). Fewer than the majority of these respondents believed that people recreating in marine areas (38%), local businesses (38%), people who do not live on the coast (36%), and people who fish recreationally (23%) or commercially (14%) would benefit. There were significant differences between Phase 1 (coast) residents and Phase 2 (I-5 corridor) respondents regarding perceived benefits to most of these groups, with Phase 2 respondents indicating higher perceived benefits to scientists / researchers, people who live on the coast, government agencies, people recreating in marine areas, local businesses, and people who do not live on the coast.

Table 17. Beliefs that groups could *benefit* from the Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Scientists / researchers	86	90	3.88	.049	.06
People who live along the Oregon coast	43	58	23.37	< .001	.15
Government agencies	49	57	6.44	.011	.08
People who recreate in marine areas	30	38	6.16	.013	.08
Local businesses	26	38	17.33	< .001	.13
People who *do not* live along Oregon coast	26	36	13.11	< .001	.12
People who fish recreationally	24	23	.14	.711	.01
People who fish commercially	16	14	1.02	.313	.03

[a] Cell entries are percentages (%) of respondents who said group could "slightly or strongly benefit" from the reserves.

Conversely, Table 18 shows the only groups that the majority of Phase 2 (I-5 corridor) respondents believed would be harmed by these reserves are people who fish commercially (77%) or recreationally (57%). Less than the majority of these respondents believed that people who recreate in marine areas (36%), local businesses (27%), and people who live along the Oregon coast (18%) would be harmed by these reserves. These residents believed the groups least likely to be harmed include scientists or researchers (2%), government agencies (7%), and people who do not live along the Oregon coast (9%). Compared to these Phase 2 (I-5 corridor) respondents, however, those living along the coast (Phase 1) were significantly more likely to believe that people who recreate in marine areas, local businesses, and people who live along the coast could be harmed by these reserves.

Table 18. Beliefs that groups could *be harmed* by the Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
People who fish commercially	75	77	.37	.544	.02
People who fish recreationally	59	57	.45	.503	.02
People who recreate in marine areas	44	36	6.78	.009	.08
Local businesses	42	27	24.19	< .001	.15
People who live along the Oregon coast	32	18	25.67	< .001	.16
People who *do not* live along Oregon coast	12	9	1.84	.175	.04
Government agencies	10	7	3.42	.064	.06
Scientists / researchers	4	2	3.32	.068	.06

[a] Cell entries are percentages (%) of respondents who said group could be "slightly or strongly harmed" by the reserves.

Attitudes toward Oregon Marine Reserves. The questionnaires contained four pairs of words, each on 5-point semantic differential scales (e.g., dislike – like, negative – positive), for measuring attitudes toward marine reserves in general (i.e., not specific to Oregon). Table 19 shows that most Phase 2 (I-5 corridor) respondents held positive attitudes toward marine reserves

in general (average attitude = 4.34 / 5.00). These residents believed that marine reserves are beneficial (84%), thought these areas are generally good (84%), believed that marine reserves are positive (84%), and liked the idea of marine reserves (79%). For all of these measures, residents living along the I-5 corridor (Phase 2) were significantly more likely than those along the coast (Phase 1) to report positive attitudes toward marine reserves in general. For example, 84% of Phase 2 (I-5 corridor) respondents thought marine reserves are positive, whereas only 64% of Phase 1 (coast) residents believed that marine reserves are positive.

Table 19. Attitudes toward marine reserves in general [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 or t	p value	ϕ or r_{pb}
Marine reserves in general are beneficial	67	84	37.74	< .001	.19
Marine reserves in general are good	65	84	47.25	< .001	.22
Marine reserves in general are positive	64	84	51.35	< .001	.22
I like the idea of marine reserves in general	65	79	26.71	< .001	.16
Average (mean) attitude [b]	3.80	4.34	8.18	< .001	.25

[a] Items were asked on 5-point semantic differential scales (e.g., 1 "dislike" to 5 "like;" 1 "harmful" to 5 "beneficial"). Cell entries are percentages (%) that selected 4 or 5 (i.e., positive attitude) for each pair unless specified as averages (means).

[b] Represents the overall average (mean) on 5-point scale for all 4 items combined where 1 represents the most negative attitude and 5 represents the most positive attitude. Cronbach alpha reliability = .97 (coast), .96 (I-5 corridor).

These same four scales were used for measuring specific attitudes toward establishing marine reserves in Oregon. Table 20 shows similar findings where Phase 2 (I-5 corridor) respondents expressed positive attitudes toward establishing marine reserves in Oregon (average attitude = 4.31 / 5.00). These residents believed that marine reserves in Oregon are beneficial (82%) and positive (81%), thought these areas are good (81%), and liked the idea of these reserves (79%). For all of these measures, residents of the I-5 corridor (Phase 2) were significantly more likely than those on the coast (Phase 1) to have positive attitudes toward establishing marine reserves in Oregon. For example, 81% of Phase 2 (I-5 corridor) respondents thought establishing these reserves is good, whereas only 60% of Phase 1 (coast) residents believed establishment is good.

Table 20. Attitudes toward establishing marine reserves in Oregon [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 or t	p value	ϕ or r_{pb}
Marine reserves in Oregon are beneficial	66	82	34.94	< .001	.19
Marine reserves in Oregon are positive	62	81	43.66	< .001	.21
Marine reserves in Oregon are good	60	81	53.25	< .001	.23
I like the idea of marine reserves in Oregon	61	79	36.87	< .001	.19
Average (mean) attitude [b]	3.70	4.31	8.24	< .001	.25

[a] Items were asked on 5-point semantic differential scales (e.g., 1 "dislike" to 5 "like;" 1 "harmful" to 5 "beneficial"). Cell entries are percentages (%) that selected 4 or 5 (i.e., positive attitude) for each pair unless specified as averages (means).

[b] Represents the overall average (mean) on 5-point scale for all 4 items combined where 1 represents the most negative attitude and 5 represents the most positive attitude. Cronbach alpha reliability = .98 (coast), .97 (I-5 corridor).

A second approach for measuring attitudes toward marine reserves in Oregon was context-specific and addressed both affective (i.e., emotional) evaluations and belief questions about 11 possible advantages and seven possible disadvantages associated with outcomes of these reserves. To measure beliefs associated with *advantages*, respondents were asked the extent they disagreed or agreed that marine reserves in Oregon would: (a) "benefit marine areas in general," (b) "protect the diversity of marine species," (c) "increase marine species populations," (d) "allow depleted marine species populations to recover," (e) "improve the economy," (f) "increase tourism," (g) "benefit people in local communities," (h) "improve scientific understanding of marine areas," (i) "allow scientists to monitor marine areas over time," (j) "improve our understanding of marine areas," and (k) "improve the ability to manage marine areas." To measure beliefs associated with possible *disadvantages* associated with these reserves, respondents were asked the extent they disagreed or agreed that marine reserves in Oregon would: (a) "not be effective in conserving marine areas," (b) "cause some species to become overpopulated," (c) "prevent people from using the reserve areas," (d) "reduce recreational fishing," (e) "reduce commercial fishing," (f) "be difficult to enforce," and (g) "cost a lot to manage." Responses were measured on 5-point scales of 1 "strongly disagree" to 5 "strongly agree," which were then recoded to "disagree" and "agree" for analysis purposes.

Table 21. Attitudes toward potential *advantages* of Oregon marine reserves [a]

Marine reserves in Oregon would:	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Allow scientists to monitor marine areas	80	91	21.98	< .001	.14
Allow depleted populations to recover	76	86	17.96	< .001	.13
Improve our understanding of marine areas	76	85	12.78	< .001	.11
Improve scientific understanding of marine areas	74	85	18.02	< .001	.13
Protect the diversity of marine species	73	85	22.87	< .001	.15
Benefit marine areas in general	71	85	27.28	< .001	.16
Increase marine species populations	71	80	9.86	.002	.10
Improve the ability to manage marine areas	57	67	10.32	.001	.10
Increase tourism	39	54	22.48	< .001	.15
Benefit people in local communities	44	49	1.58	.209	.04
Improve the economy	30	27	.87	.352	.03

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

Results in Table 21 present respondent beliefs toward potential *advantages* of these marine reserves, and show strong agreement among Phase 2 (I-5 corridor) respondents that marine reserves in Oregon would allow scientists to monitor these areas (91%), allow depleted populations to recover (86%), improve our understanding of marine areas (85%), improve

scientific understanding of marine areas (85%), protect the diversity of marine species (85%), benefit marine areas in general (85%), and increase species populations (80%). These residents were least likely to agree that these marine reserves would improve the economy (27%), benefit local communities (49%), and increase tourism (54%). Compared to residents living on the coast (Phase 1), those along the I-5 corridor (Phase 2) were more likely to agree with almost all of these potential benefits of marine reserves in Oregon, and this pattern was statistically significant for nine of the 11 variables. For example, 85% of Phase 2 (I-5 corridor) respondents agreed that establishing marine reserves in Oregon would benefit marine areas in general, whereas significantly fewer (71%) Phase 1 (coast) residents agreed with this statement.

Table 22. Affective evaluations of potential *advantages* of Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Allowing depleted populations to recover	89	96	18.73	< .001	.13
Protecting the diversity of marine species	85	94	24.88	< .001	.15
Improving our understanding of marine areas	85	94	22.02	< .001	.14
Improving scientific understanding of marine areas	84	93	23.47	< .001	.15
Allowing scientists to monitor marine areas	82	92	21.39	< .001	.14
Benefitting marine areas in general	81	92	24.72	< .001	.15
Benefitting people in local communities	84	90	9.18	.002	.09
Improving the ability to manage marine areas	73	84	18.46	< .001	.13
Improving the economy	83	83	.05	.831	.01
Increasing marine species populations	82	82	.04	.848	.01
Increasing tourism	75	72	.99	.321	.03

[a] Cell entries are percentages (%) of respondents who evaluated the potential advantage as "*good*."

To measure affective evaluations, respondents were then asked if they felt each of these possible advantages associated with marine reserves in Oregon would be good or bad on 5-point scales of 1 "very bad" to 5 "very good." For analysis purposes, the scales were recoded into dichotomous "bad" and "good" responses. Results in Table 22 present the extent that respondents believed that potential *advantages* of these marine reserves are *good*, and show Phase 2 (I-5 corridor) respondents overwhelmingly felt that these advantages would be good with positive evaluations ranging from a of low of 72% for "increasing tourism" to a high of 96% for "allowing depleted populations to recover." Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were significantly more likely to consider almost all of these advantages to be positive (i.e., good). For example, 94% of Phase 2 (I-5 corridor) respondents versus 85% of Phase 1 (coast) residents evaluated protecting the diversity of marine species as good. Evaluations associated with improving the economy, increasing marine species populations, and

increasing tourism, however, were statistically similar between Phase 1 (coast) and Phase 2 (I-5 corridor) respondents.

Results in Table 23 present respondent beliefs toward potential *disadvantages* of these marine reserves and show that 59% of Phase 2 (I-5 corridor) respondents agreed the reserves would reduce commercial fishing and 50% agreed they would reduce recreational fishing. More than 40% also agreed the reserves would be difficult to enforce (49%), cost a lot to manage (46%), and prevent people from using these areas (44%). These residents were least likely to agree that the marine reserves would not be effective in conserving marine areas (7%) and may cause some species to become overpopulated (31%). There were only a few statistical differences in these perceptions of disadvantages between these respondents living along the I-5 corridor (Phase 2) compared to those on the coast (Phase 1) with those on the coast significantly more likely to agree that these marine reserves would cost a lot to manage, prevent people from using the areas, and not be effective in conserving marine areas.

Table 23. Attitudes toward potential *disadvantages* of Oregon marine reserves [a]

Marine reserves in Oregon would:	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Reduce commercial fishing	60	59	.05	.832	.01
Reduce recreational fishing	52	50	.11	.744	.01
Be difficult to enforce	53	49	1.66	.197	.04
Cost a lot to manage	55	46	8.13	.004	.09
Prevent people from using the reserve areas	52	44	6.45	.011	.08
Cause some species to become overpopulated	32	31	.05	.819	.01
Not be effective in conserving marine areas	17	7	25.50	< .001	.16

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

Results in Table 24 present the extent that respondents believed these potential *disadvantages* of the marine reserves are *bad*. In total, 83% of Phase 2 (I-5 corridor) respondents indicated that the reserves not being effective in conserving marine areas would be bad. Another 67% of these respondents considered that it would be bad if these reserves caused some species to become overpopulated, and 66% believed that costly management of the reserves would be bad. More than half (59%) of these respondents indicated that it would be bad if these reserves were difficult to enforce. There were significant differences between these Phase 2 (I-5 corridor) respondents and Phase 1 (coast) residents, with those along the coast more likely to evaluate costly management, reduced recreational and commercial fishing, and prevention of people from using the reserves as bad. Conversely, Phase 2 (I-5 corridor) respondents were more likely to indicate that the reserves not being effective in conserving marine areas would be bad.

Table 24. Affective evaluations of potential *disadvantages* of Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Not being effective in conserving marine areas	69	83	29.63	< .001	.17
Causing some species to become overpopulated	62	67	2.98	.084	.05
Costing a lot to manage	72	66	4.16	.041	.06
Being difficult to enforce	58	59	.06	.811	.01
Reducing recreational fishing	62	40	51.18	< .001	.22
Preventing people from using the reserve areas	49	38	11.54	.001	.11
Reducing commercial fishing	52	29	53.73	< .001	.23

[a] Cell entries are percentages (%) of respondents who evaluated the potential disadvantages as "*bad*."

Behavioral Intentions in Response to Oregon Marine Reserves. The questionnaire contained a number of questions measuring behavioral intentions associated with these marine reserves. Respondents were asked, "if you were to be given an opportunity to vote for or against establishing marine reserves in Oregon, how would you vote," followed with a question asking how certain they would vote this way. Table 25 shows 90% of Phase 2 (I-5 corridor) respondents would vote in support of marine reserves in Oregon. This indicates overwhelming majority support for marine reserves in Oregon. Phase 2 (I-5 corridor) respondents (90%) would be significantly more likely than Phase 1 (coast) residents (69%) to vote in favor of these reserves.

Table 25. Intended voting behavior associated with Oregon marine reserves [a]

I would vote…	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
… *for* establishing marine reserves in Oregon	69	90
… *against* establishing marine reserves in Oregon	31	10

[a] Cell entries are percentages (%). $\chi^2(1, N = 1020) = 70.76, p < .001, \phi = .26$.

Almost all Phase 2 (I-5 corridor) respondents were also extremely (49%) or moderately certain (40%) in these voting intentions (Table 26). There were no differences in this certainty between Phase 1 (coast) residents and Phase 2 (I-5 corridor) respondents.

Table 26. Certainty of intended voting behavior associated with Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Extremely certain	47	49
Moderately certain	41	40
Slightly certain	8	7
Not certain	4	3

[a] Cell entries are percentages (%). $\chi^2(3, N = 1028) = .57, p = .904, V = .02$.

In addition, respondents also indicated the extent they disagreed or agreed with three related statements: (a) "I intend to support having marine reserves in Oregon," (b) "I am against establishing marine reserves in Oregon," and (c) "I would likely be in favor of implementing marine reserves in Oregon." Results in Table 27 show that the majority of Phase 2 (I-5 corridor) respondents agreed they would be in favor of implementing marine reserves in Oregon (76%), and they intended to support having these reserves (75%). Only 5% of these respondents agreed they were against establishing marine reserves in Oregon. There were significant differences between these Phase 2 (I-5 corridor) respondents and Phase 1 (coast) residents, with Phase 2 (I-5 corridor) respondents indicating higher favor (76% vs. 61%) and support (75% vs. 57%) of these marine reserves, whereas Phase 1 (coast) residents were slightly more likely to agree that they were against establishing these reserves (19% vs. 5%).

Table 27. Behavioral intentions associated with Oregon marine reserves [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
I would likely be in favor of implementing marine reserves in Oregon	61	76	28.98	< .001	.17
I intend to support having marine reserves in Oregon	57	75	38.88	< .001	.19
I am against establishing marine reserves in Oregon	19	5	47.21	< .001	.21

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

Residents were also asked how they would change their behavior if one or more of these five marine sites was designated as a reserve. Table 28 shows the largest percentage of Phase 2 (I-5 corridor) respondents (67%) would likely still visit these marine sites the same amount, whereas 23% would likely visit these sites more often. Only 10% of these respondents reported they would visit less often. There was one significant difference between these Phase 2 (I-5 corridor) respondents and Phase 1 (coast) residents, with those living along the I-5 corridor (Phase 2) indicating higher likelihood of visiting the same amount (67% vs. 45%). There were no differences between these two sample populations in the proportions visiting more or less often.

Table 28. Potential changes in behavior in response to Oregon marine reserves [a]

I would visit the marine sites(s)…	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
… the same amount	45	67	48.51	< .001	.22
… more often	22	23	.07	.795	.01
… less often	13	10	1.61	.204	.04

[a] Cell entries are percentages (%) of respondents who said they would engage in the action.

Trust in ODFW to Manage Oregon Marine Reserves. Residents were asked the extent they disagreed or agreed with nine statements measuring their level of social trust in Oregon Department of Fish and Wildlife (ODFW) to address and manage marine reserves in Oregon (e.g., trust to provide the best available information about these marine reserves, trust to make good decisions regarding management of these marine reserves). Results in Table 29 show that 69% of Phase 2 (I-5 corridor) respondents agreed they trusted ODFW to provide truthful information about these marine reserves, 67% trusted this agency to manage these reserves using the best available information about non-human species, and 65% trusted ODFW to manage these reserves using the best available information about human uses of these areas. The lowest proportion of these respondents trusted ODFW to use public input to inform management of marine reserves (51%). Responses to only two of these nine statements statistically differed between these Phase 2 (I-5 corridor) respondents and Phase 1 (coast) residents, with Phase 2 (I-5 corridor) respondents more likely to agree they trusted ODFW to manage marine reserves using the best available information about human uses of these areas (65% vs. 57%), and make good decisions regarding management of marine reserves (64% vs. 54%).

Table 29. Trust in ODFW to manage Oregon marine reserves [a]

I trust ODFW to:	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 value	*p* value	ϕ
Provide truthful information about marine reserves	64	69	2.71	.100	.05
Manage marine reserves using the best available information about non-human species in these areas (e.g., fish, birds)	63	67	1.68	.195	.04
Manage marine reserves using the best available information about human uses of these areas	57	65	6.84	.009	.08
Make good decisions regarding management of marine reserves	54	64	10.32	.001	.10
Provide the best available information about marine reserves	62	62	.58	.809	.01
Work with other organizations to inform management of marine reserves	54	60	3.67	.055	.06
Provide me with enough information to decide what actions I should take regarding marine reserves	54	60	2.40	.122	.05
Provide timely information about marine reserves	55	56	.26	.607	.02
Use public input to inform management of marine reserves	49	51	.25	.618	.02

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.

Assigned Values for Oregon Marine Reserves. The questionnaire for Phase 2 (I-5 corridor) asked residents to evaluate the importance of 23 assigned values associated with Oregon's marine reserves. Responses were on 9-point scales of 0 "not important" to 8 "extremely

important." These questions were not asked in the Phase 1 (coastal residents) questionnaire. Figure 2 shows the most important values for Oregon's marine reserves were "protect habitat for marine species" (94% important [73% extremely]), "protect endangered species" (93% important [74% extremely]), "preserve unique wild plants or animals" (93% important [71% extremely]), "protect water quality" (92% important [74% extremely]), "preserve natural areas for scientific discovery or study" (92% important [63% extremely]), "protect endangered places" (92% important [67% extremely]), and "protect marine species, water, or plants that have value even if humans do not benefit from them" (91% important [67% extremely]). The least important assigned values were "provide spiritual inspiration" (45% important [14% extremely]), "provide income for the tourism industry" (66% important [20% extremely]), "provide opportunities to maintain or regain physical or mental health through contact with nature" (72% important [28% extremely]), and "provide recreation opportunities" (72% important [24% extremely]).

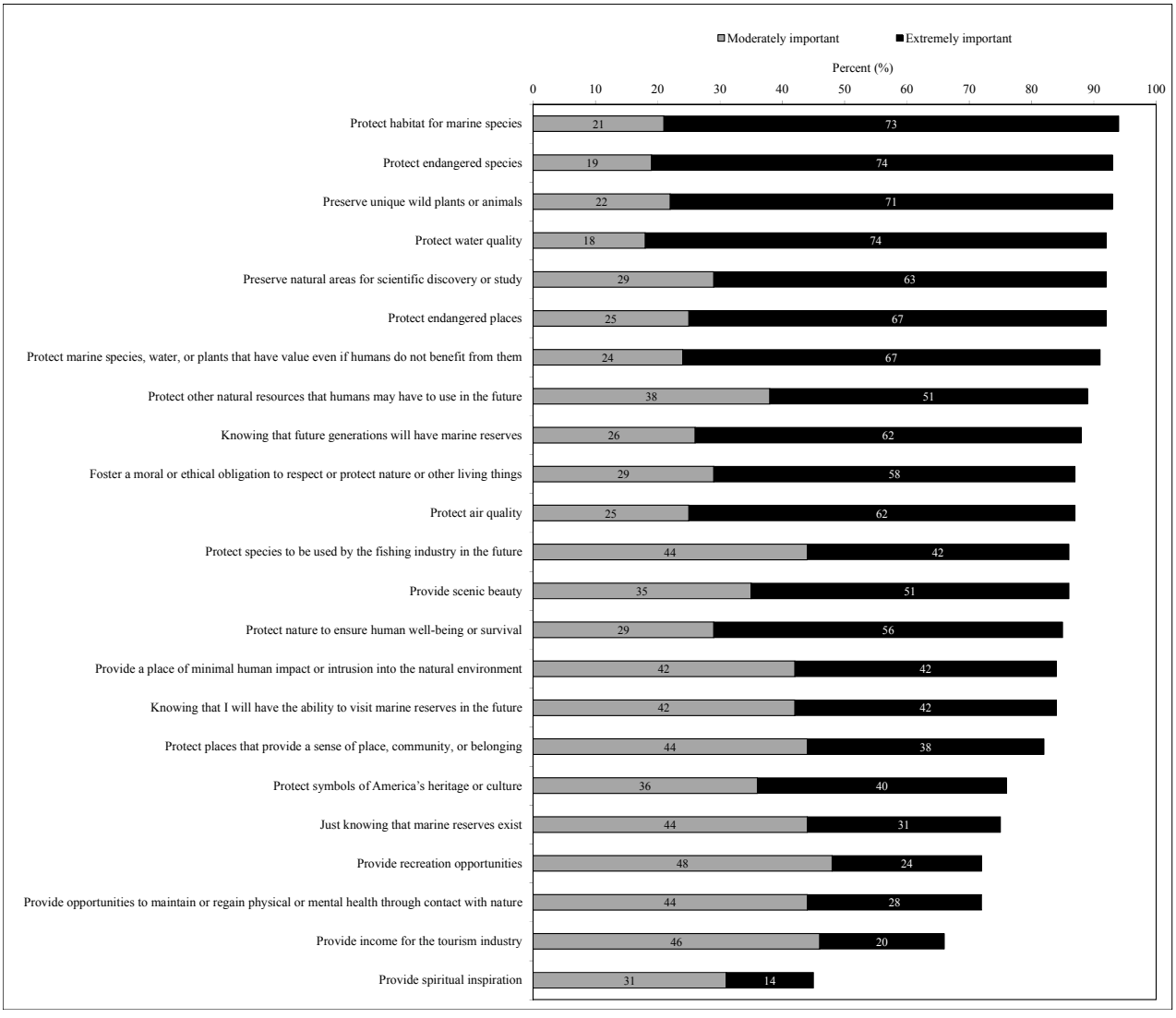

Figure 2. Assigned values for Oregon marine reserves

Phase 2 (I-5 corridor) respondents were then asked to prioritize up to three of these assigned values that they believed were the most important for Oregon's marine reserves to provide. Figure 3 shows that according to Phase 2 (I-5 corridor) respondents, the most important assigned values for Oregon's marine reserves to provide were "protect marine species, water, or plants that have value even if humans do not benefit from them" (29%), "protect habitat for marine species" (28%), "protect endangered species" (27%), and "protect water quality" (27%). Least important were "provide spiritual inspiration" (2%), "just knowing that marine reserves exist" (2%), and "protect symbols of America's heritage or culture" (2%).

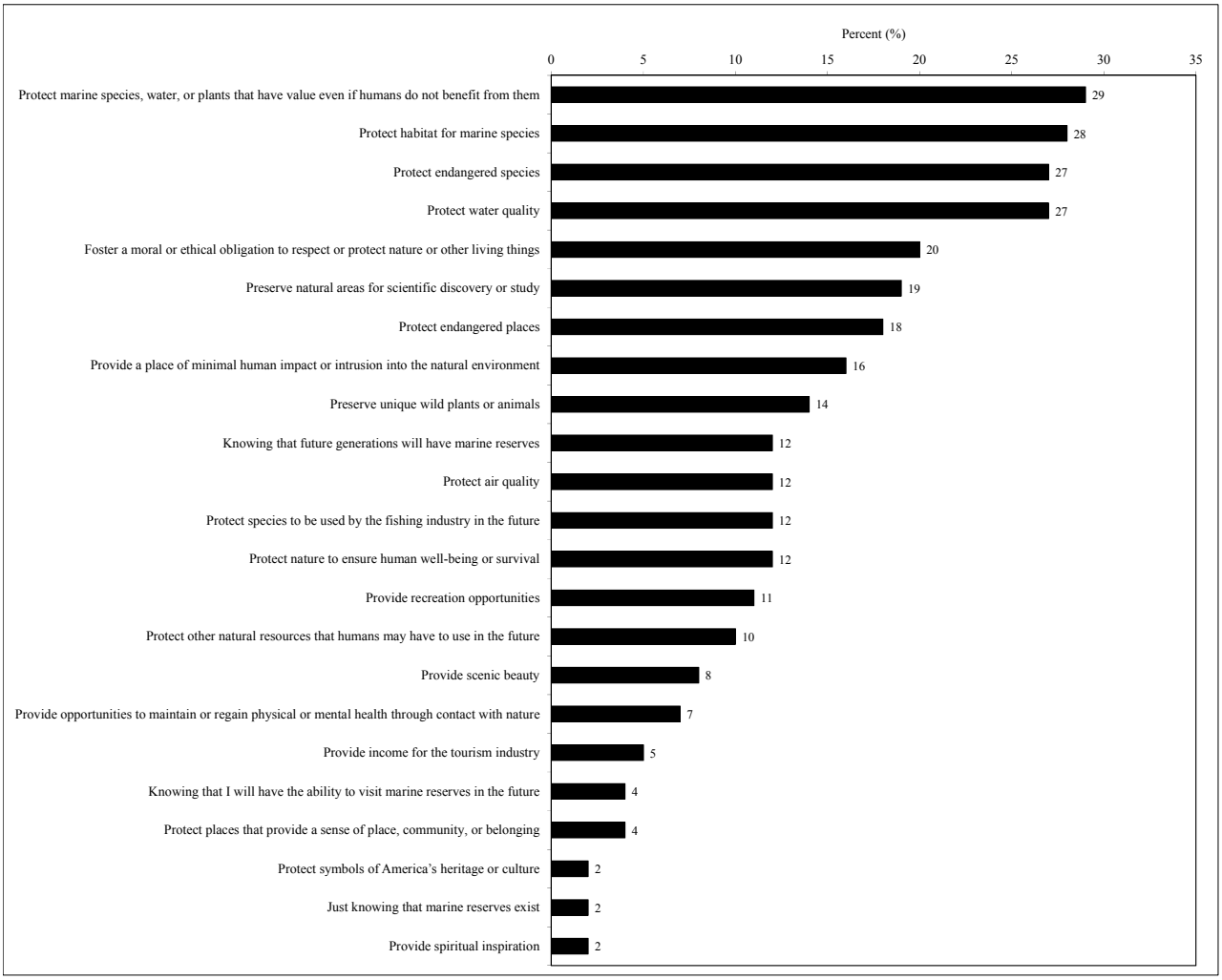

Figure 3. Most important assigned values for Oregon marine reserves to provide (percentages sum to more than 100% because respondents could select up to three choices).

Perceptions of Oregon's Marine Reserves as "Marine Wilderness." The questionnaire for Phase 2 (I-5 corridor) also asked residents a number of questions measuring their perceptions of Oregon's marine reserves if they were ever to be designated or called "wilderness" (i.e., "marine wilderness"). These questions were not asked in the Phase 1 (coastal residents) questionnaire.

Text in the Phase 2 (I-5 corridor) questionnaire first informed respondents that: "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." Respondents were then asked several questions. Respondents were asked, for example, the extent they agreed or disagreed that "there are areas of the ocean in the world that could be called wilderness," "there are areas of the ocean along Oregon's coast that could be called wilderness," and "Oregon's marine reserves could be called wilderness." Figure 4 shows that 80% of Phase 2 (I-5 corridor) respondents believed there are areas of the ocean in the world that could be called wilderness, and 72% thought there are areas of the ocean along Oregon's coast that could be called wilderness. Although still a majority, fewer of these respondents (60%) believed that Oregon's marine reserves could be called wilderness.

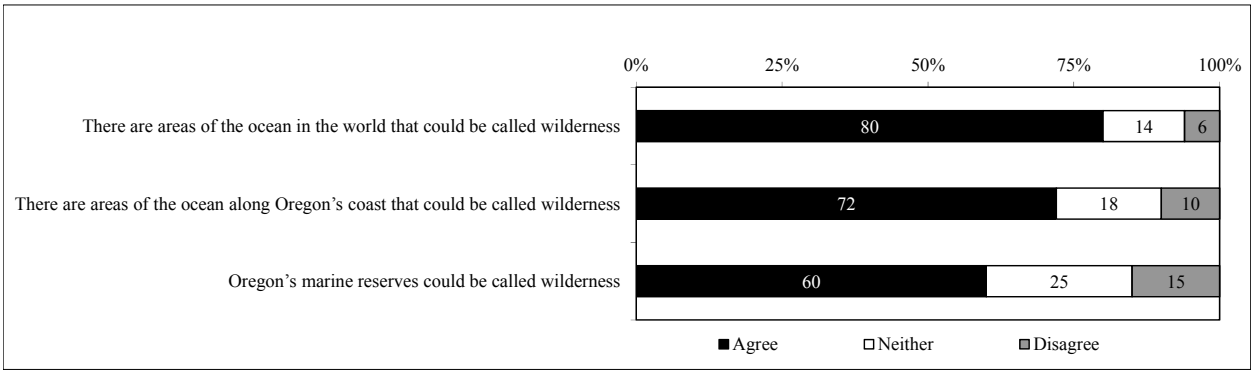

Figure 4. Applicability of wilderness to marine areas

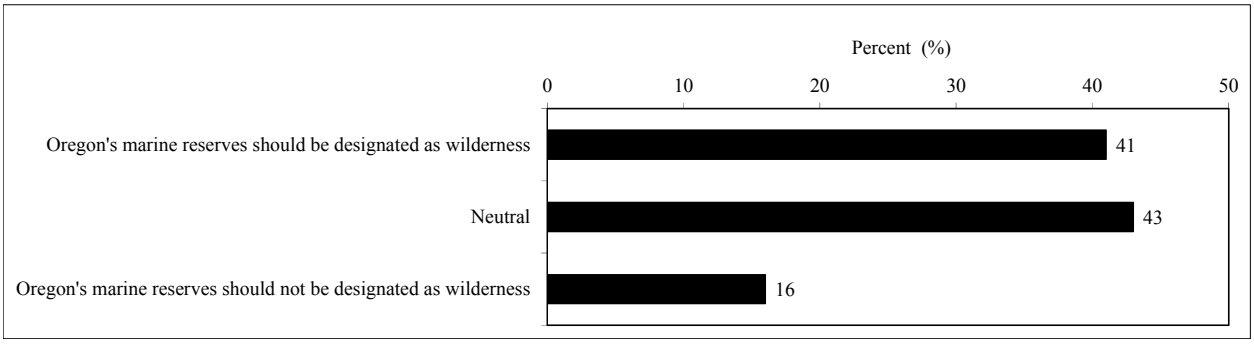

Figure 5. Beliefs about whether Oregon's marine reserves should be designated as wilderness

These respondents were also asked whether they thought Oregon's marine reserves actually should or should not be designated as wilderness. Figure 5 shows that 41% of Phase 2 (I-5

corridor) respondents believed that Oregon's marine reserves should be designated as wilderness and only 16% believed these areas should not be designated as wilderness. The largest proportion of these respondents (43%), however, was noncommittal and had a neutral opinion.

Respondents were also asked two questions measuring how their attitudes would change if Oregon's marine reserves were designated as wilderness. Figure 6 shows that the majority of Phase 2 (I-5 corridor) respondents (61%) would not change their opinion of Oregon's marine reserves if they were ever to be designated as wilderness, whereas 28% would have a more positive opinion about these areas and 11% would have a more negative opinion. Similarly, Figure 7 shows that 28% of these respondents would like Oregon's marine reserves more if they were ever to be designated as wilderness, only 10% would like these areas less, and the majority (63%) would not change their opinion.

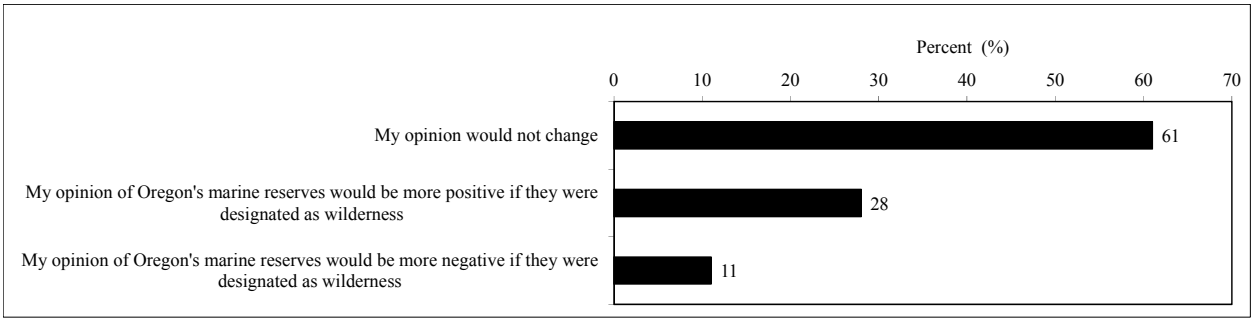

Figure 6. Change in positive or negative opinions if Oregon's marine reserves were designated as wilderness

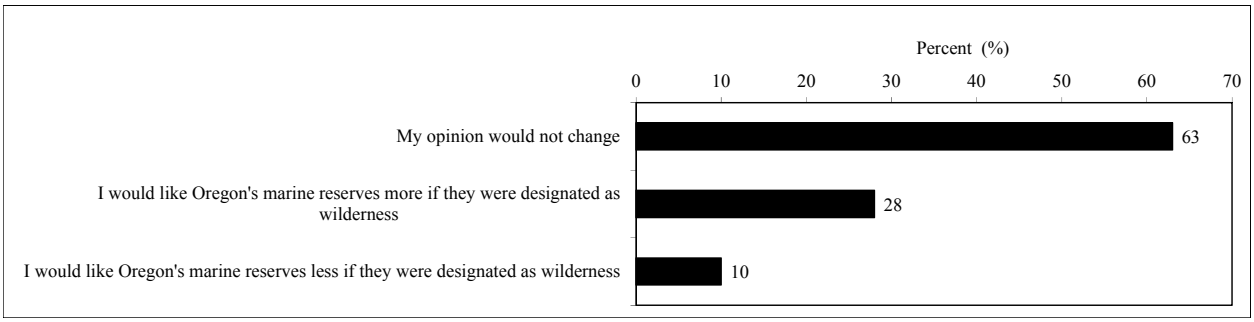

Figure 7. Change in extent that Oregon's marine reserves would be liked or disliked if designated as wilderness

Finally, respondents were asked if they would want to visit any of the five currently designated marine reserves in Oregon (Figure 1) less often, the same amount, or more often if one or more of these reserves were ever to be designated as wilderness. Figure 8 shows that the majority of Phase 2 (I-5 corridor) respondents (64%) would want to visit Oregon's marine reserves the same amount as they do now if these areas were ever to be designated as wilderness, whereas 21% would want to visit these areas more often and 15% would visit less often.

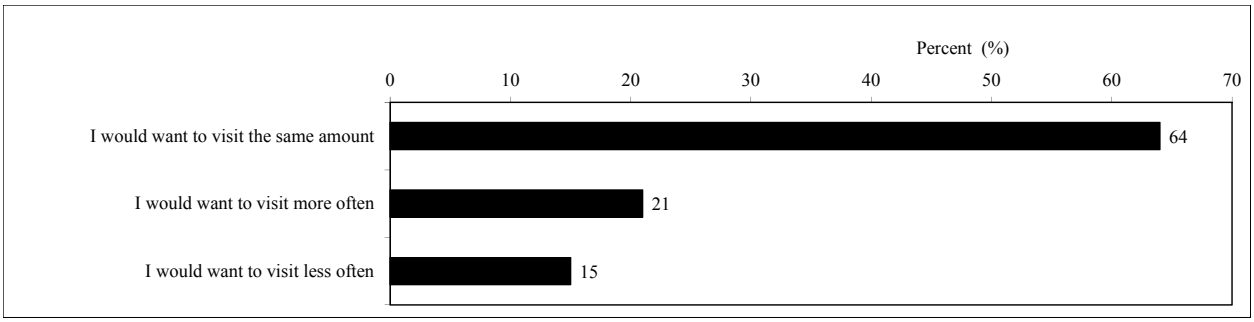

Figure 8. Change in visitation if Oregon's marine reserves were designated as wilderness

Perceptions of Marine Areas and the Environment

Environmental Value Orientations. The public is heterogeneous and often exhibits different preferences, attitudes, and behaviors in relation to natural resource issues such as marine reserves. To understand various subgroups of the public, individuals have been grouped according to their value orientations toward general objects such as natural resources (Bright, Manfredo, & Fulton, 2000; Vaske & Needham, 2007). As stated earlier in this report, value orientations refer to general classes of objects and are revealed through the pattern, direction, and intensity of basic beliefs (Fulton et al., 1996; Vaske & Donnelly, 1999). In most studies, these basic beliefs have reliably and consistently factored into value orientation continuums such as the biocentric – anthropocentric continuum for broader environmental value orientations (Steel, List, & Shindler, 1994; Vaske & Donnelly, 1999), and the protection – use continuum for value orientations related to more specific objects such as forests, wildlife, and coral reefs (Bright et al., 2000; Fulton et al., 1996; Needham, 2010; Vaske & Needham, 2007). Users arranged along these value orientation continuums can then be grouped into more meaningful homogeneous subgroups (Bright et al., 2000; Vaske & Needham, 2007). These value orientations are important because they can be useful for predicting higher order cognitions such as attitudes, behavioral intentions, and actual behaviors associated with natural resources (Fulton et al., 1996; Vaske & Donnelly, 1999). Individuals with more biocentric or protectionist orientations, for example, may be less inclined to engage in consumptive behaviors such as fishing or hunting, and they may be more likely to support policies such as species reintroduction or habitat protection.

Broad environmental value orientations of residents were measured using eight variables from the popular New Environmental Paradigm Scale (NEP, Dunlap & Van Liere, 1978) and its more recent version, the Revised New Ecological Paradigm Scale (Dunlap et al., 2000). These variables are shown in Table 30. On average, Phase 2 (I-5 corridor) respondents agreed with the four biocentric variables and disagreed with the four anthropocentric variables. For example,

these residents agreed most strongly with the belief statement that "humans are severely abusing the environment" (78% agreed) and disagreed most strongly with the statement that "the so-called ecological crisis facing humankind has been greatly exaggerated" (only 12% agreed). Reliability of variables measuring these dimensions was examined using Cronbach's alpha reliability coefficients (α), which range from 0 (no reliability) to 1 (perfect reliability). An alpha coefficient of ≥ .65 is considered by most researchers to be acceptable and indicates that multiple variables are measuring the same broad concept or dimension, and justifies combining these individual variables into broad composite indices representing the dimensions (Cortina, 1993; Nunnally & Bernstein, 1994; Vaske, 2008). The alpha reliability coefficients for Phase 2 (I-5 corridor) respondents were .78 for the anthropocentric orientation and .77 for the biocentric orientation, suggesting that variables for each reliably measured their respective orientation. Deletion of any variable from its respective orientation did not improve reliability.

Table 30. Reliability analyses of NEP items measuring environmental value orientations [a]

Orientations and variables	Mean [b]	Percent Agree (%)	Item total correlation	Alpha (α) if deleted	Cronbach alpha (α)
Anthropocentric orientation					.79, .78
The earth has plenty of natural resources if we just learn how to develop them	-.10, -.20	40, 35	.51, .49	.78, .78	
Humans have the right to modify the natural environment to suit their needs	-.70, -.56	18, 21	.60, .54	.73, .75	
Humans were meant to rule over the rest of nature	-.83, -.97	17, 16	.64, .69	.71, .67	
The so-called ecological crisis facing humankind has been greatly exaggerated	-.67, -.99	20, 12	.63, .64	.71, .70	
Biocentric orientation					.83, .77
Humans are severely abusing the environment	.74, 1.03	67, 78	.69, .67	.76, .66	
The balance of nature is very delicate and easily upset	.93, .96	75, 76	.60, .52	.80, .74	
When humans interfere with nature, it often produces disastrous consequences	.81, .81	69, 68	.72, .61	.75, .70	
Plants and animals have as much right as humans to exist	.56, .78	60, 66	.62, .51	.79, .76	

[a] First numbers listed = Phase 1 (coast), second numbers listed = Phase 2 (I-5 corridor).

[b] Variables measured on 5-point recoded scales of -2 strongly disagree to +2 strongly agree.

K-means cluster analysis was then performed on these variables to group respondents. Cluster analysis classifies individuals into groups based on statistical patterns of responses across multiple variables or factors (Hair & Black, 2000). A series of two to six group cluster analyses showed that a four group solution provided the best fit for the data. To validate this solution, the data were randomly sorted and a cluster analysis was conducted after each of five random sorts. These analyses supported the solution identifying four distinct clusters of residents, labeled:

- Strong biocentric orientation
- Moderate biocentric orientation
- Mixed anthropocentric – biocentric orientation
- Anthropocentric orientation

These groups were compared in terms of their responses to the original value orientation belief statements. Residents with an anthropocentric orientation agreed with all anthropocentric statements and disagreed with all biocentric variables. Those with a mixed anthropocentric – biocentric orientation mostly had neutral mean or average responses (i.e., midpoint on scales) for all variables. Residents with a moderate biocentric orientation slightly agreed with all biocentric variables and slightly disagreed with all anthropocentric variables. Residents with a strong biocentric orientation strongly agreed with all biocentric variables and strongly disagreed with all anthropocentric variables. In total, the largest proportion of Phase 2 (I-5 corridor) respondents had a strong biocentric (i.e., nature oriented) environmental value orientation (38%) and the smallest proportion had an anthropocentric orientation (i.e., human oriented, 8%). In addition, 26% of these respondents had a moderate biocentric orientation and 29% had a mixed anthropocentric – biocentric orientation. Table 31 shows that Phase 2 (I-5 corridor) respondents (38%) were slightly more likely than Phase 1 (coast) residents (34%) to have a strong biocentric orientation. Conversely, Phase 1 residents on the coast (12%) were slightly more likely than Phase 2 (I-5 corridor) respondents (8%) to have an anthropocentric orientation. These differences, however, were not statistically significant.

Table 31. Environmental value orientations [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Strong biocentric orientation	34	38
Moderate biocentric orientation	25	26
Mixed anthropocentric – biocentric orientation	29	29
Anthropocentric orientation	12	8

[a] Cell entries are percentages (%). $\chi^2(3, N = 975) = 7.12, p = .068, V = .09$.

Value Orientations toward Marine Areas. Research has also measured value orientations toward more specific objects such as forests, wildlife, and coral reefs, as opposed to broader environmental value orientations. This is especially important in the context of marine areas, which are the focus of this project. An individual's specific value orientation toward marine areas, therefore, was constructed from four variables designed to measure protectionist basic

beliefs toward marine areas and four variables measuring use related beliefs about marine areas. These variables are shown in Table 32. On average, Phase 2 (I-5 corridor) respondents disagreed with all of the use related variables and agreed with most of the protectionist statements. For example, these residents agreed most strongly with the belief statement that "marine areas have value whether humans are present or not" (91% agreed) and disagreed most strongly with the statements that "marine areas exist primarily to be used by humans" and "the economic values that marine areas provide for humans are more important than the rights of species in these marine areas" (only 5% agreed). Alpha reliability coefficients were .87 for the use orientation and .77 for the protectionist orientation, suggesting that variables for each reliably measured their respective orientation. Deletion of any of these variables did not improve reliability.

Table 32. Reliability analyses of items measuring value orientations toward marine areas [a]

Orientations and variables	Mean [b]	Percent Agree (%)	Item total correlation	Alpha (α) if deleted	Cronbach alpha (α)
Use orientation toward marine areas					.85, .87
The primary value of marine areas is to provide benefits for humans	-.42, -.79	24, 15	.71, .70	.80, .85	
The needs of humans are more important than those of marine areas	-.48, -.76	18, 11	.70, .69	.81, .85	
Marine areas exist primarily to be used by humans	-.77, -1.05	13, 5	.73, .81	.80, .80	
The economic values that marine areas provide for humans are more important than the rights of species in these marine areas	-.55, -1.11	16, 5	.63, .71	.84, .84	
Protectionist orientation toward marine areas					.72, .77
Marine areas have value whether humans are present or not	1.22, 1.38	89, 91	.42, .56	.71, .72	
Marine areas should be protected for their own sake rather than to simply meet the needs of humans	.77, 1.07	68, 79	.59, .64	.60, .66	
Marine areas should have rights similar to the rights of humans	.01, .25	35, 44	.56, .65	.62, .65	
I object to fishing, harvesting, or collecting species from marine areas because it violates the rights of these species	-.50, -.46	21, 19	.49, .45	.67, .77	

[a] First numbers listed = Phase 1 (coast), second numbers listed = Phase 2 (I-5 corridor).

[b] Variables measured on 5-point recoded scales of -2 strongly disagree to +2 strongly agree.

K-means cluster analysis was performed on these variables to group respondents based on their value orientations toward marine areas. A series of two to six group cluster analyses showed that a four group solution provided the best fit for the data. To validate this solution, the data were randomly sorted and a cluster analysis was conducted after each of five random sorts. These additional analyses supported the solution identifying four distinct groups of residents, labeled:

- Strong protectionist orientation
- Moderate protectionist orientation
- Mixed protection – use orientation

- Use orientation

These groups were compared in terms of their responses to the original value orientation belief statements. Respondents with use orientations agreed with all of the use related statements and disagreed with all protectionist variables. Those with a mixed protection – use orientation mostly had neutral mean or average responses (i.e., midpoint on scales) for all variables. Residents with a moderate protectionist orientation slightly agreed with all protectionist variables and slightly disagreed with all of the use related variables. Residents with a strong protectionist orientation strongly agreed with all protectionist variables and strongly disagreed with all of the use related variables. In total, the largest proportion of Phase 2 (I-5 corridor) respondents had a strong protection value orientation toward marine areas (42%) and the smallest proportion had a use related orientation toward these areas (human oriented, 10%). Another 28% of these residents had a moderate protectionist orientation toward marine areas, and 21% had a mixed protection – use orientation toward these areas. Table 33 shows that Phase 2 (I-5 corridor) respondents were more likely than Phase 1 (coast) residents to have a strong protectionist orientation toward marine areas (42% vs. 26%), whereas Phase 1 (coast) residents were more likely to have mixed protection – use (28% vs. 21%) or just use orientations (16% vs. 10%) toward these areas.

Table 33. Value orientations toward marine areas [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)
Strong protectionist orientation	26	42
Moderate protectionist orientation	29	28
Mixed protection – use orientation	28	21
Use orientation	16	10

[a] Cell entries are percentages (%). $\chi^2(3, N = 948) = 31.47, p < .001, V = .18$.

Demographic and Residential Characteristics

In total, 51% of Phase 2 (I-5 corridor) respondents were female and 49% were male, the average age was 48 years old with 39% of the sample under 40 years of age and 61% 40 years of age and older (48% over 50 years), and the majority (62%) had a four-year college degree or an advanced degree (e.g., MS, PhD, Law, Medical; Table 34). Only 2% of these respondents had someone in their household who was employed in the commercial fishing industry. Compared to Phase 1 (coast) residents, these Phase 2 (I-5 corridor) respondents were younger, more likely to be female, more highly educated, and less likely to have someone in their household who was employed in the commercial fishing industry.

Table 34. Demographic characteristics [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 or t	p value	ϕ, V, or r_{pb}
Sex			8.09	.004	.09
Male	58	49			
Female	42	51			
Adult age [b]			150.47	< .001	.37
20 – 29 years old	4	20			
30 – 39 years old	9	19			
40 – 49 years old	9	14			
50 – 59 years old	17	18			
60 – 69 years old	33	18			
70 – 79 years old	20	8			
80 – 89 years old	7	3			
90 or older	2	1			
Average adult age (mean years)	61	48	13.06	< .001	.38
Anyone in household employed in the commercial fishing industry			5.66	.017	.07
No	95	98			
Yes	5	2			
Highest level of education achieved			46.71	< .001	.21
Less than high school diploma	1	2			
High school diploma or GED	28	20			
2 year associates or trade school	28	16			
4 year college degree (BS)	23	38			
Advanced degree (MS, PhD, Law, Medical)	20	24			

[a] Cell entries are percentages (%) unless specified as averages (means).

[b] Nobody under 18 years of age was allowed to be sampled due to university institutional review board (IRB) regulations on research involving human subjects.

Table 35. Residential characteristics [a]

	Phase 1 (Coast)	Phase 2 (I-5 Corridor)	χ^2 or t value	p value	V or r_{pb}
Length of time lived in Oregon			27.01	< .001	.16
Less than 10 years	20	20			
10 – 19 years	14	14			
20 – 29 years	13	23			
30 – 39 years	11	12			
40 – 49 years	9	9			
50 – 59 years	13	9			
60 – 69 years	12	8			
70 or more years	8	6			
Average (mean years)	34	30	2.96	.003	.09
Length of time lived at current residence			20.28	.005	.14
Less than 10 years	47	60			
10 – 19 years	26	18			
20 – 29 years	14	12			
30 – 39 years	6	4			
40 – 49 years	4	3			
50 – 59 years	2	2			
60 – 69 years	1	1			
70 or more years	0	0			
Average (mean years)	14	11	3.36	.001	.10

[a] Cell entries are percentages (%) unless specified as averages (means).

Phase 2 (I-5 corridor) respondents had lived an average of 30 years in Oregon and 11 years at their current residence (Table 35). Compared to Phase 1 (coast) residents, these Phase 2 (I-5 corridor) respondents spent slightly less time living in Oregon and at their current residence.

The questionnaire for Phase 2 (I-5 corridor) also asked residents a number of additional questions measuring some more of their sociodemographic characteristics. These additional questions were not asked in the Phase 1 (coastal residents) questionnaire. Table 36 shows that the largest proportion of Phase 2 (I-5 corridor) respondents lived in large cities of 250,000 or more people (32%), followed by cities of 100,000 to 249,999 people (23%), small cities of 25,000 to 99,999 people (21%), towns of 5,000 to 24,999 people (15%), and farm or rural areas with few people (6%). Few of these respondents (6%) owned a second home on the Oregon coast with these individuals using the home mainly for recreation and property investment. The majority of Phase 2 (I-5 corridor) respondents had a liberal political orientation (51%), whereas 26% considered themselves to be moderate and 23% had a conservative orientation.

Table 36. Additional demographic characteristics

	Phase 2 (I-5 Corridor) [a]
Residential community	
Large city (250,000 or more people)	32
City (100,000 to 249,999 people)	23
Small city (25,000 to 99,999 people)	21
Town (5,000 to 24,999 people)	15
Small town (less than 5,000 people)	3
Farm or rural area with few people	6
Ownership of a second home on the Oregon coast	
No	94
Yes [b]	6
Political orientation	
Very conservative	5
Somewhat conservative	18
Moderate	26
Somewhat liberal	32
Very liberal	19

[a] Cell entries are percentages (%).

[b] Main purpose of the second home: recreation (57% of the 6%), property investment (27% of the 6%), and other (e.g., inheritance, woodlot, 10% of the 6%).

Table 37 shows that the majority of Phase 2 (I-5 corridor) respondents lived in Portland region counties, such as Multnomah (31%), Washington (16%), and Clackamas (12%). An additional 11% lived in Lane county (e.g., Eugene), 8% lived in Marion county (e.g., Salem), 6% lived in Jackson county (e.g., Medford), 4% lived in Benton (e.g., Corvallis) and Polk counties (e.g., Dallas), and 2% lived in Linn county (e.g., Albany). These results are consistent with population proportions of

counties reported in the U.S. Census. In terms of cities, the largest proportion of Phase 2 (I-5 corridor) respondents lived in Portland (32%), followed by Eugene (8%), Beaverton (7%), Salem (4%), Corvallis (4%), and Hillsboro (3%).

Table 37. Location of residence

	Phase 2 (I-5 Corridor) [a]
County	
Multnomah (i.e., Portland area)	31
Washington (i.e., Portland area)	16
Clackamas (i.e., Portland area)	12
Lane (i.e., Eugene area)	11
Marion (i.e., Salem area)	8
Jackson (i.e., Medford area)	6
Benton (i.e., Corvallis area)	4
Polk (i.e., Dallas area)	4
Linn (i.e., Albany area)	2
Other (e.g., Columbia, Douglas, Josephine, Yamhill)	6
City / town	
Portland	32
Eugene	8
Beaverton	7
Salem	4
Corvallis	4
Hillsboro	3
Medford	2
Tigard	2
Oregon City	2
Monmouth	2
Keizer	2
Milwaukie	2
Lake Oswego	2
Other (e.g., Springfield, Clackamas, Ashland)	28

[a] Cell entries are percentages (%).

Predicting Support and Knowledge Associated with the Marine Reserves

This section extends these descriptive and bivariate results by understanding predictors of: (a) support for the marine reserves in Oregon, (b) self-assessed and factual knowledge associated with these reserves, and (c) trust in ODFW to manage these reserves. Only data from Phase 2 (I-5 corridor) are reported here, but they are compared to results from Phase 1 (coast) described in Needham and Cramer (2016). To assess predictors of support for the marine reserves, reliability analyses were first conducted for each multiple-item concept (intentions to support, attitudes, environmental value orientations, ecological concern, trust in the managing agency, self-assessed knowledge about the reserves). Table 38 shows that reliabilities for all of these concepts were extremely high (Cronbach alphas = .85 to .97) and much higher than the accepted cut-off (> .65).

Deletion of any item from its respective concept did not improve reliability, so all items were retained. These results justify combining items into composite indices for each concept.

Table 38. Reliability analysis of multiple cognitions associated with Oregon's marine reserves

	Item Total Correlation	Alpha if deleted	Cronbach Alpha
Behavioral intentions (support for marine reserves in Oregon)			.91
Voting certainty [a]	.71	.91	
Support having marine reserves in Oregon [b]	.82	.78	
Against establishing marine reserves in Oregon [b]	.73	.80	
In favor of implementing marine reserves in Oregon [b]	.84	.77	
Attitudes toward marine reserve establishment [c]			.97
Harmful to beneficial	.91	.97	
Negative to positive	.95	.96	
Dislike to like	.92	.97	
Bad to good	.94	.96	
Environmental Value Orientations [b]			.85
The balance of nature is very delicate and easily upset	.48	.84	
Human interference with nature has disastrous consequences	.54	.83	
Humans are severely abusing the environment	.70	.82	
Plants and animals have as much right as humans to exist	.58	.83	
Earth has plenty of natural resources if we learn to develop them	.44	.85	
The so-called ecological crisis has been greatly exaggerated	.69	.82	
Humans have the right to modify environment to suit their needs	.56	.83	
Humans were meant to rule over the rest of nature	.70	.81	
Ecological Concern [d]			.94
Ecological health of marine animals in Oregon	.84	.92	
Ecological health of marine fish in Oregon	.84	.92	
Ecological health of marine areas (ocean) in Oregon	.87	.91	
Ecological health of rivers and streams in Oregon	.77	.93	
Ecological health of bays and estuaries in Oregon	.83	.92	
Trust in Oregon Department of Fish and Wildlife (I trust ODFW to:) [b]			.96
Provide truthful information about marine reserves	.86	.95	
Manage using best information about non-human species	.88	.96	
Provide best available information about marine reserves	.86	.95	
Manage using best information about human use of areas	.84	.95	
Work with other organizations to manage marine reserves	.84	.96	
Provide me enough information to make marine reserve actions	.79	.96	
Make good decisions regarding marine reserve management	.88	.95	
Provide timely information about marine reserves	.82	.96	
Use public input to inform marine reserve management	.78	.96	
Self-assessed knowledge of Oregon marine reserves			.91
How informed do you feel about marine reserves in Oregon [e]	.60	.90	
How knowledgeable do you feel about marine reserves in Oregon [f]	.64	.89	
Understand purpose of marine reserves in Oregon [g]	.71	.88	
Understand role of science in marine reserves in Oregon [g]	.74	.88	
Understand role of public in marine reserves in Oregon [g]	.77	.87	
Understand where marine reserves are located in Oregon [g]	.67	.88	
Understand how marine reserves would be managed in Oregon [g]	.73	.88	
Understand rules/regulations of marine reserves in Oregon [g]	.82	.87	

[a] Coded from -4 "extremely certain to vote against marine reserves" to 4 "extremely certain to vote for marine reserves"
[b] Coded on a 5-point scale of 1 "strongly disagree" to 5 "strongly agree"
[c] Coded on 5-point scales from 1 "dislike/bad/negative/harmful" to 5 "like/good/positive/beneficial"
[d] Coded on 9-point scale from 0 "not healthy" to 8 "very healthy"
[e] Coded on 4-point scale from 1 "not informed" to 4 "extremely informed"
[f] Coded on 4-point scale from 1 "not knowledgeable" to 4 "extremely knowledgeable"
[g] Coded on 9-point scale from 0 "do not understand" to 8 "fully understand"

Table 39. Influence of cognitions and demographics on behavioral intentions to support Oregon's marine reserves with all variables included

	Dependent variable: Behavioral intentions (support) [a, b]					
Independent variables	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Factual knowledge [c]	.101	.044	-.011	.088	-.004	.905
Self-assessed knowledge [d]	.168	.001	.072	.032	.076	.024
Trust in ODFW [e]	.326	< .001	.083	.027	.090	.003
Attitude toward marine reserves [f]	.813	< .001	.489	.029	.637	< .001
Environmental value orientations [g]	.637	< .001	.161	.035	.180	< .001
Ecological concern [h]	-.311	< .001	-.025	.016	-.050	.107
Sex (male) [i]	-.160	.001	.049	.040	.035	.222
Age (in years)	-.173	< .001	-.002	.002	-.038	.299
Years lived in Oregon (in years)	-.252	< .001	-.001	.001	-.023	.557
Member of commercial fishing industry [j]	-.002	.969	-.222	.119	-.053	.063
Education level (college degree or more) [k]	.162	.001	-.039	.044	-.027	.372
Community (large city 100,000+ people) [l]	.218	< .001	-.032	.041	-.023	.442
Political orientation (liberal) [m]	.504	< .001	.063	.050	.045	.208

[a] $R^2 = .710$; $F = 73.04$; $p < .001$.
[b] Computed from 4 variables (Table 38). Higher number means more support for the marine reserves.
[c] Computed as number of total correct answers to 11 factual questions (Table 11).
[d] Computed from 8 variables (Table 38) with higher number having more knowledge.
[e] Computed from 9 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38) with higher number meaning more trust.
[f] Computed from 4 variables on a 5-point semantic differential scale (dislike/like, bad/good, negative/positive, harmful/beneficial; Table 38) with higher number having more positive attitude.
[g] Computed from 8 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38) with higher number being more biocentric or environmentally oriented.
[h] Computed from 5 variables on scale from 0 "not healthy" to 8 "very healthy" (Table 38).
[i] Item coded as 0 "female" or 1 "male."
[j] Item coded as 0 "no" or 1 "yes."
[k] Item coded as 0 "less than 4-year college degree" or 1 "4-year college degree or more"
[l] Item coded as 0 "small city, town, or rural area (< 100,00 people)" or 1 "large city (100,00 or more people)."
[m] Item coded as 0 "conservative or moderate" or 1 "liberal."

In addition to these multiple-item concepts, the questionnaire also contained 11 true / false or multiple choice statements measuring respondent factual knowledge associated with the Oregon marine reserves. These results are presented in Table 11. This combined factual knowledge score, all of the concepts listed in Table 38, and several sociodemographic variables (Tables 34-37) were included in a multiple regression analysis predicting behavioral intentions to vote in support or opposition toward Oregon's marine reserves. Table 39 presents results of this analysis. Initially, all of the predictors were significantly correlated with support for these marine reserves, except having a member of the household employed in the commercial fishing industry. The strongest correlations were attitude toward these reserves (r = .81), environmental value orientations (r = .64), and political orientation (liberal, r = .50). When controlling for all of the other predictors in the multiple regression model, however, only four of the 13 predictors were significantly related to support for marine reserves in Oregon: attitudes toward the marine

reserves, environmental value orientations, trust in the managing agency (ODFW), and self-assessed knowledge about the reserves. All of the other predictors were not statistically related to intentions to vote in support of these marine reserves.

Table 40. Influence of cognitions and demographics on behavioral intentions to support Oregon's marine reserves with only significant variables included

	Dependent variable: Behavioral intentions (support) [a, b]					
Independent variables	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Self-assessed knowledge [c]	.158	.001	.080	.026	.082	.002
Trust in ODFW [d]	.341	< .001	.066	.026	.072	.011
Attitude toward marine reserves [e]	.812	< .001	.519	.027	.666	< .001
Environmental value orientations [f]	.614	< .001	.178	.030	.195	< .001

[a] $R^2 = .701$; $F = 248.53$; $p < .001$.
[b] Computed from 4 variables (Table 38). Higher number means more support for the marine reserves.
[c] Computed from 8 variables (Table 38) with higher number having more knowledge.
[d] Computed from 9 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38) with higher number meaning more trust.
[e] Computed from 4 variables on a 5-point semantic differential scale (dislike/like, bad/good, negative/positive, harmful/beneficial; Table 38) with higher number having more positive attitude.
[f] Computed from 8 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38) with higher number being more biocentric or environmentally oriented.

This regression model was then re-run with only the significant predictors from Table 39. Attitudes toward the marine reserves, environmental value orientations, trust in the managing agency (ODFW), and self-assessed knowledge all had significant positive relationships with intentions to vote in support of marine reserves in Oregon (Table 40). Phase 2 (I-5 corridor) respondents who were more likely to vote in support of the marine reserves in Oregon had more favorable attitudes toward these reserves, had more biocentric or environmentally oriented value orientations, were more trusting of ODFW, and believed they were more knowledgeable of these reserves. The strongest predictor of intentions to vote in support of these marine reserves was attitudes toward the reserves ($\beta = .67$) followed by value orientations ($\beta = .20$), self-assessed knowledge ($\beta = .08$), and trust ($\beta = .07$). Taken together, these four concepts collectively predicted 70% of the variance in intentions to vote in support for marine reserves in Oregon ($R^2 = .70$). With the exception of self-assessed knowledge, these results from Phase 2 (I-5 corridor) respondents were identical to Phase 1 (coast) residents, as attitudes, value orientations, and trust were also significant predictors for Phase 1 (coast) residents (Needham & Cramer, 2016).

Additional multiple regression analyses examined the influence of information sources on these intentions to support or oppose the marine reserves. Initially, four of the predictors were significantly positively correlated with support for these marine reserves: community or environmental groups (r = .14), work or school (r = .11), social media websites (r = .10), and radio news / programs (r = .09; Table 41). Two of the predictors were significantly negatively correlated with support for these marine reserves: fishing regulations brochures (r = -.17) and discussions with government agency employees (r = -.11). When controlling for all of the other predictors in the multiple regression model, however, only three of the 13 sources of information about marine reserves in Oregon were significantly related to intentions to vote in support of the marine reserves in Oregon: discussions with government agency employees, fishing regulations brochures, and community or environmental groups. All of the other predictors were not significantly related to support for the marine reserves in Oregon.

Table 41. Influence of sources of information on behavioral intentions to support Oregon's marine reserves with all variables included

	Dependent variable: Behavioral intentions (support) [a, b]					
Independent variables – Sources of information about marine reserves in Oregon [c]	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Newspaper articles	.063	.181	-.002	.047	-.003	.958
Radio news / programs	.092	.050	.053	.049	.072	.281
Television news / programs	.087	.064	.044	.051	.062	.394
Magazine articles / books	.056	.239	-.057	.054	-.079	.291
Government agency websites	.091	.053	.061	.052	.070	.246
Social websites (e.g., Facebook, Twitter)	.104	.027	.070	.060	.072	.244
Other websites	.075	.112	-.009	.053	-.012	.857
Fishing regulations brochures	-.170	< .001	-.144	.038	-.215	< .001
Government agency employees	-.111	.019	-.330	.084	-.231	< .001
Community or environmental groups	.138	.003	.153	.056	.170	.007
Work or school	.110	.202	.075	.046	.110	.104
Friends or family members	.014	.766	-.005	.046	-.007	.909
Meetings or presentations	.053	.264	.029	.073	.025	.694

[a] R^2 = .119; F = 4.54; p <.001.
[b] Computed from 4 variables (Table 38). Higher number means more support for the marine reserves.
[c] Measured on 4-point scale from 0 "never" to 4 "often."

The model was then re-run with only the significant predictors. As indicated in Table 42, the only variable that had a significant positive relationship with intentions to support the marine reserves in Oregon was community or environmental groups. Phase 2 (I-5 corridor) respondents who communicated with community or environmental groups about these marine reserves were more likely to support these reserves. This result is consistent with Phase 1 (coast) residents (Needham & Cramer, 2016). Fishing regulations brochures and discussions with government agency employees, however, both had significant negative relationships with support for marine

reserves in Oregon. This result is not consistent with Phase 1 (coast) respondents (Needham & Cramer, 2016). It is possible that the fishing regulations brochures are most predominately used by anglers, and these individuals are likely most concerned about limitations on fishing imposed by these marine reserves, so the negative relationship could be explained more by user group (i.e., anglers) than how individuals learn about the reserves. The strongest significant predictor of support was community or environmental groups (β = .27). The weakest predictor was discussions with government agency employees (β = -.15). Taken together, however, these three sources only predicted 10% of the variance in intentions to support (R^2 = .10); clearly there are other information sources that predict support.

Table 42. Influence of sources of information on behavioral intentions to support Oregon's marine reserves with only significant variables included

	Dependent variable: Behavioral intentions (support) [a, b]					
Independent variables – Sources of information about marine reserves in Oregon [c]	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Fishing regulations brochures	-.190	< .001	-.143	.032	-.214	< .001
Government agency employees	-.089	.054	-.213	.075	-.147	.005
Community or environmental groups	.143	.002	.244	.045	.270	< .001

[a] R^2 = .095; F = 16.094; p <.001.
[b] Computed from 4 variables (Table 38). Higher number means more support for the marine reserves.
[c] Measured on 4-point scale from 0 "never" to 4 "often."

Table 43. Influence of sources of information on self-assessed knowledge of Oregon's marine reserves with all variables included

	Dependent variable: Self-assessed knowledge [a, b]					
Independent variables – Sources of information about marine reserves in Oregon [c]	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Newspaper articles	.516	< .001	.114	.038	.155	.003
Radio news / programs	.479	< .001	.043	.039	.056	.273
Television news / programs	.479	< .001	.009	.041	.013	.820
Magazine articles / books	.535	< .001	.100	.043	.133	.021
Government agency websites	.497	< .001	.157	.042	.171	< .001
Social websites (e.g., Facebook, Twitter)	.402	< .001	-.061	.048	-.061	.199
Other websites	.501	< .001	.090	.042	.112	.033
Fishing regulations brochures	.429	< .001	.080	.031	.113	.009
Government agency employees	.339	< .001	.017	.067	.012	.796
Community or environmental groups	.476	< .001	.070	.045	.074	.121
Work or school	.468	< .001	.082	.037	.115	.026
Friends or family members	.498	< .001	.063	.036	.085	.083
Meetings or presentations	.395	< .001	.011	.059	.009	.856

[a] R^2 = .488; F = 32.28; p <.001.
[b] Computed from 8 variables (Table 38). Higher number means more knowledge.
[c] Measured on 4-point scale from 0 "never" to 4 "often."

The next analysis examined these sources of information as possible predictors of self-assessed knowledge of Oregon's marine reserves. Table 43 presents results of this analysis. Initially, all of

the predictors were significantly correlated with self-assessed knowledge with the strongest correlations being magazine articles / books (r = .54), newspaper articles (r = .52), and websites other than social media and government websites (r = .50). When controlling for all of the other predictors in the multiple regression model, six of the 13 predictors were significantly related to self-assessed knowledge about these marine reserves: newspaper articles, magazines / books, government agency websites, other websites, fishing regulations brochures, and work or school (Table 43). All of the other predictors were not significantly related to self-assessed knowledge about marine reserves in Oregon.

The model was then re-run with only these significant predictors. As indicated in Table 44, six variables had significant positive relationships with self-assessed knowledge about these marine reserves: newspaper articles, magazines / books, government agency websites, other websites, fishing regulations brochures, and work or school. This means that Phase 2 (I-5 corridor) respondents who learned about the marine reserves through newspapers, magazines / books, government agency websites, other websites, fishing regulations brochures, and work or school were more likely to believe they were more knowledgeable about these reserves. Both newspaper articles and government agency websites were also significant predictors for Phase 1 (coast) residents (Needham & Cramer, 2016). The strongest significant predictor of self-assessed knowledge among Phase 2 (I-5 corridor) respondents was newspaper articles (β = .22). This is consistent with Phase 1 (coast) residents (Needham & Cramer, 2016). The weakest significant predictor was websites other than social media and government websites (β = .11). Taken together, these six sources of information predicted 48% of the variance in self-assessed knowledge about the reserves (R^2 = .48).

Table 44. Influence of sources of information on self-assessed knowledge of Oregon's marine reserves with only significant variables included

	Dependent variable: Self-assessed knowledge [a, b]					
Independent variables – Sources of information about marine reserves in Oregon [c]	Zero-order correlation (*r*)	*p*-value	*B*	*SEB*	*β*	*p*-value
Newspaper articles	.513	< .001	.159	.032	.219	< .001
Magazine articles / books	.537	< .001	.119	.036	.159	.001
Government agency websites	.492	< .001	.159	.040	.174	< .001
Other websites	.491	< .001	.087	.037	.108	.020
Fishing regulations brochures	.432	< .001	.101	.028	.143	< .001
Work or school	.466	< .001	.117	.030	.164	< .001

[a] R^2 = .477; F = 68.54; p <.001.
[b] Computed from 8 variables (Table 38). Higher number means more knowledge.
[c] Measured on 4-point scale from 0 "never" to 4 "often."

The next analysis examined the influence of these sources of information on factual knowledge of Oregon's marine reserves (i.e., true / false questions). Table 45 presents results of this analysis. Initially, all of the predictors were significantly correlated with factual knowledge with the strongest correlations being friends or family (r = .42), websites other than social media and government websites (r = .37), and newspaper articles (r = .36). When controlling for all of the other predictors in the multiple regression model, however, only four of the 13 predictors were significantly related to factual knowledge about the marine reserves: newspaper articles, social websites (e.g., Facebook, Twitter), other websites, and friends and family (Table 45). All of the other predictors were not significantly related to factual knowledge about the marine reserves.

Table 45. Influence of sources of information on factual knowledge of Oregon's marine reserves with all variables included

	Dependent variable: Factual knowledge [a, b]					
Independent variables – Sources of information about marine reserves in Oregon [c]	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Newspaper articles	.357	< .001	.032	.016	.121	.048
Radio news / programs	.320	< .001	.007	.017	.024	.689
Television news / programs	.311	< .001	.017	.018	.062	.351
Magazine articles / books	.309	< .001	.001	.019	-.002	.981
Government agency websites	.286	< .001	.028	.018	.085	.126
Social websites (e.g., Facebook, Twitter)	.184	< .001	-.076	.021	-.213	< .001
Other websites	.367	< .001	.054	.018	.189	.003
Fishing regulations brochures	.346	< .001	.022	.013	.088	.097
Government agency employees	.239	< .001	.019	.029	.035	.511
Community or environmental groups	.302	< .001	.015	.019	.043	.452
Work or school	.285	< .001	-.015	.016	-.061	.332
Friends or family members	.419	< .001	.063	.016	.233	< .001
Meetings or presentations	.296	< .001	.021	.025	.049	.398

[a] R^2 = .272; F = 12.33; p <.001.
[b] Computed from 11 variables (Table 11). Higher number means more knowledge.
[c] Measured on 4-point scale from 0 "never" to 4 "often."

The model was then re-run with only significant predictors. As indicated in Table 46, three variables had significant positive relationships with factual knowledge about marine reserves in Oregon: newspaper articles, other websites (i.e., not social media or agency websites), and friends or family. This means that Phase 2 (I-5 corridor) respondents who learned about these reserves through newspaper articles, other websites, and friends or family were more likely to be more factually knowledgeable about these reserves. One variable, social websites (e.g., Facebook, Twitter), had a significant negative relationship with factual knowledge about the marine reserves, suggesting that these respondents who learned about the reserves through social websites were less factually knowledgeable about these reserves. These results are identical to those for Phase 1 (coast) residents (Needham & Cramer, 2016). The strongest significant predictor of factual knowledge among Phase 2 (I-5 corridor) respondents was friends or family

members (β = .29) and the weakest significant predictor was social websites (β = -.18). These four sources of information predicted 25% of the variance in factual knowledge (R^2 = .25).

Table 46. Influence of sources of information on factual knowledge of Oregon's marine reserves with only significant variables included

	Dependent variable: Factual knowledge [a, b]					
Independent variables – Sources of information about marine reserves in Oregon [c]	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Newspaper articles	.365	< .001	.054	.013	.205	< .001
Social websites (e.g., Facebook, Twitter)	.176	< .001	-.065	.019	-.180	.001
Other websites	.359	< .001	.069	.015	.240	< .001
Friends or family members	.417	< .001	.079	.014	.291	< .001

[a] R^2 = .250; F = 37.35; p <.001.
[b] Computed from 11 variables (Table 11). Higher number means more knowledge.
[c] Measured on 4-point scale from 0 "never" to 4 "often."

Table 47. Influence of cognitions and demographics on trust in Oregon Department of Fish and Wildlife with all variables included

	Dependent variable: Trust in ODFW [a, b]					
Independent variables	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Factual knowledge [c]	.050	.322	-.010	.167	-.003	.953
Self-assessed knowledge [d]	.079	.113	.037	.060	.036	.531
Vote for marine reserves [e]	.265	< .001	.021	.031	.056	.498
Attitude toward marine reserves [f]	.302	< .001	.208	.074	.246	.005
Environmental value orientations [g]	.255	< .001	.168	.068	.168	.014
Ecological concern [h]	.085	.091	.116	.029	.206	< .001
Sex (male) [i]	-.132	.008	-.070	.076	-.046	.354
Age (in years)	.001	.985	.002	.003	.039	.537
Years lived in Oregon (in years)	-.038	.449	.001	.003	.013	.847
Member of commercial fishing industry [j]	.048	.342	.091	.224	.020	.685
Education level (college degree or more) [k]	.055	.273	.039	.083	.025	.635
Community (large city 100,000+ people) [l]	.080	.113	.032	.078	.021	.678
Political orientation (liberal) [m]	.102	.043	-.134	.094	-.087	.156

[a] R^2 = .153; F = 5.32; p <.001.
[b] Computed from 9 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38). Higher number means higher trust.
[c] Computed as number of total correct answers to 11 factual questions (Table 11).
[d] Computed from 8 variables (Table 38) with higher number having more knowledge.
[e] Coded from -4 "extremely certain to vote against marine reserves" to 4 "extremely certain to vote for marine reserves" (combination of two survey variables).
[f] Computed from 4 variables on a 5-point semantic differential scale (dislike/like, bad/good, negative/positive, harmful/beneficial; Table 38) with higher number having more positive attitude.
[g] Computed from 8 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38) with higher number being more biocentric or environmentally oriented.
[h] Computed from 5 variables on scale from 0 "not healthy" to 8 "very healthy" (Table 38).
[i] Item coded as 0 "female" or 1 "male."
[j] Item coded as 0 "no" or 1 "yes."
[k] Item coded as 0 "less than 4-year college degree" or 1 "4-year college degree or more"
[l] Item coded as 0 "small city, town, or rural area (< 100,00 people)" or 1 "large city (100,00 or more people)."
[m] Item coded as 0 "conservative or moderate" or 1 "liberal."

The final analysis involved understanding support of the agency (i.e., ODFW) as marine reserve stewards and who supports and trusts this agency in this context. Table 47 presents the results of a multiple regression analysis of cognitive and demographic factors predicting trust in ODFW. Initially, five of the 13 predictors were significantly correlated with agency trust. The strongest positive correlations were attitude toward these reserves (r = .30), intention to vote for the reserves (r = .27), and environmental value orientations (r = .26). Being male was negatively correlated with trust (r = -.13). When controlling for all of the other predictors in the multiple regression model, however, only three of the 13 predictors were significantly related to trust in ODFW: attitudes toward the marine reserves, environmental value orientations, and ecological concern (Table 47). All of the other predictors were not significantly related to trust.

Table 48. Influence of cognitions and demographics on trust in Oregon Department of Fish and Wildlife with only significant variables included

	Dependent variable: Trust in ODFW [a, b]					
Independent variables	Zero-order correlation (*r)*	*p*-value	*B*	*SEB*	*β*	*p*-value
Attitude toward marine reserves [c]	.317	< .001	.261	.048	.307	< .001
Environmental value orientations [d]	.240	< .001	.128	.057	.128	.026
Ecological concern [e]	.081	.089	.128	.027	.225	< .001

[a] R^2 = .148; F = 24.61; p <.001.
[b] Computed from 9 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38). Higher number means higher trust.
[c] Computed from 4 variables on a 5-point semantic differential scale (dislike/like, bad/good, negative/positive, harmful/beneficial; Table 38) with higher number having more positive attitude.
[d] Computed from 8 variables on scale from 1 "strongly disagree" to 5 "strongly agree" (Table 38) with higher number being more biocentric or environmentally oriented.
[e] Computed from 5 variables on scale from 0 "not healthy" to 8 "very healthy" (Table 38).

The model was then re-run with just the significant predictors. As indicated in Table 48, attitudes toward the marine reserves, environmental value orientations, and ecological concern all had significant positive relationships with trust. This means that Phase 2 (I-5 corridor) respondents who were more likely to trust ODFW had more favorable attitudes toward these marine reserves, had more biocentric or environmentally oriented values, and were more likely to perceive ecological resources in the state as healthy. The strongest significant predictor of trust was attitudes toward the reserves (β = .31) followed by ecological concern (β = .23) and environmental value orientations (β = .13). These results are identical to those for Phase 1 (coast) residents (Needham & Cramer, 2016). Taken together, these four concepts collectively predicted 15% of the variance in trust in ODFW for Phase 2 (I-5 corridor) respondents (R^2 = .15).

IMPLICATIONS AND RECOMMENDATIONS

Based on these findings, the following broad implications and recommendations, in no particular order, are made for Oregon marine areas and reserves:

- Although residents overwhelmingly perceived Oregon's marine areas and resources (e.g., ocean, animals, fish) to be moderately or very healthy, fewer than one-third agreed that conditions have improved in recent years. These findings were consistent across both Phase 1 (coast) and Phase 2 (I-5 corridor) respondents. It is clear that residents are concerned about Oregon's marine areas and are an important constituency for agencies to work with, inform, and educate about these areas and efforts that agencies and others are taking to address threats in the areas.

- The majority of residents, especially those in the I-5 corridor (Phase 2), believed that the government should do more to help protect marine areas in Oregon. In addition, less than one-third of respondents agreed that laws protecting these marine areas are too strict or that managers are already doing everything they can to protect these areas. It appears that a large percentage of residents, especially those in the I-5 corridor (Phase 2), believe there is room for improvement in agency management and policies associated with marine conservation in Oregon.

- The organization that almost all residents believed should have the greatest influence in managing Oregon's marine areas was the Oregon Department of Fish and Wildlife (ODFW), but the majority thought that a variety of other groups should also have a major influence (e.g., US Fish and Wildlife Service, Oregon Parks and Recreation Department, National Oceanic and Atmospheric Administration). Residents also trusted most of these groups to contribute to managing this state's marine areas. Phase 2 (I-5 corridor) respondents were more likely than those on the coast (Phase 1) to trust most of these groups and organizations, and believe they should influence management of marine areas in Oregon. Regardless, residents clearly believe that ODFW should be the lead agency for managing these areas, but should also collaborate with several other agencies and organizations in these efforts. These groups should also work together and strive to build and foster trust among residents both along the coast and elsewhere in the state.

- Although more than 60% of respondents have visited at least one of the five marine reserve sites in Oregon and the majority reported understanding the purpose of these

reserves, fewer than 50% felt informed and knowledgeable about these reserves, knew where the reserves are located, and understood the role of science and public involvement in these reserves. Fewer than 30% understood how these reserves are managed, including rules and regulations associated with these areas. Factual knowledge about these reserves was also extremely low with an average of only 36% (Phase 2, I-5 corridor) and 43% (Phase 1, coast) of the factual questions about these reserves answered correctly (i.e., failing grades). In addition, only 17% of I-5 corridor (Phase 2) and 18% of coastal (Phase 1) residents agreed that it was easy to access and find information about the reserves, and only 7% of I-5 corridor (Phase 2) and 13% of coastal (Phase 1) residents agreed that managers have done a good job educating the public about these areas. Although coastal residents (Phase 1) were slightly more knowledgeable of these reserves compared to residents along the I-5 corridor (Phase 2), it is clear that resident knowledge about these reserves is minimal and much more is needed to inform and educate citizens about these areas. Major information campaigns are needed and most residents would prefer this information to be disseminated through conventional channels such as newspapers and television. Education and engagement catering to different audiences and settings, however, may not be needed because of the consistently low self-assessed and factual knowledge across settings. Managers may want to pinpoint messages and facts about the marine reserves and convey these to the entire public, as there are clearly some facts that are understood by few individuals. For example, fewer than 35% of Phase 1 (coast) residents and fewer than 25% of Phase 2 (I-5 corridor) respondents knew: (a) that five marine reserves have been established and where these reserves are located, (b) how these areas are managed and any rules and regulations at these reserves, and (c) that non-extractive recreation and tourism activities are allowed in these reserves. These topic areas should offer a starting point for improving resident knowledge of these reserves.

- The majority of residents believed that scientific research and non-extractive recreation activities should be allowed in Oregon's marine reserves, but did not think that recreational or commercial fishing should be allowed in these areas. Although both types of fishing are not currently permitted in Oregon's marine reserves, they are allowed in some of the adjacent marine protected areas. To avoid public confusion and contention, therefore, it is important for managers to clearly articulate to residents the differences between reserves and protected areas, activities that are allowed within each designation, and the rationale for these different allowances.

- The group that residents believed would benefit most from Oregon's marine reserves is scientists / researchers. Fewer than the majority believed that recreationists, businesses, people who do not live on the coast, and recreational and commercial anglers would benefit. In fact, many residents believed that these other groups, especially recreational and commercial fishing, would be harmed by the reserves. It is important, therefore, for agencies to inform and educate residents about potential benefits of these reserves for all groups, such as the potential for more tourism revenue and its impacts on local businesses, as well as the ability of fish populations to recover thereby enhancing long-term sustainability of the recreational and commercial fishing industries.

- An overwhelming majority of residents had strong positive attitudes toward marine areas in general and marine reserves in Oregon in particular. In addition, almost 70% of coastal residents (Phase 1) and 90% of those along the I-5 corridor (Phase 2) would vote in support of these reserves. There was also strong agreement that these marine reserves would provide advantages (e.g., improve understanding, allow populations to recover, protect species diversity). There was significantly less agreement, however, regarding potential disadvantages associated with these reserves, such as reduced commercial fishing, increased management costs, difficulties with enforcement, and increased restrictions on people using the areas. Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were more likely to agree with these advantages of the reserves and disagree with several of these disadvantages. These disadvantages, however, are still important and realistic because there will always be costs associated with placing sites under protected area designation. When informing and educating residents about these marine reserves, therefore, managers should strive for a transparent and balanced perspective emphasizing not only the potential advantages of these reserves, but also the realistic challenges, disadvantages, and costs likely to be encountered with these areas.

- The majority of both Phase 1 (coast) and Phase 2 (I-5 corridor) residents agreed they trusted the managing agency (ODFW) to manage marine reserves in Oregon. This is important for several reasons. First, trust can influence support of agency goals and objectives. Residents who trust ODFW, for example, may be more likely to support future management actions associated with these reserves. Second, persuasion models (e.g., elaboration likelihood, heuristic systematic) suggest that perceived similarity and trust are important determinants of effective information and education campaigns (Eagly

& Chaiken, 1993). Residents who trust an agency are often more motivated to attend to its informational and educational efforts. Campaign effectiveness may be lower with residents who are less trusting of the managing agency. Third, agencies should strive to understand constituent opinions, values, and goals because to preserve trust and a strong constituent base, management should be tailored to reflect these views whenever practical and feasible. If constituent views are not reflected in management, reasons for inconsistencies should be shared so they can be weighed in relation to considerations of trust. The public now demands and expects involvement in natural resource decision making and, if ignored, may resort to administrative appeals, court cases, and ballot initiatives. Managers, therefore, should seek positive relationships with residents and actively generate and maintain trust by fostering dialogue with citizens.

- The largest proportions of both Phase 1 (coast) and Phase 2 (I-5 corridor) residents had biocentric (i.e., nature-oriented) value orientations toward the environment in general and protectionist orientations toward marine areas in particular. In addition, 60% of Phase 1 (coast) and 82% of Phase 2 (I-5 corridor) respondents believed in protecting Oregon's marine areas with little or no human utilization. Taken together, these results suggest that activities and management strategies encouraging deleterious effects on marine areas are unlikely to be supported by a large number of residents. Multivariate analyses also showed that value orientations can predict attitudes about marine reserves, behavioral intentions toward these areas, and trust in the agency responsible for managing these reserves, so knowing value orientations of residents can be useful for estimating possible reactions to potentially controversial management actions. In addition, value orientations are stable and resistant to change, so attempts to inform individuals with biocentric or protectionist value orientations to consider adopting attitudes and supporting actions that may be harmful to marine areas are unlikely to be successful.

- Compared to Phase 1 (coast) residents, Phase 2 (I-5 corridor) respondents were less knowledgeable of Oregon's marine reserves, but had more positive attitudes and were more supportive of the reserves, more likely to agree with advantages of the reserves, and less likely to agree with disadvantages of the reserves. Despite these differences, both Phase 1 (coast) and Phase 2 (I-5 corridor) residents were highly supportive of these reserves, suggesting relatively widespread support of Oregon's marine reserve system.

- Among Phase 2 (I-5 corridor) respondents, the most important values they assigned to Oregon's marine reserves focused on environmental and scientific attributes such as protecting habitat, species, and water quality, and preserving areas for scientific discovery or study. Their least important values were associated with human uses such as tourism and recreation activities. This is important because these values reported by residents align with the fundamental agency missions of these reserves to "conserve marine habitats and biodiversity" and "serve as scientific reference sites to learn about marine reserves and inform nearshore management."

- Phase 2 (I-5 corridor) respondents were also asked about the idea of marine wilderness. Over 60% of these respondents believed that Oregon's marine reserves could possibly be called marine wilderness in the future, but fewer than the majority believed these reserves should be called marine wilderness and even fewer would change their visitation to these areas or their opinions about these areas if they were ever called marine wilderness. Designating these reserves as marine wilderness, therefore, may not likely provide major appreciable benefits to residents, at least in the short-term. In addition, marine wilderness designation would not likely inspire any major public backlash. If Oregon ever wanted to move in this direction, reactions from this population would tend to be neutral to positive.

- Both Phase 1 (coast) and Phase 2 (I-5 corridor) respondents who were more likely to vote in support of the marine reserves in Oregon had more favorable attitudes toward these reserves, had more biocentric or environmentally oriented value orientations, and were more trusting of the managing agency (i.e., ODFW). These attitudes, value orientations, and trust explained approximately 70% of the variance in support for these marine reserves. From a management perspective, this suggests that it is critically important to take steps toward increasing citizen – agency trust even more, educating residents about these reserves to improve knowledge and foster positive attitudes toward these areas, and connecting agency outreach and communication efforts with residents' value systems.

- Both Phase 1 (coast) and Phase 2 (I-5 corridor) respondents who were most factually knowledgeable of these marine reserves were most likely to learn about these reserves through newspaper articles, friends and family, and internet websites other than social media (e.g., Facebook, Twitter) and government websites. In fact, social media websites had a significant negative relationship with factual knowledge, suggesting that respondents who learned about the reserves through social media were less

knowledgeable about the reserves. These sources of information, however, only explained less than 40% of the variance in factual knowledge across Phase 1 (coast) and Phase 2 (I-5 corridor) respondents, suggesting that there are other predictors and sources that inform factual knowledge associated with these reserves. Regardless, this is important for informing managing agencies about avenues for disseminating communication campaigns about the Oregon marine reserve system.

- Finally, this project used cross-sectional data at two points in time (coastal residents in 2013, I-5 corridor residents in 2016) to provide baseline snapshots of resident perceptions of marine reserves in Oregon at relatively early stages in the implementation of these areas. Although most residents would vote in favor of these reserves, had positive attitudes toward the benefits of these areas, and trusted ODFW to manage these reserves, cognitions can change over time. It is critically important, therefore, for managers to cultivate and maintain this support and trust, and monitor these social conditions over time (e.g., every 5-10 years) to ensure they do not deteriorate.

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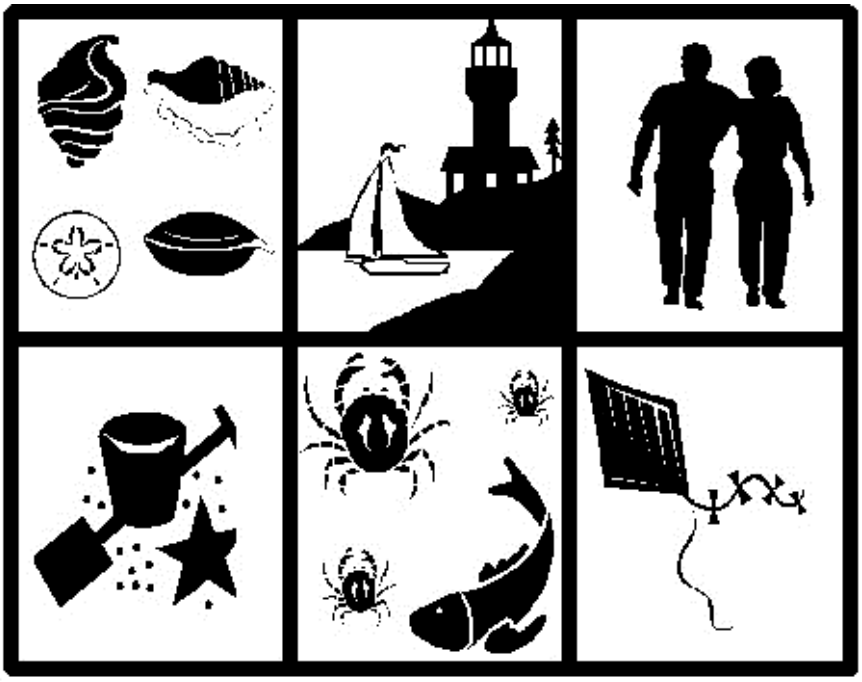
APPENDIX A
MAIL QUESTIONNAIRE: PHASE 1 (COASTAL RESIDENTS)

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

NATURE Natural Resources, Tourism and Recreation Studies Lab

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, not land. Your input is important and will assist resource managers. ***Please complete this survey and return it in the addressed postage-paid envelope as soon as possible.***

1. 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) _____

2. From Question 1 above, what ***ONE activity*** have you participated in most often at marine areas in Oregon? **(write the letter)**

Letter for activity _____

3. How much do you believe that each of the following is a threat to marine areas in Oregon? **(circle one number for *EACH*)**

	No Threat		Slight Threat		Moderate Threat			Extreme Threat	
Water pollution.	0	1	2	3	4	5	6	7	8
Other types of pollution (e.g., marine trash, debris).	0	1	2	3	4	5	6	7	8
Overfishing.	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 purchase / consume seafood.	0	1	2	3	4	5	6	7	8
Wildlife viewers getting too close to marine animals.	0	1	2	3	4	5	6	7	8
Loss or disturbance of marine / coastal habitat.	0	1	2	3	4	5	6	7	8
Invasive / exotic species.	0	1	2	3	4	5	6	7	8
Dams.	0	1	2	3	4	5	6	7	8
Naval or other military operations.	0	1	2	3	4	5	6	7	8
Oil / gas exploration or transport.	0	1	2	3	4	5	6	7	8
Wave energy / power development.	0	1	2	3	4	5	6	7	8
Global climate change.	0	1	2	3	4	5	6	7	8
Changes in water temperature.	0	1	2	3	4	5	6	7	8
Ocean acidification (lower pH, higher acidity).	0	1	2	3	4	5	6	7	8
Rise in sea level.	0	1	2	3	4	5	6	7	8
Tsunamis.	0	1	2	3	4	5	6	7	8

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 port authorities.	0	1	2	3	4	5	6	7	8
Local governments.	0	1	2	3	4	5	6	7	8
Tribal authorities / 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
Oregon Marine Board.	0	1	2	3	4	5	6	7	8
Oregon State Police.	0	1	2	3	4	5	6	7	8
Governor of Oregon.	0	1	2	3	4	5	6	7	8
Pacific Fishery Management Council.	0	1	2	3	4	5	6	7	8
US Coast Guard.	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 port authorities.	0	1	2	3	4	5	6	7	8
Local governments.	0	1	2	3	4	5	6	7	8
Tribal authorities / 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
Oregon Marine Board.	0	1	2	3	4	5	6	7	8
Oregon State Police.	0	1	2	3	4	5	6	7	8
Governor of Oregon.	0	1	2	3	4	5	6	7	8
Pacific Fishery Management Council.	0	1	2	3	4	5	6	7	8
US Coast Guard.	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

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 about your opinions of marine reserves.

7. 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

8. 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

9. 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

10. 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

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

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

12. 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
Most people who are important to me would want me to support establishing marine reserves in Oregon.	1	2	3	4	5
Doing what most people who are important to me would want me to do matters to me.	1	2	3	4	5
Other people would expect me to oppose establishing marine reserves in Oregon.	1	2	3	4	5
I am usually motivated to do what other people expect me to do.	1	2	3	4	5
The people in my life whose opinions I value the most would want me to favor establishing marine reserves in Oregon.	1	2	3	4	5
Doing what people in my life whose opinions I value the most would want me to do is important to me.	1	2	3	4	5

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 state 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*)**

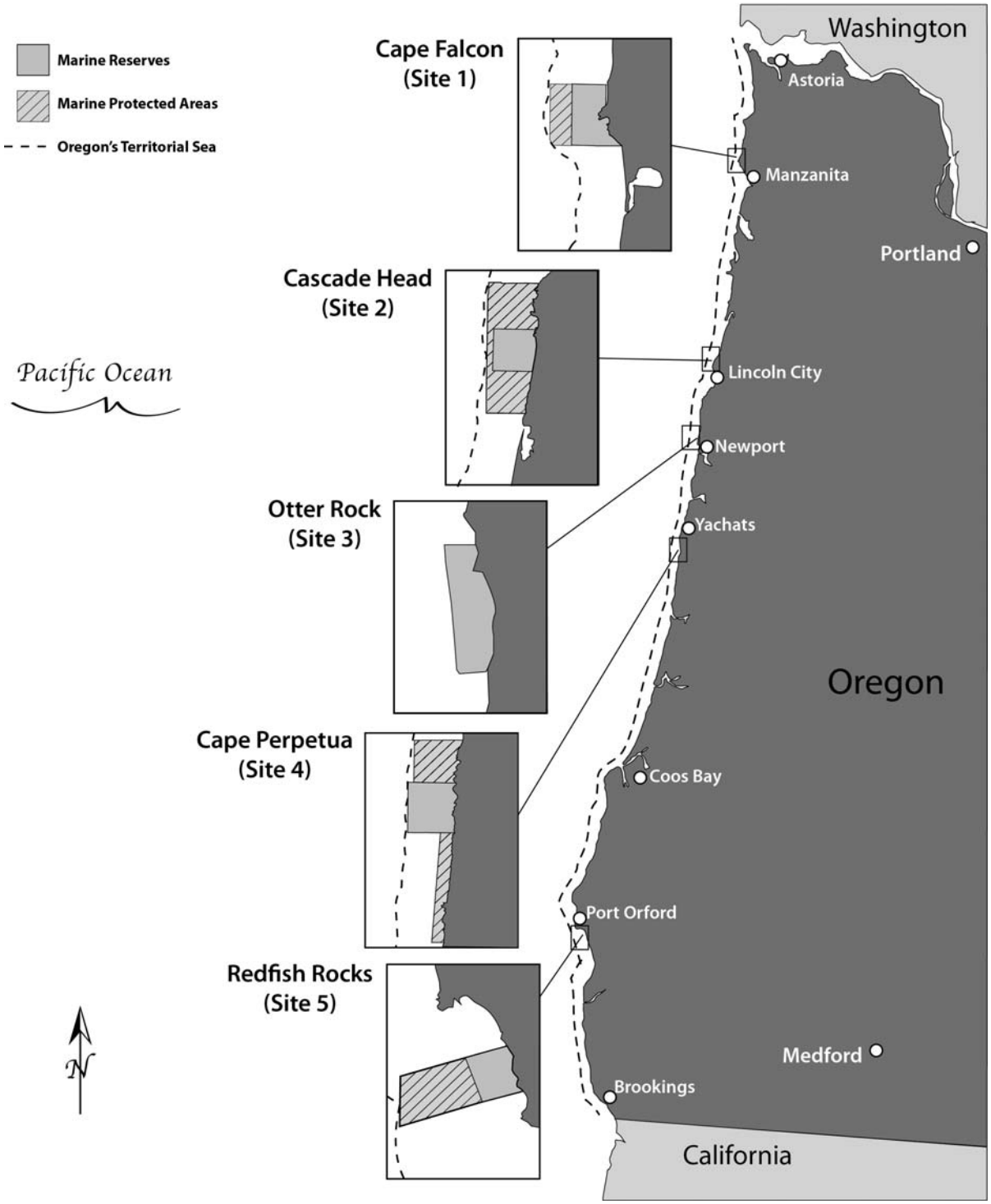
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Commercial fishing should be allowed in marine reserves in Oregon.	1	2	3	4	5
Recreational fishing should be allowed in marine reserves in Oregon.	1	2	3	4	5
Non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) should be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


Marine Reserves
Marine Protected Areas
Oregon's Territorial Sea
Cape Falcon
(Site 1)
Cascade Head
(Site 2)
Otter Rock
(Site 3)
Cape Perpetua
(Site 4)
Redfish Rocks
(Site 5)
Pacific Ocean
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, not land***. Please answer questions on this page based on these sites.

26. 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

27. 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

28. Please check the activities in which you have ever participated at 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 *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) _____

29. From Question 28 above, what ***ONE activity*** have you participated in most often at 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*)**? **(write the letter)**

Letter for activity _____

30. Thinking about 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 shown on the map*),** do you disagree or agree with each of the following? **(circle one number for *EACH*)**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
At least one of these marine sites is very special to me.	1	2	3	4	5
At least one of these marine sites is one of the best places for doing what I like to do.	1	2	3	4	5
I am very attached to at least one of these marine sites.	1	2	3	4	5
I would not substitute any other area for doing the types of things that I do in at least one of these marine sites.	1	2	3	4	5
I identify strongly with at least one of these marine sites.	1	2	3	4	5
Doing what I do in at least one of these marine sites is more important to me than doing it in any other place.	1	2	3	4	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*)** is designated as a marine reserve, how unlikely or likely would you do each of the following?

	Very Unlikely	Unlikely	Neither	Likely	Very Likely
Visit the marine sites(s) more often.	1	2	3	4	5
Visit the marine sites(s) the same amount.	1	2	3	4	5
Visit the marine sites(s) less often.	1	2	3	4	5
Never visit the marine sites(s) again.	1	2	3	4	5
Participate in a different primary activity in the marine sites(s).	1	2	3	4	5
Go to other nearby or adjacent marine areas instead.	1	2	3	4	5
Go to other marine areas on the Oregon coast instead.	1	2	3	4	5

32. 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 one number for ***EACH***)**

I feel that the Oregon Department of Fish and Wildlife …	Strongly Disagree	Slightly Disagree	Neither	Slightly Agree	Strongly Agree
… shares similar values as I do.	1	2	3	4	5
… shares similar opinions as I do.	1	2	3	4	5
… shares similar goals as I do.	1	2	3	4	5
… thinks in a similar way as I do.	1	2	3	4	5
… takes similar actions as I would.	1	2	3	4	5

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

I trust the Oregon Department of Fish and Wildlife to …	Strongly Disagree	Slightly Disagree	Neither	Slightly 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

34. Both marine reserves and marine protected areas have been proposed for Oregon. These designations are not the same thing. Do you think each of the following activities would be allowed in Oregon's marine reserves, marine protected areas, both of these types of areas, or neither of these types of areas? Circle "unsure" if you are not sure. **(circle one number for ***EACH***)**

	Marine Reserves	Marine Protected Areas	Both Marine Reserves and Protected Areas	Neither Marine Reserves nor Protected Areas	Unsure
Commercial fishing would be allowed in …	1	2	3	4	5
Recreational fishing would be allowed in …	1	2	3	4	5
Scientific research would be allowed in …	1	2	3	4	5
Removing any species or habitat would ***NOT*** be allowed in …	1	2	3	4	5
Non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) would be allowed in …	1	2	3	4	5

35. 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

36. 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 am aware of impacts that humans can have on marine areas.	1	2	3	4	5
My own personal actions can impact marine areas.	1	2	3	4	5
I know that my own behaviors can cause problems in marine areas.	1	2	3	4	5
I feel a personal obligation to help protect marine areas.	1	2	3	4	5
I feel a responsibility to help educate others about protecting marine areas.	1	2	3	4	5
I can do more to help protect marine areas.	1	2	3	4	5

37. 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
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
I would be offended or upset if there were more limits on human use of marine areas.	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
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
It is important to take care of marine areas for the future.	1	2	3	4	5
It is important that healthy marine areas exist.	1	2	3	4	5
It is important that future generations can enjoy marine areas.	1	2	3	4	5
I enjoy learning about marine areas.	1	2	3	4	5
It is important that people have a chance to learn about marine areas.	1	2	3	4	5
It is important that we learn as much as we can about marine areas.	1	2	3	4	5
I do *not* enjoy going to marine areas.	1	2	3	4	5
Some of my most memorable experiences occurred in marine areas.	1	2	3	4	5
Visiting marine areas is one of the reasons I take trips outdoors.	1	2	3	4	5

38. 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

39. Below are three separate groups of goals that people might prioritize differently.
For EACH group, please RANK the four goals in order of importance to YOU (NO TIES). That is:

1 = the goal that is most important to YOU
2 = the 2nd most important goal
3 = the 3rd most important goal
4 = the least important goal

Group 1. Rank these four goals from 1= most important to 4 = least important.
NO TIES **(DO NOT GIVE ANY OF THESE FOUR ITEMS THE SAME RANK).** **Rank**

- Maintain a high level of economic growth. _____
- See that people have more to say about how things are done at their jobs and in their communities. _____
- Make sure this country has strong defense forces. _____
- Try to make our cities and countryside more beautiful. _____

Group 2. Now repeat for this next set of four goals (1= most important, 4 = least important).
NO TIES **(DO NOT GIVE ANY OF THESE FOUR ITEMS THE SAME RANK).** **Rank**

- Maintain order in the nation. _____
- Give people more to say in important government decisions. _____
- Fight rising prices. _____
- Protect freedom of speech. _____

Group 3. Now repeat again for this final set of four goals (1 = most important, 4 = least important).
NO TIES **(DO NOT GIVE ANY OF THESE FOUR ITEMS THE SAME RANK).** **Rank**

- Maintain a stable economy. _____
- Progress toward a less impersonal and more humane society. _____
- Fight crime. _____
- Progress toward a society in which ideas count more than money. _____

40. Are you: **(check *ONE*)** ☐ Male ☐ Female

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

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

43. Approximately how many years have you lived ***on the Oregon coast***? **(write the number)** _____ year(s)

44. Do you own or rent / lease the residence where you currently live? **(check *ONE*)** ☐ Own ☐ Rent / Lease ☐ Other

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

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

47. Are you a member of any environmental or marine related organizations (e.g., Sierra Club, Ducks Unlimited)? **(check *ONE*)**

☐ No
☐ Yes → if yes, what organization(s) are you a member of? **(write response)**

_____

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

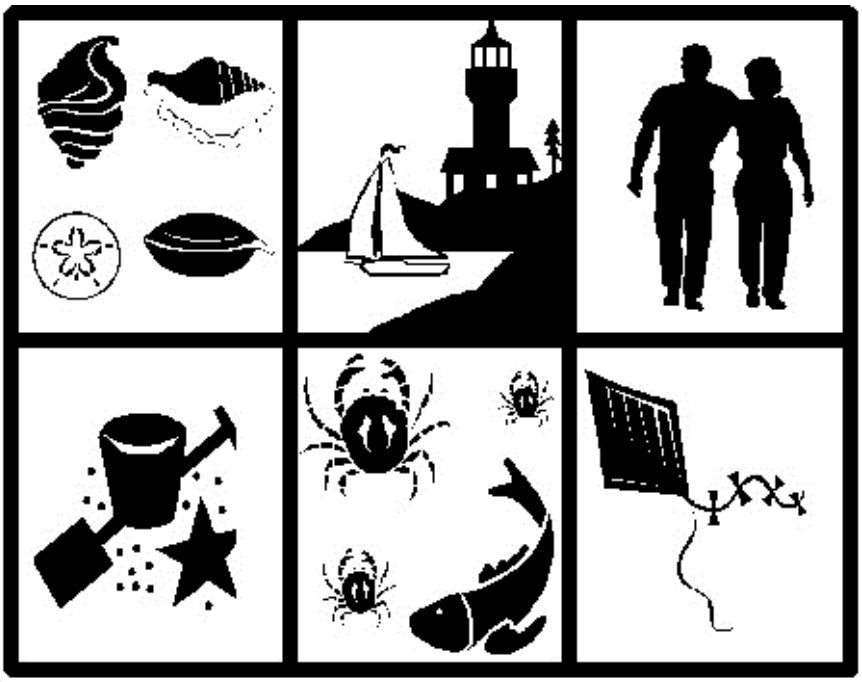
☐ Less than high school diploma
☐ High school diploma or GED
☐ 2-year associates degree or trade school
☐ 4-year college degree (e.g., bachelors degree)
☐ Advanced degree beyond 4-year degree (e.g., masters, Ph.D., medical doctor, law degree)

THANK YOU! PLEASE RETURN THIS COMPLETED SURVEY AS SOON AS POSSIBLE IN THE ENCLOSED ADDRESSED AND POSTAGE-PAID ENVELOPE

APPENDIX B
MAIL QUESTIONNAIRE: PHASE 2 (I-5 CORRIDOR RESIDENTS)

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*)**

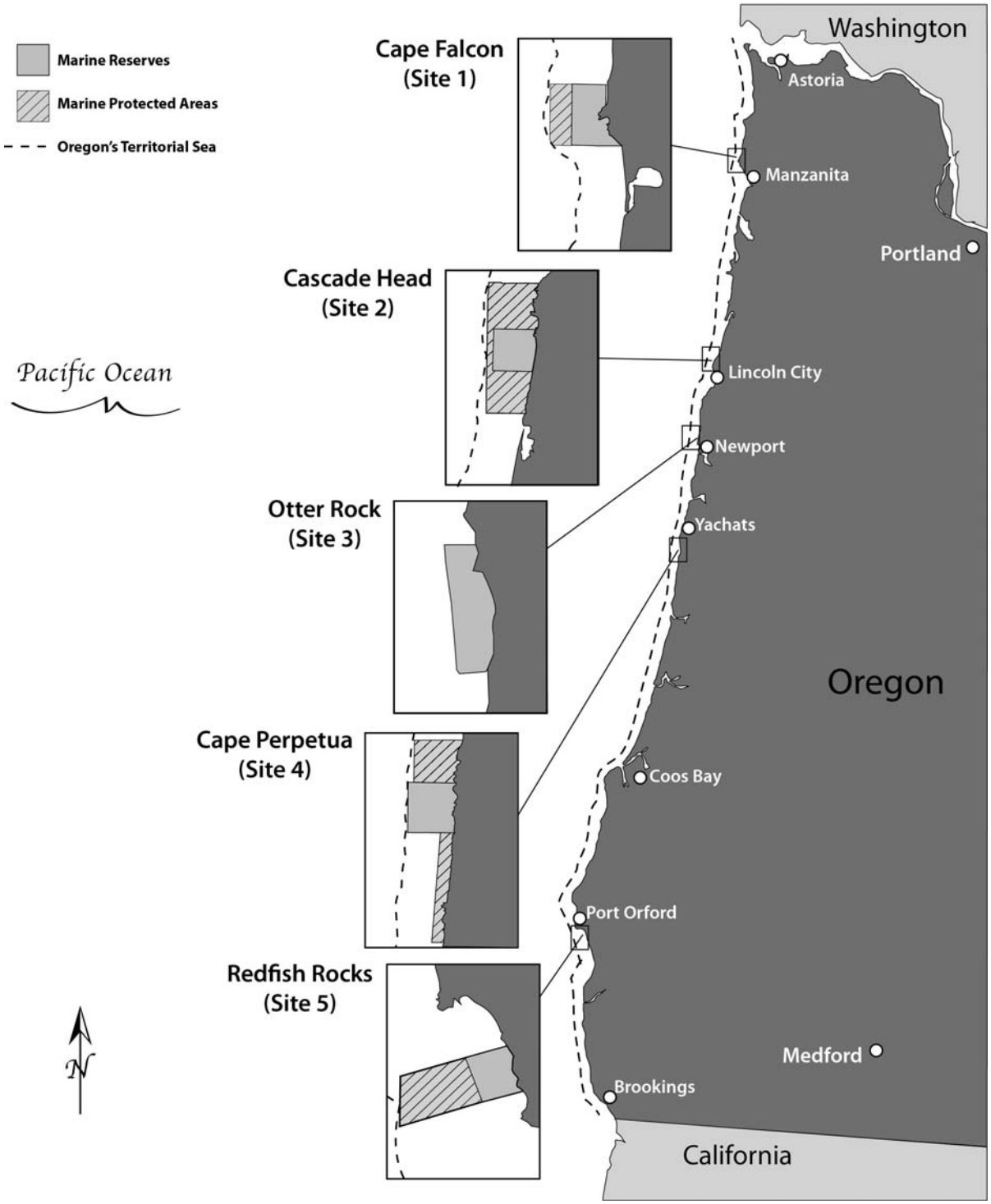
	Not Important			Slightly Important		Moderately Important			Extremely Important		I do not know
A. Provide recreation opportunities.	0	1	2	3	4	5	6	7	8		☐
B. Provide spiritual inspiration.	0	1	2	3	4	5	6	7	8		☐
C. Provide opportunities to maintain or regain physical or mental health through contact with 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
Cape Falcon
(Site 1)
Cascade Head
(Site 2)
Otter Rock
(Site 3)
Cape Perpetua
(Site 4)
Redfish Rocks
(Site 5)
Pacific Ocean
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)

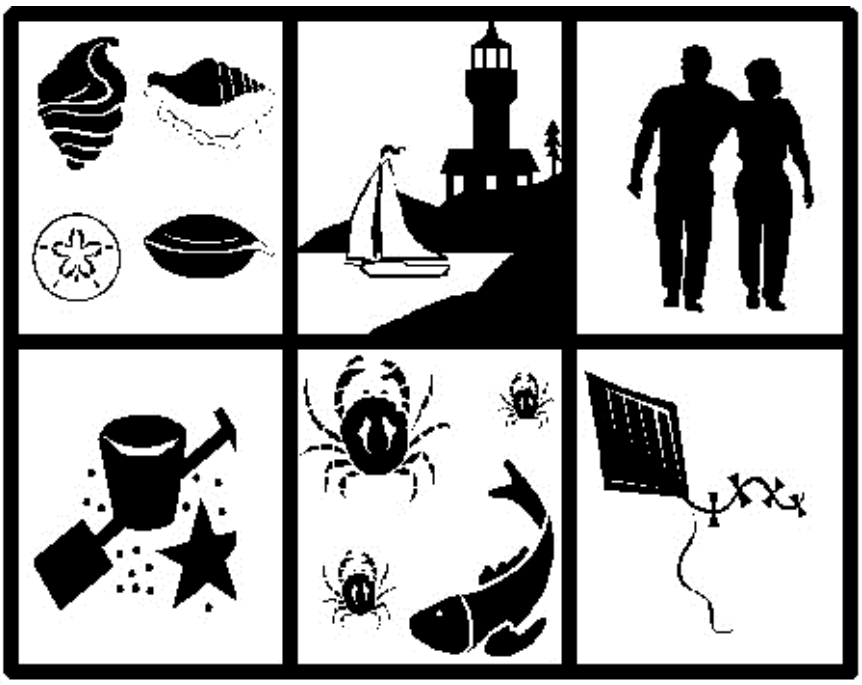
56. Where do you live? **(write responses)** City / town _____ County _____ Zipcode _____

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

APPENDIX C
UNCOLLAPSED TOTAL PERCENTAGES:
PHASE 2 (I-5 CORRIDOR RESIDENTS)

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*)**

   88% Yes
   12% 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*)**

   89% ***A.*** Sightseeing
   36% ***B***. Swimming
   80% ***C***. Viewing marine animals (e.g., birds, whales, sea lions)
   76% ***D***. Exploring tidepools
   13% ***E***. Surfing / boogie boarding
   6% ***F.*** Scuba diving / snorkeling
   32% ***G***. Non-charter recreational fishing
   23% ***H***. Charter recreational fishing
   2% ***I***. Commercial fishing
   21% ***J***. Non-motorized boating (e.g., canoe, kayak)
   26% ***K***. Motorized boating
   9% ***L***. Other (write response) see report

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 see report

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%	11%	56%	26%	5%
The government should do more to help protect marine areas in Oregon.	1	5	25	41	28
Laws protecting marine areas in Oregon are already too strict.	15	33	44	7	1
Managers are doing everything they can to protect marine areas in Oregon.	4	19	56	18	3
Fishing is *not* harming marine areas in Oregon.	7	29	37	21	6
People who fish recreationally are harming marine areas in Oregon.	12	37	37	13	2
People who fish commercially are harming marine areas in Oregon.	3	16	42	32	7
People who purchase / consume seafood are harming marine areas in Oregon.	15	33	35	13	4

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.	1%	2%	14%	19%	16%	26%	11%	5%	6%
People who fish recreationally.	1	3	12	18	16	25	15	5	4
People who fish commercially.	2	3	11	16	12	24	19	9	5
People who live along the Oregon coast.	1	1	7	12	18	20	21	14	8
People who *do not* live along the Oregon coast.	5	8	22	21	20	15	5	3	1
Environmental organizations.	4	2	9	11	14	21	15	16	8
University researchers.	2	1	4	6	13	19	20	21	14
Local governments.	1	2	8	10	13	25	23	9	9
Oregon Department of Fish and Wildlife.	0	0	3	2	9	13	23	28	21
Oregon Parks and Recreation Department.	1	1	5	4	14	18	19	23	16
US Fish and Wildlife Service.	1	1	5	5	10	16	21	22	19
National Oceanic and Atmospheric Administration.	2	1	4	6	10	13	15	27	23

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.	6%	7%	19%	23%	16%	16%	7%	4%	2%
People who fish recreationally.	3	7	16	23	16	17	11	5	2
People who fish commercially.	8	12	20	16	14	16	9	3	1
People who live along the Oregon coast.	1	2	10	16	26	17	15	10	3
People who *do not* live along the Oregon coast.	12	13	18	26	18	9	2	1	1
Environmental organizations.	7	3	9	13	13	16	15	18	8
University researchers.	1	1	3	7	9	18	21	24	15
Local governments.	3	3	12	16	17	24	19	7	1
Oregon Department of Fish and Wildlife.	1	2	4	6	10	19	24	19	15
Oregon Parks and Recreation Department.	1	1	6	8	13	22	20	18	13
US Fish and Wildlife Service.	2	2	4	11	10	16	21	21	14
National Oceanic and Atmospheric Administration.	2	1	5	9	10	13	17	24	20

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

see J. Johnston thesis (2017)

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

see J. Johnston thesis (2017)

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	2%	3%	16%	21%	57%	Like
Bad	1	4	11	27	57	Good
Negative	2	3	11	28	57	Positive
Harmful	1	1	14	23	61	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	3%	4%	14%	20%	59%	Like
Bad	1	5	12	27	55	Good
Negative	2	4	13	26	56	Positive
Harmful	1	3	14	25	57	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*)**

90% I would vote **for** establishing marine reserves in Oregon

10% I would vote **against** establishing marine reserves in Oregon

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

4% Not Certain 8% Slightly Certain 40% Moderately Certain 49% 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%	1%	13%	49%	36%
… not be effective in conserving marine areas.	23	52	18	5	2
… protect the diversity of marine species.	1	3	12	56	30
… increase marine species populations.	1	2	18	55	25
… allow depleted marine species populations to recover.	1	2	12	55	32
… cause some species to become overpopulated.	3	25	40	27	4
… improve the economy.	6	18	49	20	7
… increase tourism.	4	12	29	42	12
… benefit people in local communities.	4	11	37	40	9
… prevent people from using the reserve areas.	3	21	33	33	11
… reduce recreational fishing.	3	15	32	42	8
… reduce commercial fishing.	2	11	27	43	17
… improve scientific understanding of marine areas.	1	2	13	44	41
… allow scientists to monitor marine areas over time.	0	1	8	41	50
… improve our understanding of marine areas.	1	1	14	42	43
… be difficult to enforce.	3	14	33	40	9
... cost a lot to manage.	1	15	38	37	9
… improve the ability to manage marine areas.	2	3	28	50	17

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…	0%	1%	8%	44%	48%
Not being effective in conserving marine areas would be…	34	49	14	2	0
Protecting the diversity of marine species would be…	1	1	4	43	52
Increasing marine species populations would be…	0	1	18	42	40
Allowing depleted marine species populations to recover would be…	0	1	3	39	58
Causing some species to become overpopulated would be…	10	57	30	2	1
Improving the economy would be…	0	1	16	47	36
Increasing tourism would be…	1	4	24	51	21
Benefitting people in local communities would be…	0	1	8	53	38
Preventing people from using the reserve areas would be…	7	32	39	20	4
Reducing recreational fishing would be…	8	32	45	12	3
Reducing commercial fishing would be…	4	25	36	24	11
Improving scientific understanding of marine areas would be…	0	0	7	40	54
Allowing scientists to monitor marine areas over time would be…	0	1	7	37	55
Improving our understanding of marine areas would be…	0	0	6	37	57
Difficult enforcement would be…	12	47	36	4	2
Costly management would be…	14	52	31	3	1
Improving the ability to manage marine areas would be…	1	1	15	51	33

15. Before receiving this survey, were you familiar with the topic of marine reserves in Oregon? **(check *ONE*)** 65% No 35% Yes

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

31% Not Informed 45% Slightly Informed 23% Moderately Informed 1% Extremely Informed

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

36% Not Knowledgeable 43% Slightly Knowledgeable 20% Moderately Knowledgeable 1% 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.	47%	0%	53%
… the government has approved marine reserves for this state.	30	5	65
… commercial fishing would be allowed in all marine reserves.	2	50	47
… all marine reserves would include coastal lands such as beaches and coastlines.	19	29	51
… the government has established five marine reserve sites.	13	3	84
… new developments such as wave energy or fish farms would be allowed in all marine reserves.	8	25	67
… non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) would be allowed in all marine reserves.	24	22	55
… keeping fish caught in marine reserves would be allowed in all reserves.	3	44	53
… only scientists and no other people would be allowed in all marine reserves.	7	52	41
… there have been opportunities for public involvement in agency discussions about marine reserves.	43	3	54

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.	51%	22%	19%	6%	2%
B. Listened to radio news / programs about marine reserves in Oregon.	60	18	17	5	1
C. Watched television news / programs about marine reserves in Oregon.	53	20	20	6	1
D. Read magazine articles or books about marine reserves in Oregon.	62	16	14	6	1
E. Read about marine reserves in Oregon on government agency websites.	77	11	8	4	0
F. Read about marine reserves in Oregon on social websites (e.g., Facebook, Twitter).	78	12	8	2	0
G. Read about marine reserves in Oregon on any other websites.	69	14	10	7	0
H. Read about marine reserves in Oregon fishing regulations brochures.	70	12	8	8	3
I. Discussed marine reserves in Oregon with government agency employees.	88	8	3	1	0
J. Learned about marine reserves in Oregon from environmental or community groups.	72	16	9	4	0
K. Learned about marine reserves in Oregon from work or school.	73	11	9	4	3
L. Discussed marine reserves in Oregon with friends or family members.	56	20	17	6	1
M. Attended meetings or presentations about marine reserves in Oregon.	89	5	4	2	0

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 see report

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

6% National Oceanic and Atmospheric Administration
11% US Fish and Wildlife Service
0% US Coast Guard
1% Pacific Fishery Management Council
2% Oregon Parks and Recreation Department
47% Oregon Department of Fish and Wildlife
5% Oregon Marine Board
30% 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.	10%	7%	17%	17%	12%	23%	10%	4%	2%
How marine reserves would be managed in Oregon.	23	25	23	15	7	4	3	1	0
Rules / regulations of marine reserves in Oregon.	28	21	22	12	8	7	2	1	0
Where marine reserves are located in Oregon.	33	22	20	9	5	8	2	1	2
Role of science in marine reserves in Oregon.	16	10	20	15	13	12	8	4	3
Role of public involvement in marine reserves in Oregon.	25	18	17	15	14	7	3	1	0

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.	34%	31%	27%	7%	2%
Recreational fishing should be allowed in marine reserves in Oregon.	14	26	33	22	5
Non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) should be allowed in marine reserves in Oregon.	6	14	28	43	9
Scientific research should be allowed in marine reserves in Oregon.	0	3	8	32	57

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.	4%	32%	27%	27%	11%
People who fish recreationally.	10	47	20	16	7
People who fish commercially.	32	45	9	9	5
Local businesses.	6	21	35	30	7
People who live along the Oregon coast.	5	14	24	43	15
People who *do not* live along the Oregon coast.	2	8	56	26	10
Government agencies.	1	7	36	41	16
Scientists / researchers.	0	2	8	30	60

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.	2%	5%	17%	46%	30%
Managers have done a good job communicating with the public about marine reserves in Oregon.	18	38	37	7	1
I am against establishing marine reserves in Oregon.	44	35	16	3	2
It is easy to access / find information about marine reserves in Oregon.	7	25	51	15	3
I would likely be in favor of implementing marine reserves in Oregon.	2	6	16	44	33

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.	6%	5%	8%	7%	10%	19%	18%	14%	9%	3%
B. Provide spiritual inspiration.	21	11	8	11	7	12	10	8	5	6
C. Provide opportunities to maintain or regain physical or mental health through contact with nature.	8	5	7	8	11	21	10	15	11	5
D. Provide a place of minimal human impact or intrusion into the natural environment.	4	3	4	6	9	13	18	19	21	4
E. Just knowing that marine reserves exist.	10	3	5	6	7	16	19	14	16	5
F. Protect species to be used by the fishing industry in the future.	5	1	3	5	9	17	16	22	18	5
G. Protect other natural resources that humans may have to use in the future.	4	1	2	5	7	12	18	28	21	4
H. Knowing that I will have the ability to visit marine reserves in the future.	6	2	4	5	7	15	18	26	15	4
I. Provide income for the tourism industry.	6	3	12	11	13	16	15	12	6	5
J. Foster a moral or ethical obligation to respect or protect nature or other living things.	6	2	2	2	5	11	13	27	30	3
K. Knowing that future generations will have marine reserves.	6	2	2	3	4	10	11	29	31	3
L. Protect air quality.	6	2	2	3	4	7	12	24	36	5
M. Protect nature to ensure human well-being or survival.	6	2	3	3	6	10	13	25	29	4
N. Protect symbols of America's heritage or culture.	8	3	6	7	9	11	14	20	18	4
O. Protect water quality.	1	0	3	4	3	5	10	25	46	4
P. Protect endangered species.	3	0	3	2	3	4	12	28	44	3
Q. Preserve natural areas for scientific discovery or study.	1	0	3	3	8	7	14	31	30	3
R. Protect places that provide a sense of place, community, or belonging.	7	2	4	5	13	14	15	19	17	4
S. Protect endangered places.	3	0	3	2	3	5	16	28	37	3
T. Preserve unique wild plants or animals.	2	1	1	2	4	5	13	30	40	3
U. Protect marine species, water, or plants that have value even if humans do not benefit from them.	2	1	1	5	4	6	14	29	36	4
V. Protect habitat for marine species.	2	0	1	4	3	5	11	32	38	3
W. Provide scenic beauty.	3	2	5	5	6	12	16	24	24	3

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) see report

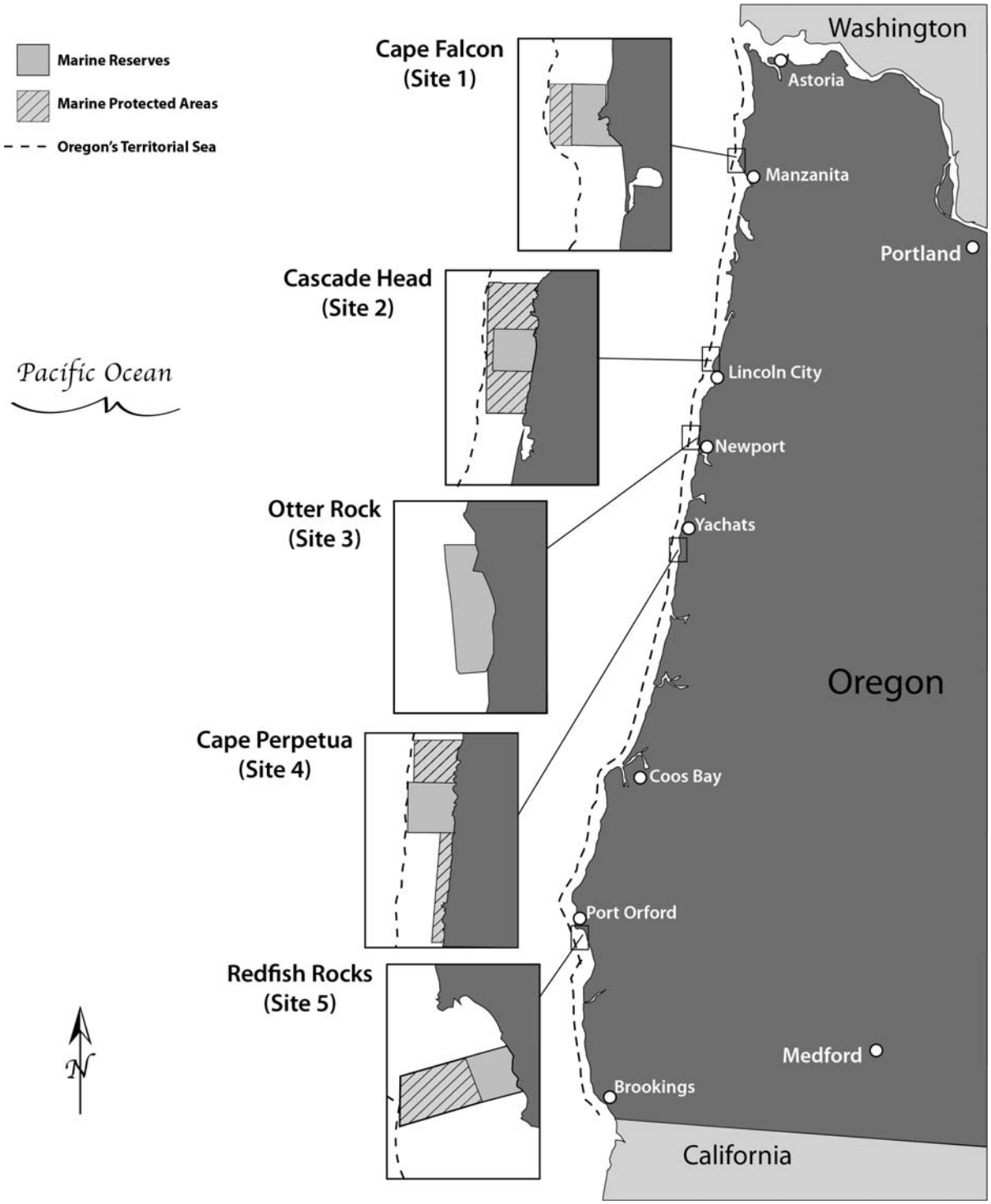
28. What is your opinion regarding the protection or human utilization (use) of marine areas in Oregon? **(check *ONE*)**

1% We should fully utilize marine areas with almost no protection

18% We should mostly utilize marine areas with just a little protection

70% We should mostly protect marine areas with just a little utilization

12% We should fully protect marine areas with almost no utilization


Marine Reserves
Marine Protected Areas
Oregon's Territorial Sea
Cape Falcon
(Site 1)
Cascade Head
(Site 2)
Otter Rock
(Site 3)
Cape Perpetua
(Site 4)
Redfish Rocks
(Site 5)
Pacific Ocean
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*)**

    40% No → if no, skip to question 31 below

    60% Yes → if yes, how many trips have you made to the site(s) ***in the past 12 months***? **(write number)** see report 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*)**

    23% Site 1 39% Site 2 42% Site 3 26% Site 4 10% 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)**

6%	5%	67%	18%	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)**

    see J. Johnston thesis (2017)

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

    see J. Johnston thesis (2017)

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)**

9%	7%	64%	17%	4%
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.	3%	3%	14%	42%	38%
…there are areas of the ocean along Oregon's coast that could be called wilderness.	3	7	18	43	29
…Oregon's marine reserves could be called wilderness.	5	11	25	38	22

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

4%	7%	61%	17%	11%
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**)

5%	5%	63%	19%	9%
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)**

see J. Johnston thesis (2017)

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

8%	8%	43%	30%	11%
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.	2%	10%	25%	50%	12%
… provide timely information about marine reserves.	2	13	28	49	8
… provide truthful information about marine reserves.	2	8	22	55	13
… provide me with enough information to decide what actions I should take regarding marine reserves.	3	11	26	49	11
… manage marine reserves using the best available information about non-human species in these areas (e.g., fish, birds).	2	7	24	52	15
… manage marine reserves using the best available information about human uses of these areas.	2	9	24	51	15
… work with other organizations to inform management of marine reserves.	2	7	31	48	12
… use public input to inform management of marine reserves.	4	11	35	41	10
… make good decisions regarding management of marine reserves.	3	8	25	48	16

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.	23%	43%	24%	9%	2%
The primary value of marine areas is to provide benefits for humans.	28	40	17	12	3
Marine areas exist primarily to be used by humans.	34	42	19	5	1
The economic values that marine areas provide for humans are more important than the rights of species in these marine areas.	39	38	18	4	1
Marine areas should be protected for their own sake rather than to simply meet the needs of humans.	1	7	13	42	37
Marine areas have value whether humans are present or not.	0	2	7	42	49
Marine areas should have rights similar to the rights of humans.	8	17	31	29	14
I object to fishing, harvesting, or collecting species from marine areas because it violates the rights of these species.	19	33	29	13	6

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.	2%	4%	5%	7%	9%	25%	17%	17%	11%	2%
B. Provide spiritual inspiration.	17	8	5	11	11	13	8	14	9	5
C. Provide opportunities to maintain or regain physical or mental health through contact with nature.	7	3	5	7	11	18	14	21	14	3
D. Provide a place of minimal human impact or intrusion into the natural environment.	1	2	2	4	6	15	17	27	25	2
E. Just knowing that wilderness areas on land exist.	4	2	4	4	8	12	14	26	25	2
F. Protect species to be used by industry in the future.	2	9	9	5	15	15	14	15	12	5
G. Protect other natural resources that humans may have to use in the future.	3	2	5	8	15	16	16	22	12	3
H. Knowing that I will have the ability to visit wilderness areas on land in the future.	3	1	2	3	8	13	14	31	25	2
I. Provide income for the tourism industry.	7	8	8	14	15	19	14	10	4	2
J. Foster a moral or ethical obligation to respect or protect nature or other living things.	4	2	2	2	6	10	14	27	30	3
K. Knowing that future generations will have wilderness areas on land.	1	1	1	2	3	10	12	31	38	2
L. Protect air quality.	1	1	2	2	3	7	13	24	46	2
M. Protect nature to ensure human well-being or survival.	2	1	4	5	5	14	16	24	27	2
N. Protect symbols of America's heritage or culture.	6	3	5	6	9	13	17	21	18	2
O. Protect water quality.	1	0	1	1	5	7	8	27	49	2
P. Protect endangered species.	1	0	2	1	5	6	12	27	44	2
Q. Preserve natural areas for scientific discovery or study.	1	1	2	2	6	8	20	28	30	2
R. Protect places that provide a sense of place, community, or belonging.	6	1	3	5	11	17	18	20	17	2
S. Protect endangered places.	1	1	1	3	3	6	15	28	41	2
T. Preserve unique wild plants or animals.	1	0	1	3	3	5	15	29	42	2
U. Protect wildlife, water, or plants that have value even if humans do not benefit from them.	1	0	2	3	4	5	14	29	42	2
V. Protect habitat for wildlife.	0	0	1	1	3	6	13	30	44	2
W. Provide scenic beauty.	2	1	2	2	6	14	21	22	30	2

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) see report

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.	0%	1%	4%	37%	59%
…there are protected areas of land in Oregon that could be called wilderness.	1	1	7	39	52
…there are other areas of land in Oregon that could be called wilderness.	1	2	10	40	47

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.	1%	5%	8%	16%	24%	27%	13%	6%	1%
Bays and estuaries in Oregon.	1	4	10	20	28	21	12	3	1
Marine areas (ocean) in Oregon.	1	3	8	17	29	22	12	7	2
Marine fish in Oregon.	1	3	11	16	31	22	11	3	2
Other marine animals in Oregon.	1	4	9	15	31	22	12	4	2
Wildlife in Oregon.	0	3	7	12	21	28	20	6	2
Forests in Oregon.	1	3	7	15	19	23	18	12	3

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.	22%	35%	21%	19%	3%
Humans were meant to rule over the rest of nature.	47	25	12	11	6
The so-called ecological crisis facing humankind has been greatly exaggerated.	41	32	15	8	4
The earth has plenty of natural resources if we just learn how to develop them.	21	21	23	29	7
The balance of nature is very delicate and easily upset.	2	8	15	43	33
When humans interfere with nature, it often produces disastrous consequences.	3	7	23	42	26
Plants and animals have as much right as humans to exist.	5	10	20	33	33
Humans are severely abusing the environment.	3	8	11	39	39

47. Are you: **(check *ONE*)** 49% Male 51% Female 0% Other (e.g., Transgender Person)

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

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

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

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

32% Large city (250,000 or more people) 21% Small city (25,000 to 99,999 people) 3% Small town (less than 5,000 people)
21% City (100,000 to 249,999 people) 15% Town (5,000 to 24,999 people) 6% Farm or rural area with few people

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

94% No
6% Yes → if yes, what is the main purpose of this second home? **(check *ONE*)**
0% Retirement 2% Property investment 3% Recreation 1% Other **(write response)** see report

53. Are you or anyone else in your household employed in the commercial fishing industry? **(check *ONE*)** 97% No 3% Yes

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

5% Very Conservative 18% Somewhat Conservative 26% Moderate 32% Somewhat Liberal 19% Very Liberal

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

2% Less than high school diploma
19% High school diploma or GED
16% 2-year associates degree or trade school
38% 4-year college degree (e.g., bachelors degree)
25% Advanced degree beyond 4-year degree (e.g., masters, Ph.D., medical doctor, law degree)

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

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