



Changes Over Time in Resident Perceptions of Marine Reserves in Oregon

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. Early 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 initially 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 early efforts involved economic stakeholders and vocal residents thought to be most directly affected by the 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 in 2013 (Phase 1; Needham et al., 2013), (b) in the most heavily populated region of Oregon in 2016 (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]; Phase 2; Needham et al., 2016a), and (c) in both of these same regions again in 2021 to detect any possible changes over time (Phase 3). 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 over time. Project objectives were to understand resident:

- Awareness about 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 three 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* = 596** completed questionnaires were returned, yielding a 27% response rate (596 / 2,600 – 357). The sample size for residents in the communities of place was $n = 327$ (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 $n = 596$ 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 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 these results are statistically examined in relation to Phase 3 data in this report here for comparison purposes to detect any changes in resident responses over time (2013 vs. 2021).

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) based on US Census information for this region to ensure that the sample and questionnaire responses were statistically representative of the target population. Detailed results of Phase 2 were reported in Needham et al. (2016), but these results are statistically examined in relation to Phase 3 data in this report here for comparison purposes to detect any changes in resident responses over time (2016 vs. 2021).

Phase 3 involved administering questionnaires by mail in mid-2021 again to residences both: (a) along the Oregon coast, and (b) in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]). Two different sampling approaches were used. First, the *longitudinal samples (i.e., different people over time compared to 2013 [Phase 1] and 2016 [Phase 2])* were selected randomly from postal records where a new sample of 5,400 addresses was divided among three subpopulations: (a) residents near the five marine reserves (i.e., communities of place), (b) residents along the rest of the coast (i.e., general coastal sample), and (c) residents of the I-5 corridor. The 1,350 addresses in the communities of place were distributed equally among five areas corresponding to each marine reserve location (i.e., 270 addresses each). Identical to Phase 1, 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 coastal sample of addresses (i.e., 1,350; general coastal sample) was spread throughout the rest of the coast and included areas seaward of the Coast Range excluding those in the five communities of place. For the I-5 corridor sample, 2,700 addresses were selected randomly. Any duplicate addresses between these 2021 (Phase 3) samples and the 2013 (Phase 1) and 2016 (Phase 2) samples were deleted and replaced to ensure that these Phase 3 samples contained different residences and people compared to Phases 1 and 2.

Second, the *panel samples (i.e., same people over time compared to 2013 [Phase 1] and 2016 [Phase 2])* involved sampling all of the same 596 coastal residential addresses from which completed questionnaires were received in Phase 1 and all of the same 530 I-5 corridor addresses from which questionnaires were received in Phase 2. To ensure that these Phase 3 samples contained exactly the same people as Phases 1 and 2, respondent demographic characteristics were compared between phases to make sure they matched (e.g., male, female; education level; age, years lived at current residence, and years lived in Oregon all

adjusted for years between the phases of data collection). In addition, respondents were asked in the Phase 3 questionnaire "Several years ago, we sent a similar survey with the same front cover graphic and similar questions. Do you remember completing and returning that survey several years ago (no, unsure, yes)?"

Three separate mailings were implemented (full mailing, postcard reminder, full mailing) in Phase 3. In total, 582 questionnaires were undeliverable (e.g., incorrect address, vacant, moved) and ***n* = 1,038** completed questionnaires were returned, yielding a 17.5% overall response rate (1,038 / 6,526 – 582). For the *longitudinal samples (i.e., different people over time)*, the new sample size for residents in the communities of place was $n = 251$, the sample for those along the rest of the coast (i.e., general coastal sample) was $n = 222$ (total for the entire coast $n = 473$, 20% response rate), and the sample for those along the I-5 corridor was $n = 351$ (14% response rate). These sample sizes allow generalizations about the population of: (a) Oregon's coastal residents at a margin of error of ± 4.5% at the 95% confidence level, and (b) Oregon's I-5 corridor residents at a margin of error of ± 5% at the 95% confidence level. The combined sample size of $n = 824$ allows generalizations about the combined population of Oregon's coastal and I-5 corridor residents at a margin of error of ± 3% 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. Identical to Phase 1, the new coastal resident data were weighted by population proportions based on the most recent US Census information for number of households in the sampling areas. Identical to Phase 2, the new I-5 corridor resident data were weighted by demographics (e.g., age; male, female) based on the most recent US Census information for this region. This weighting ensured that these samples and questionnaire responses were statistically representative of the broader target populations. For the *panel samples (i.e., same people over time)*, the total sample size for the same people who completed multiple questionnaires over time (i.e., 2013 or 2016 and again in 2021) was $n = 214$ (22% response rate). The sample sizes were $n = 61$ in the communities of place, $n = 38$ along the rest of the coast (total for the entire coast $n = 99$), and $n = 115$ along the I-5 corridor. An important difference between these panel samples and the longitudinal samples is the panel samples involve a within-subjects design (same people over time) where the goal is to detect change over time in the same people, but these smaller samples ($n = 214$) are not necessarily representative of the population. The longitudinal samples involve a between-subjects design (different people over time) where the goal is for these larger samples ($n = 824$-1126) to be statistically representative of the populations over time.

Results

Oregon Marine Areas in General

- Almost all (90-98%) Phase 3 longitudinal respondents (i.e., 2021; different people over time) had visited marine areas in Oregon before. Sightseeing (88-93%), viewing marine animals (88-90%), and exploring tide pools (81-86%) were most common in these areas. Viewing marine animals and exploring tide pools were more popular for I-5 corridor residents in 2021 compared to 2016. Swimming in marine areas was less popular among residents in the communities of place and other coastal areas in 2021 than it was in 2013, whereas it was more popular among I-5 corridor residents in 2021 than it was in 2016. Non-charter recreational fishing, charter recreational fishing, and motorized boating were all less popular in 2021 than they were in 2013 for residents in the communities of place and other coastal areas. Charter recreational fishing was also less popular in 2021 than it was in 2016 for I-5 corridor residents.
- Sightseeing (43-63%), viewing marine animals (12-21%), exploring tide pools (8-14%), and non-charter recreational fishing (8-12%) were the most popular *main* activities among the Phase 3 longitudinal respondents. Sightseeing was more commonly listed as the main activity across all of the 2021 samples compared to the 2013 and 2016 samples. Non-charter recreational fishing was less often listed as the main activity across most of the 2021 samples compared to most 2013 and 2016 samples. For the panel samples (i.e., same people over time), sightseeing increased dramatically over time as the main activity for residents in the communities of place, coast in total, and I-5 corridor. Viewing marine animals also increased dramatically over time as the main activity for residents at all sites along the coast, but not the I-5 corridor. Exploring tide pools decreased over time as the main activity, especially for residents of the I-5 corridor. Non-charter recreational fishing and motorized

boating also decreased over time as the main activity, especially for residents of the rest of the coast and coast in total. Non-motorized boating and commercial fishing also decreased over time as the main activity, especially for residents of the communities of place and the coast in total.

- Two-thirds or more of Phase 3 longitudinal respondents believed that wildlife (73-78%), forests (61-63%), other marine animals (64-68%), marine areas (64-77%), rivers and streams (65-67%), marine fish (59-69%), and bays and estuaries (59-72%) were moderately or very healthy in Oregon. Forests in Oregon were perceived as less healthy by all samples in 2021 compared to earlier (2013, 2016). Marine fish and other marine animals in Oregon were perceived as less healthy by all coastal populations in 2021 compared to earlier in 2013. For the panel sample, almost all perceptions of ecological health indicators declined (i.e., less healthy) over time, but this was only significant for perceptions of forest health among some of the coastal samples.
- In total, 67-84% of Phase 3 longitudinal respondents believed the government should do more to help protect marine areas in Oregon, 35-55% agreed that people who fish commercially are harming these areas, 18-40% agreed that fishing is not harming marine areas in the state, 27-31% agreed that the condition of marine areas in Oregon has improved in recent years, 22-35% agreed that managers are doing everything they can to protect marine areas in this state, 17-18% agreed that people fishing recreationally are harming Oregon's marine areas, 7-21% agreed that people who purchase and consume seafood are harming marine areas in Oregon, and only 5-14% agreed that laws protecting Oregon's marine areas are too strict. There was a substantial increase over time in the percent of residents across all locations who agreed that the government should do more to help protect marine areas in Oregon. There was also an increase over time in the percent of I-5 corridor residents who agreed that people who fish commercially are harming Oregon's marine areas, and a decrease among these residents who agreed that fishing is not harming these areas. There were also decreases over time in the percent of coastal residents who agreed that people who purchase and consume seafood are harming these marine areas and laws protecting these areas are already too strict. For the panel sample, respondents in all areas were now (2021) more likely to agree that the government should do more to help protect Oregon's marine areas, but this was only significant for the rest of the coast and the total coast residents. Residents of the communities of place were now (2021) more likely to agree that the condition of these marine areas has improved in recent years compared to what they said in 2013. These residents of the communities of place were also less likely to agree now (2021) that fishing is not harming marine areas in Oregon compared to what they said in 2013. Respondents in all areas were now (2021) less likely to agree that people who purchase and consume seafood are harming these areas, but this was only significant for the communities of place and coast in total.

Oregon Marine Reserves

- In total, 60-76% of Phase 3 longitudinal respondents had visited at least one of the marine reserve sites in Oregon, whereas 24-40% had not visited. There were no changes over time or substantial differences among phases and samples over time in visitation to these reserves. The largest proportions had visited Otter Rock (56-73% of those who had visited a site), Cascade Head (52-74%), or Cape Perpetua (47-62%). Fewer had visited Cape Falcon (38-42%) or Redfish Rocks (9-37%). For the panel sample, there were also no changes in visitation over time.
- The majority (57-65%) of Phase 3 longitudinal respondents felt they understood the purpose of Oregon's marine reserves, 48-58% felt they understood the role of science in these reserves, 45-68% were familiar with the reserves, 28-37% understood the role of public involvement in these reserves, 24-48% felt informed about the topic of marine reserves in Oregon, 20-39% felt knowledgeable about these reserves, 27-39% understood where the reserves were located, 21-37% understood how the reserves would be managed, and 20-30% understood the rules and regulations associated with these reserves. Across these self-assessed knowledge questions, residents of the communities of place nearest the reserves felt most knowledgeable, whereas those along the I-5 corridor felt least knowledgeable. Residents of the communities of place in 2021 reported higher understanding of the role of science, rules / regulations, and how these reserves would be managed compared to residents of these locations in 2013. Residents of the rest of the coast in 2021 reported lower familiarity, level

of being informed, and knowledge about these reserves compared to residents of these locations in 2013. Residents of the coast in total in 2021 reported higher understanding about the role of science, but lower familiarity, level of being informed, and knowledge about these reserves compared to residents of these locations in 2013. Residents of the I-5 corridor in 2021 reported higher familiarity and understanding of the purpose, role of science, location, and how these reserves would be managed compared to residents of the I-5 corridor in 2016. For the panel sample, there were no changes over time in these self-assessed knowledge questions.

- Residents answered 11 factual knowledge (e.g., true / false) questions about Oregon's marine reserves. The only two questions answered correctly by the majority of Phase 3 longitudinal respondents across all locations were that the government has been considering marine reserves in Oregon for several years (51-62%) and commercial fishing would not be allowed in these reserves (52-61%). The question answered correctly by the fewest residents was that the government has already established five marine reserves (19-30%). The factual knowledge score out of 11 questions showed that this knowledge was low among residents, with averages of only 42-49% of questions answered correctly. For coastal residents, this score did not change over time, remained low across years, and, decreased slightly in some cases. For I-5 corridor residents, this score increased over time, but remained low (36% correct in 2016 to 42% in 2021). Knowledge scores for residents in the panel sample in all locations remained low across years and did not change substantively over time.
- Only 18-30% of Phase 3 longitudinal respondents agreed that it is easy to find information about marine reserves in Oregon, and only 7-21% agreed that managers have done a good job communicating with the public about these reserves. Residents in the communities of place were most likely to agree with these statements, whereas those along the I-5 corridor were least likely to agree. There were slight increases in agreement over time (2013 or 2016 vs. 2021). For the panel sample, there were no major differences across time in responses.
- Newspapers (46-79%), television news / programs (42-62%), discussions with family or friends (44-63%), and radio news / programs (44-64%) were used most by Phase 3 longitudinal respondents to learn about Oregon's marine reserves, whereas attending meetings or presentations (8-30%) and discussing the reserves with government employees (10-21%) were used least. Residents in the communities of place were most likely to use many of these sources of information, whereas those along the I-5 corridor were least likely. Residents of the communities of place in 2021 were more likely than those in 2013 to learn about the reserves from magazine articles or books, environmental or community groups, government websites, social websites (e.g., Facebook, Twitter), and other websites. Residents of the rest of the coast in 2021 were more likely than those in 2013 to learn about the reserves from government websites, social websites, and other websites. However, these residents were also less likely than those in 2013 to learn about the reserves from newspapers, television news / programs, friends or family, radio, work or school, government employees, and meetings or presentations. Residents of the coast in total in 2021 were more likely than those in 2013 to learn about the reserves from government websites, social websites, and other websites. However, these residents were also less likely than those in 2013 to learn about these reserves from newspaper articles, television news / programs, friends or family, radio news / programs, work or school, and government agency employees. Residents of the I-5 corridor in 2021 were more likely than those in 2016 to learn about the reserves from environmental or community groups, and government agency websites. For the panel sample, residents of the communities of place were more likely to read about Oregon's marine reserves on social websites and any other websites over time. Conversely, residents of the rest of the coast were less likely to discuss the reserves with agency employees and attend meetings or presentations over time. Residents of the coast in total were also less likely to attend meetings or presentations over time, but were more likely to read about them on social websites.
- The greatest proportions of Phase 3 longitudinal respondents would prefer to receive information about these reserves from newspaper articles (10-24%) or television news and programs (14-19%). Newspaper articles, television news / programs, and meetings or presentations were less preferred sources of information in 2021 compared to before (i.e., in 2013 or 2016). Conversely, government

websites, social websites, and environmental or community groups were more preferred sources of information about the reserves in 2021 compared to before (i.e., 2013 or 2016). For the panel sample, newspaper articles and meetings / presentations were less preferred sources of information about the reserves in 2021 compared to before (i.e., 2013 or 2016). Government websites, fishing regulations brochures, and radio news / programs were more preferred sources of information about these reserves in 2021 compared to before (i.e., 2013 or 2016). Television news / programs were less preferred sources of information about the reserves in 2021 compared to before (i.e., 2013) for those living in the communities of place. However, television news / programs were more preferred sources of information for residents on the rest of the coast and for those along the I-5 corridor.

- In total, 70-89% of Phase 3 longitudinal respondents believed in protecting Oregon's marine areas with little or no human utilization, whereas 10-29% believed in utilizing these areas with little or no protection. The majority (53-72%) believed that these marine areas should mostly be protected with just a little utilization, whereas only 9-25% believed the areas should be mostly utilized with just a little protection and even fewer believed the areas should be either fully protected with no utilization (17-20%) or fully utilized with no protection (1-4%). Residents of all areas in 2021 were more likely than those in 2013 and 2016 to think that Oregon's marine areas should either be fully protected with almost no utilization or mostly protected with just a little utilization. In addition, residents of all areas in 2021 were less likely than those in 2013 and 2016 to think that Oregon's marine areas should be mostly utilized with just a little protection. For the panel sample, residents of all areas were more likely in 2021 than they were in 2013 and 2016 to think that Oregon's marine areas should be fully protected with almost no utilization. This change over time was most pronounced in the communities of place. In addition, residents of all areas were less likely in 2021 than they were in 2013 and 2016 to think that these areas should be mostly utilized with just a little protection.
- Phase 3 longitudinal respondents overwhelmingly agreed (91-97%) that scientific research should be allowed in these marine reserves. The majority (53-59%) also agreed that non-extractive recreation and tourism should be allowed (e.g., surf, swim). Only 23-33% agreed that recreational fishing should be allowed, and the fewest thought that commercial fishing should be allowed (7-19%). Residents of both the communities of place and I-5 corridor in 2021 were more likely than residents in these locations in 2013 or 2016 to agree that scientific research should be allowed in the reserves. Residents of both the rest of the coast and the coast in total in 2021 were less likely than residents in these locations in 2013 to agree that recreational fishing should be allowed in the reserves. For the panel sample, residents of all coastal locations were less likely to agree in 2021 (compared to 2013) that non-extractive recreation / tourism activities (e.g., surfing, swimming) should be allowed in the reserves. Residents of the rest of the coast were also less likely to agree in 2021 (compared to 2013) that both recreational and commercial fishing should be allowed in the reserves.
- The only groups the majority of Phase 3 longitudinal respondents believed could benefit from these reserves are scientists / researchers (86-95%), people who live along the Oregon coast (57-69%), and government agencies (55-65%). Fewer believed that people recreating in marine areas (39-43%), local businesses (40-53%), people who do not live on the coast (36-49%), and people who fish recreationally (22-34%) or commercially (11-26%) could benefit. Residents of all areas in 2021 were more likely than those in 2013 and 2016 to think that people who live along the Oregon coast, people who do not live along the coast, and local businesses could benefit. Residents of all areas along the coast in 2021 were more likely than those in 2013 to think that people who recreate in marine areas could benefit from the reserves. Residents of the communities of place and coast in total in 2021 were more likely than those in 2013 to think that government agencies could benefit. Residents of the rest of the coast and the coast in total in 2021 were more likely than those in 2013 to think that people who fish recreationally or commercially could benefit from the reserves. Residents of the I-5 corridor in 2021 were more likely than those in 2016 to think that scientists / researchers could benefit from these reserves. For the panel sample, there were no changes in responses over time.
- Conversely, the groups that the most Phase 3 longitudinal respondents believed could be harmed by these reserves are people who fish commercially (60-81%) or recreationally (47-59%). Fewer than

40% thought that people who recreate in marine areas (34-39%), local businesses (16-26%), and people who live on the Oregon coast (14-24%) could be harmed. Residents believed the groups least likely to be harmed include scientists or researchers (0-2%), government agencies (2-5%), and people who do not live along the Oregon coast (4-10%). Residents of all areas in 2021 were less likely than those in 2013 and 2016 to think that local businesses and government agencies could be harmed by these reserves. Residents of all areas along the coast in 2021 were less likely than those in 2013 to think that people who fish commercially could be harmed by the reserves. Residents of the rest of the coast and the coast in total in 2021 were less likely than those in 2013 to think that people who live along the Oregon coast could be harmed. Residents of the I-5 corridor in 2021 were less likely than those in 2016 to think that scientists / researchers and people who do not live along Oregon coast could be harmed by these reserves. For the panel sample, residents of the rest of the coast in 2021 were less likely than they were in 2013 to think that people who fish commercially could be harmed by the reserves. Residents of the communities of place in 2021 were less likely than they were in 2013 to think that local businesses could be harmed by Oregon's marine reserves.

- Across all locations, Phase 3 longitudinal respondents said the groups that have already benefitted the most from these marine reserves are scientists / researchers (80-84%), followed by people who live along the coast (49-56%), government agencies (48-58%), local businesses (29-39%), people who do not live on the coast (31-35%), and people recreating in marine areas (27-33%). Fewer thought people who fish recreationally (21-24%) or commercially (13-19%) have benefitted from the reserves. In fact, across all locations, respondents believed the groups that have already been harmed the most from these reserves are people who fish commercially (53-65%) or recreationally (42-51%).
- Phase 3 longitudinal respondents expressed positive attitudes toward marine reserves in Oregon, as they believed the reserves are beneficial (69-85%) and positive (69-90%), thought these areas are good (67-89%), and liked the idea of these reserves (70-90%). Residents of the I-5 corridor and communities of place expressed the most positive attitudes, whereas those along the rest of the coast had the least positive attitudes. Residents of all areas in 2021 were more likely than those in 2013 and 2016 to have more favorable attitudes toward these reserves. For the panel sample, residents of all areas in 2021 were also more likely than they were in 2013 and 2016 to have more favorable attitudes about marine reserves in Oregon. As a result, favorable attitudes increased over time.
- Phase 3 longitudinal respondents believed that marine reserves in Oregon would allow scientists to monitor these areas (83-95%), allow depleted populations to recover (79-93%), improve our understanding of marine areas (80-93%), improve scientific understanding of marine areas (79-92%), protect the diversity of marine species (79-91%), benefit marine areas in general (76-93%), and increase species populations (75-90%). These residents were least likely to agree that these marine reserves would improve the economy (41-42%), benefit local communities (56-63%), and increase tourism (54-64%). Residents of the I-5 corridor and the communities of place had the most agreement regarding these potential advantages, whereas those living along the rest of the coast often had the least agreement. Residents of all areas in 2021 were more likely than those in 2013 and 2016 to have more favorable attitudes toward all of these potential advantages. For the panel sample, residents of all areas in 2021 were also more likely than they were in 2013 and 2016 to have more favorable attitudes toward almost all of these potential advantages of Oregon's marine reserves.
- In total, 41-66% of Phase 3 longitudinal respondents agreed that the reserves would reduce commercial fishing, and 30-47% agreed they would reduce recreational fishing. More than 30% also agreed that the reserves would be difficult to enforce (43-49%), cost a lot to manage (30-43%), and prevent people from using the areas (30-43%). Residents were least likely to agree that the marine reserves would *not* be effective in conserving marine areas (6-17%) and may cause some species to become overpopulated (19-27%). Residents of the communities of place were least likely to agree with these potential disadvantages. Residents of all areas in 2021 were less likely than those in 2013 and 2016 to agree with almost all disadvantages. For the panel sample, residents of the communities of place and coast in total were less likely in 2021 (compared to 2013) to agree that the reserves

would cost a lot to manage and prevent people from using the areas. Those in the I-5 corridor were also less likely in 2021 (compared to 2016) to agree that the reserves would cost a lot to manage.

- Most (78-94%) Phase 3 longitudinal respondents would vote in support of marine reserves in Oregon. This indicates overwhelming majority support for these reserves. Respondents along the I-5 corridor and the communities of place were most likely to vote in support, whereas those along the rest of the coast were least likely. Residents of all areas in 2021 were more likely than those in 2013 and 2016 to say they would vote in support of (i.e., vote for) marine reserves in Oregon. Support ranged from 78% to 94% in 2021 compared to 65% to 90% in 2013 / 2016. For the panel sample, residents of all coastal areas in 2021 were more likely than they were in 2013 to say they would vote in support of these reserves, as support among these coastal residents ranged from 73% to 90% in 2021 compared to 58% to 82% in 2013. As a result, support increased over time. There were no differences between 2016 (96%) and 2021 (95%) in support among I-5 corridor residents.
- Most Phase 3 longitudinal respondents were extremely (54-66%) or moderately (29-38%) certain in these voting intentions and almost no respondents (1-3%) were not certain. Residents of all areas in 2021 were more likely than those in 2013 and 2016 to say that they were extremely certain of these intentions. For the panel sample, residents of all areas in 2021 were also more likely than they were in 2013 and 2016 to say they were extremely certain of these intentions.
- In terms of future behaviors at these marine reserve sites, the largest percentages (61-64%) of Phase 3 longitudinal respondents would visit these sites the same amount and 27-29% would visit more often. Only 9-11% would visit less often. Residents along the rest of the coast and the coast in total were more likely in 2021 to say they would visit the same amount compared to those who responded in 2013. For the panel sample, there were no substantial changes over time in visitation behavior.
- In total, 69-75% of Phase 3 longitudinal respondents trusted ODFW to provide truthful information about these marine reserves, and 69-71% trusted this agency to manage the reserves using the best available information about non-human species. Approximately half to two-thirds of these respondents (55-68%) agreed with the other questions measuring trust. There was greater trust in ODFW among Phase 3 (2021) respondents compared with Phases 1 (2013) and 2 (2016). The largest increases over time were in response to the statement "I trust ODFW to use public input to inform management of marine reserves" and "I trust ODFW to make good decisions regarding management of marine reserves." For the panel sample, there were slight increases and decreases in trust over time, but none of these changes over time were significant.
- Another 67-78% of Phase 3 (2021) respondents agreed that ODFW has legitimate experts with high knowledge, 62-70% agreed that ODFW is highly credible, and 57-63% agreed that ODFW is highly capable and trustworthy. Approximately half of respondents (48-57%) agreed that ODFW shares similar values as them, 37-46% agreed that ODFW does a good job of communicating with the public, and 33-40% agreed that ODFW operates transparently. For these positive beliefs, residents in the communities of place and I-5 corridor were most likely to agree, whereas those along the rest of the coast were least likely. For negative beliefs, 13-17% agreed that they do not believe ODFW thinks the same way as them, 3-11% thought ODFW is dishonest, and 2-12% believe that ODFW does not operate fairly. Residents along the rest of the coast were most likely to agree with these negative beliefs, whereas those in the communities of place and the I-5 corridor were least likely.
- For emotions, Phase 3 (2021) respondents were most likely to be "interested" (69-88%), "joyful" (57-68%), "excited" (56-68%), "calm" (55-71%), "relaxed" (54-70%), and "energetic" (48-60%) in response to marine reserves in Oregon. Residents in the communities of place and along the I-5 corridor were most likely to feel these positive emotions in response to the reserves, whereas those along the rest of the coast were least likely. Only 10-19% of respondents felt "surprised" by these reserves. In terms of negative emotions, only 5-12% were "fearful," 6-12% felt "sad," 3-6% were "disgusted," and 2-7% felt "angry" in response to the reserves.
- The most important values assigned to Oregon's marine reserves among Phase 3 (2021) respondents were "protect endangered species" (72-85% extremely important), "protect habitat for marine

species" (72-86%), "protect water quality" (72-86%), "preserve unique wild plants or animals" (71-86%), "protect marine species, water, or plants that have value even if humans do not benefit from them" (67-84%), "protect endangered places" (70-83%), "preserve natural areas for scientific discovery or study" (64-75%), and "knowing that future generations will have marine reserves" (62-80%). The least important assigned values were "provide income for the tourism industry" (17-33% extremely important), "provide spiritual inspiration" (18-22%), "provide recreation opportunities" (27-38%), and "provide opportunities to maintain or regain physical or mental health through contact with nature" (33-47%). For I-5 corridor respondents, importance of all values increased over time (from 2016 to 2021). This same pattern was also generally found for the I-5 corridor panel sample.

Perceptions of Marine Areas and the Environment

- The largest proportions of Phase 3 longitudinal respondents had a strong biocentric (nature oriented) environmental orientation (41-56%) and the smallest proportions were anthropocentric (human oriented, 4-13%). Another 17-21% had a moderate biocentric orientation and 20-25% had a mixed anthropocentric – biocentric orientation. Residents in the communities of place and the I-5 corridor were slightly more likely to have a strong biocentric orientation, whereas those along the rest of the coast were slightly more likely to have an anthropocentric orientation. Residents of all locations became more strongly biocentric over time (2021 vs. 2013 or 2016), whereas the percentages with moderate biocentric and mixed anthropocentric – biocentric orientations decreased over time.
- The largest proportions of Phase 3 longitudinal respondents had strong protectionist (29-44%) or moderate protectionist (25-37%) value orientations toward marine areas, whereas the smallest proportion had a human use related orientation toward marine areas (7-15%). Another 18-24% had a mixed protection – use orientation toward these areas. Residents in the communities of place and the I-5 corridor were slightly more likely to have a strong protectionist orientation, whereas those along the rest of the coast were slightly more likely to have a human use orientation. Residents of all coastal locations became more strongly protectionist over time (2021 vs. 2013 or 2016). At most locations, the proportions of residents who reported a moderate protectionist orientation also increased over time, whereas the percentages with mixed protectionist – use orientations decreased.

Demographic and Residential Characteristics

- In total, 47-51% of Phase 3 longitudinal respondents were female and 49-52% were male, with minimal differences across locations and over time. Average ages were 65 years old for the coastal samples and 48 years old for the I-5 corridor sample. Among the coastal samples, only 10-12% were under 40 years of age and 73-76% were 60 and older. By comparison, 41% of the I-5 corridor sample was under 40 years old and 31% of this sample was 60 and older. There were slight changes over time, but these reflect people getting older between the years of data collection (2013 / 2016 vs. 2021). These results are similar to US census information for adult populations in these locations, as the samples were weighted by these demographic characteristics (i.e., age; male, female).
- Among Phase 3 (2021) respondents, 45-59% were liberal, 27-35% considered themselves to be moderate, and 13-20% were conservative. Residents in the communities of place and I-5 corridor were more likely to be liberal. Those on the rest of the coast were slightly more likely to be moderate or conservative. Those in the most recent sample (2021) were more likely to be liberal (59%) and less likely to be conservative (13%) compared to the 2016 sample (51% liberal, 23% conservative).
- Only 0-6% of Phase 3 longitudinal respondents reported that they had someone in their household who was employed in the commercial fishing industry, and there were minimal differences among locations and across the years and phases of data collection.
- The majority (53-72%) of Phase 3 longitudinal respondents had a four-year college degree or an advanced degree (e.g., MS, PhD, Law, Medical). Residents in the communities of place and along the I-5 corridor were more likely to have an advanced degree, whereas those along the rest of the coast were slightly more likely to have a high school diploma, GED, two-year associates degree, or trade school as their highest level of education achieved. Those in Phase 3 (2021) were slightly more

likely than those in Phases 1 (2013) and 2 (2016) to have an advanced degree, and less likely to have a high school diploma or GED as their highest level of education achieved.

- Phase 3 longitudinal respondents lived an average of 29-35 years in Oregon and 12-15 years at their current residence, but the largest proportions tended to live fewer than 10 years in Oregon (19-20%) and at their current residence (48-54%). Compared to coastal residents, I-5 corridor respondents spent slightly less time in Oregon and at their residence. There were no changes over time in the length of time respondents lived in Oregon and at their current residence.
- The largest proportions of Phase 3 (2021) respondents along the coast lived in towns of 5,000 to 24,999 people (52-62%) or small towns with fewer than 5,000 people (21-34%). In contrast, I-5 corridor respondents were most likely to live in large cities of 250,000 or more people (31%), followed by small cities of 25,000 to 99,999 people (26%), and cities of 100,000 to 249,999 people (21%). There were no differences in residential communities over time.
- Few Phase 3 (2021) respondents (4-14%) owned a second home on the Oregon coast, although those in the communities of place (10%) and on rest of the coast (14%) were more likely than those in the I-5 corridor (4%) to own a second home on the Oregon coast. These individuals used their second home for recreation, property investment, and retirement. There were no differences over time.
- In total, 36-53% of Phase 3 (2021) respondents had purchased a fishing license in the last five years with the highest proportion (53%) among residents of the rest of the coast (i.e., not in the communities place) and the lowest (36%) among residents along the I-5 corridor. Among those who had purchased a license, the largest percentages had gone fishing for recreation 5-14 times (25-28%) or 2-4 times (17-27%) in the last five years (M = 31-50 times, SD = 63-100 times).

Implications and Recommendations

- Although residents overwhelmingly perceived Oregon's marine areas and resources (e.g., ocean, animals, fish) to be moderately or very healthy, marine fish and other marine animals in Oregon were perceived as significantly less healthy by all coastal populations in 2021 compared to earlier in 2013 and 2016. In addition, fewer than one-third agreed that the condition of marine areas in Oregon has improved in recent years. 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 to the areas.
- More than two-thirds of residents believed that the government should do more to help protect marine areas in Oregon and residents were significantly more likely to believe this in 2021 than in 2013 and 2016. In addition, fewer than one-third of respondents agreed that managers are already doing everything they can to protect these marine areas and even fewer thought the laws protecting these areas are too strict. It appears, therefore, that a large percentage of residents across locations and over time believe there is room for improving management and policies associated with marine conservation in Oregon.
- Although more than 60% of residents believed that they have visited at least one of the five marine reserve sites in Oregon, visitation to these areas has not significantly increased over time. In addition, although the majority of residents 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 public involvement in these reserves. Fewer than 40% 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% to 49% (i.e., failing grades) of the factual questions about these reserves answered correctly across locations and years of collecting data from these large samples that are representative of the population. In addition, only 16% to 30% of residents agreed that it was easy to access and find information about the reserves, and only 7% to 21% agreed that managers have done a good job educating the public about these areas. Coastal residents were slightly more knowledgeable about these reserves compared to residents along the I-5 corridor, but coastal resident knowledge slightly declined over time in some cases and knowledge of I-5 corridor residents increased only slightly over time. It is

clear, therefore, that resident knowledge about these reserves continues to be low and much more is still needed to inform and educate citizens about these areas. Major information campaigns continue to be needed and most residents would prefer this information to be disseminated through conventional channels such as newspapers and television, although internet websites and social media (e.g., Facebook, Twitter) have become more preferable over time. 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 locations and years. 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 not understood by many individuals. For example, fewer than 30% of residents knew that five marine reserves have already been established, only 24% to 43% knew that non-extractive recreation and tourism activities are allowed in the reserves, and fewer than 50% said they understood how these reserves were managed and any rules and regulations in these areas. These topic areas should offer a starting point for dramatically improving resident knowledge about these reserves.

- The majority of residents believed that scientific research and non-extractive recreation activities should be allowed in Oregon's marine reserves, but they did not think that recreational or commercial fishing should be allowed in these areas. These beliefs have not changed much over time. 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 the reserves and protected areas, activities that are allowed in each designation, and the rationale for different allowances.
- The groups that residents believed could benefit and already have benefitted the most from Oregon's marine reserves are scientists / researchers, people who live along the coast, and government agencies. Fewer than the majority believed that recreationists, local 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, could be harmed and have already been harmed by the reserves. It is important, therefore, for agencies to do more 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 reserves in Oregon. Most residents also expressed positive emotions in response to these reserves (e.g., interested, joyful, excited). In addition, 65-94% of residents would vote in support of these reserves. These favorable attitudes and support have also increased significantly over time to the point where more than three-quarters of residents would now vote in support of these reserves and be moderately or extremely certain of their intentions. Some of the greatest support was from residents living closest to these reserves (i.e., communities of place). There was also strong agreement that these marine reserves would provide potential advantages (e.g., improve understanding, allow populations to recover, protect species diversity), with this agreement also increasing over time. There was 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. In addition, agreement with several of these potential disadvantages has decreased over time. 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 advantages of these reserves, but also the realistic challenges, disadvantages, and costs likely to be encountered with these areas.

- The majority of residents agreed that they trusted the managing agency (ODFW) to manage marine reserves in Oregon, with this trust slightly increasing over time. 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 model, heuristic systematic model) 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 a 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 most important values that residents 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. The importance of all these values increased over time. The least important values were associated with human uses such as tourism and recreation activities. These findings are 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."
- The largest proportions of residents had biocentric (i.e., nature-oriented) value orientations toward the environment in general and protectionist orientations toward marine areas in particular. Residents in all locations also became more strongly biocentric and protectionist over time. In addition, most residents 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. Knowing value orientations of residents can be useful for estimating possible reactions to potentially controversial actions. In addition, value orientations are relatively stable and resistant to substantial change (Manfredo et al., 2004), so attempts to inform individuals with strong biocentric or protectionist value orientations to consider adopting attitudes and supporting actions that may be harmful to marine areas are unlikely to be successful.
- Finally, this project used longitudinal and panel data both at a baseline point in time (2013) and then at later points in time (2016, 2021) to understand resident perceptions of marine reserves in Oregon at a relatively early stage in the implementation of these areas and then make comparisons several years after implementation. Results showed that most residents would vote in favor of these reserves, had positive attitudes toward these areas, and trusted ODFW to manage these reserves. Results also showed that several of these cognitions can change over time, as attitudes became more positive and trust increased, but knowledge remained low. It is critically important, therefore, for managers to continue: (a) cultivating and maintaining this support and trust, (b) increasing outreach and public information to improve resident knowledge about these reserves, and (c) monitoring 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.

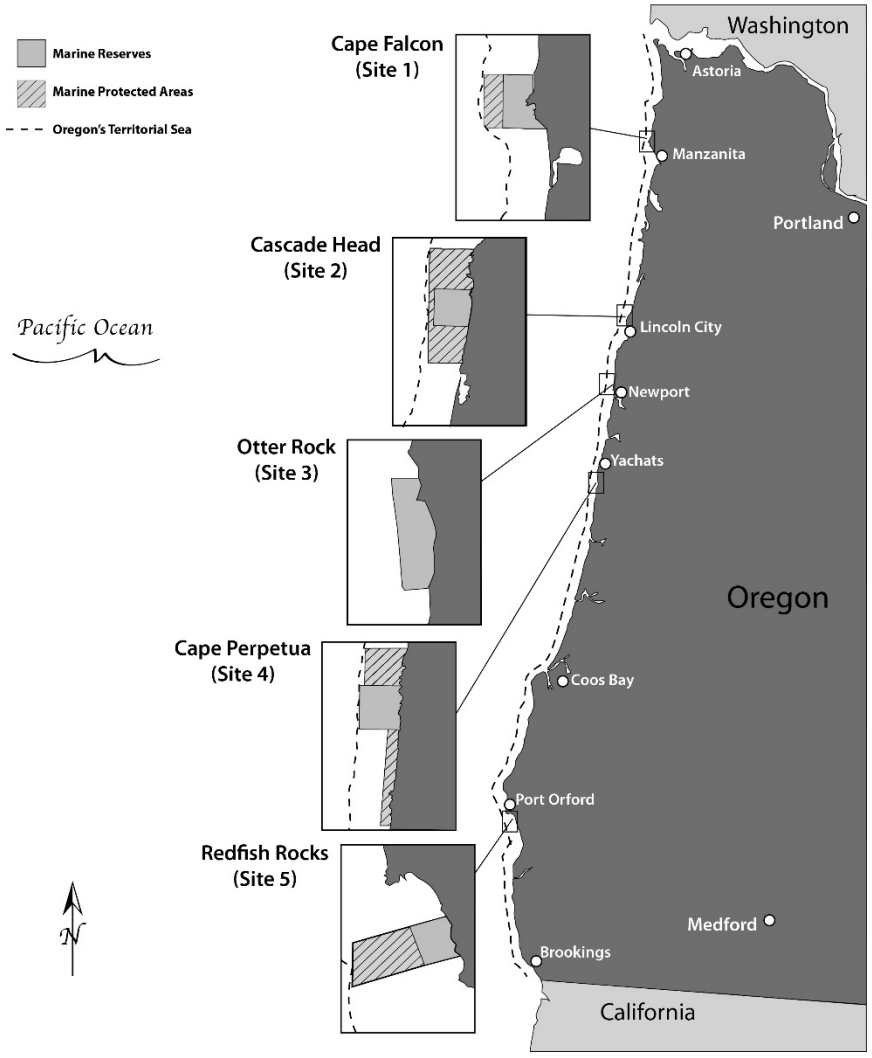

Figure 1. Current marine reserve sites in Oregon

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 could 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 et al., 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 et al., 2011; Lanier et al., 2007).

Conversely, the initial 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 early data for evaluating social and economic impacts of these reserves were 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 initial or early efforts involved economic interest groups and vocal community residents thought to be most directly affected by these marine reserves, which was beneficial as a starting point for issue identification and clarification.

What was lacking in the initial process of establishing and implementing the marine reserve system in Oregon, however, was a comprehensive, systematic, and representative assessment of resident perceptions regarding these reserves. A scientifically grounded and representative selection of residents was required for generalizing information beyond select interest groups. This scientifically grounded social science was needed for fulfilling the 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 et al., 1996; Lück, 2008; Needham & Szuster, 2011; Perry et al., 2014).

As a result of this emphasis on EBM for the Oregon marine reserves, a number of agencies 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 in 2013 (Phase 1; Needham et al., 2013; Perry et al., 2014, 2017), (b) in the most heavily populated region of Oregon in 2016 (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]; Phase 2; Johnston et al., 2019, 2020; Needham et al., 2016a), and (c) in both of these same regions again in 2021 to detect any possible changes over time (Phase 3). The main goal of these efforts was to understand resident knowledge, attitudes, and behaviors in response to Oregon's marine 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 about these marine reserves and sources of information 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, values, 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 et al., 1996; Manfredo et al., 2004; Needham et al., 2016b; 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 et al., 2008). For example, a person may respect other forms of life across many contexts (held values), but the relative importance that they place 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 et al., 2015), assigned values also offer insight into attributes that are valued about a particular place (and to what degree) and offer a clearer understanding of public perceptions toward a specific place (Seymour et al., 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 anthropocentric, biocentric, domination (utilitarianism), and mutualism (social affiliation, caring) have also been examined for fisheries, forests, coral reefs, and the broader environment (see Dunlap et al., 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 that they feel should or 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 their *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 they are 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 et al., 2006; Vaske et al., 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 intentions 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 in opposition to 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 three phases. Phase 1 focused on residents along the Oregon coast in 2013, Phase 2 focused on residents in the most heavily populated region of Oregon in 2016 (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]), and Phase 3 focused on residents in these same regions in 2021 to detect any possible changes in responses over time. Results of Phase 1 were reported in Needham et al. (2013) and results of Phase 2 were reported in Needham et al. (2016a), but results from these two phases are statistically examined in relation to Phase 3 data in this report to compare responses over time.

Phase 1 (Coastal Samples in 2013)

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 et al., 2014; Vaske, 2019). 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, 2019). 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* = 596** completed questionnaires were returned, yielding a 27% overall response rate (596 / 2,600 – 357). This response rate is relatively consistent with many other recent mail surveys asking the public about natural resource issues (see Connelly et al., 2003; Stedman et al., 2019; Vaske, 2019 for reviews). The sample size for residents living in the communities of place was $n = 327$ (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 $n = 596$ 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, 2019). 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 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).

Phase 2 (I-5 Corridor Sample in 2016)

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) based on US census information for this region to ensure that the sample and questionnaire responses were statistically representative of the broader target population (see Needham et al., 2016a for weighting details).

Phase 3 (Longitudinal and Panel Samples in 2021)

Data for Phase 3 were obtained from questionnaires administered by mail in mid-2021 again to residences both: (a) along the Oregon coast, and (b) in the most heavily populated region of Oregon (Portland to Ashland between the Coast and Cascade Mountain Ranges [I-5 corridor]). Respondents were adult residents who were 18 years of age and older. Two different sampling approaches were used. First, the *longitudinal samples (i.e., different people over time compared to 2013 [Phase 1] and 2016 [Phase 2])* were selected randomly by MSG from the most recent postal records where a new sample of 5,400 addresses was divided among three subpopulations: (a) residents living near the five marine reserves (i.e., communities of place), (b) residents along the rest of the coast (i.e., general coastal sample), and (c) residents of the I-5 corridor. The 1,350 addresses in the communities of place were distributed equally among the five specific areas corresponding to each marine reserve location (i.e., 270 addresses each). Identical to Phase 1, 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 new coastal sample of addresses (i.e., 1,350; general coastal sample) was spread throughout the rest of the coast and included areas seaward of the Coast Range excluding those in the five communities of place. For the new I-5 corridor sample, 2,700 addresses were selected randomly (identical to Phase 2). Any duplicate addresses between the 2021 (Phase 3) samples and the 2013 (Phase 1) and 2016 (Phase 2) samples were deleted and replaced to ensure these Phase 3 samples contained different residences and people compared to Phases 1 and 2.

Second, the *panel samples (i.e., same people over time compared to 2013 [Phase 1] and 2016 [Phase 2])* involved sampling all of the same 596 coastal residential addresses from which completed questionnaires were received in Phase 1 and all of the same 530 I-5 corridor addresses from which questionnaires were received in Phase 2. To ensure that these Phase 3 samples contained exactly the same people as Phases 1 and 2, respondent demographic characteristics were compared between phases to make sure they matched (e.g., male, female; education level; age, years lived at current residence, and years lived in Oregon all adjusted for years between the phases of data collection). Respondents were also asked in the Phase 3 questionnaire “Several

years ago, we sent a similar survey with the same front cover graphic and similar questions. Do you remember completing and returning that survey several years ago (no, unsure, yes)?"

Three separate mailings were implemented to collect data for Phase 3. Residents were first sent on May 4, 2021 a mail packet containing a questionnaire booklet (Appendix C), postage paid business reply envelope, and letter requesting their participation. On May 13, 2021, a postcard reminder was sent encouraging their participation. On June 16, 2021, 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 these 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 ID code also allowed the researchers to identify who completed the questionnaire so that respondents were not contacted again in any additional correspondence. The ID code also enabled matching questionnaire responses over time for the panel samples (Phases 1 and 2 vs. 3).

Tables 1 and 2 provide the sample sizes and response rates for all three phases of this project. For Phase 3, a total of 582 questionnaires were undeliverable (e.g., incorrect address, vacant, moved) and ***n* = 1,038** completed questionnaires were returned, yielding a 17.5% overall response rate (1,038 / 6,526 – 582). Again, this response rate is relatively consistent with many other recent mail surveys asking the public about natural resource issues (see Connelly et al., 2003; Stedman et al., 2019; Vaske, 2019 for reviews).

For the *longitudinal samples* (*i.e., different people over time*; Table 1), the new sample size for residents in the communities of place was $n = 251$, the sample for those along the rest of the coast (i.e., general coastal sample) was $n = 222$ (total for the entire coast $n = 473$, 20% response rate), and the sample for those along the I-5 corridor was $n = 351$ (14% response rate). These sample sizes allow generalizations about the population of: (a) Oregon's coastal residents at a margin of error of ± 4.5% at the 95% confidence level, and (b) Oregon's I-5 corridor residents at a margin of error of ± 5% at the 95% confidence level. The combined sample size of ***n* = 824** allows generalizations about the combined population of Oregon's coastal and I-5 corridor residents at a margin of error of ± 3% at the 95% confidence level, which is better than the standard of ± 5% that is widely accepted and adopted in human dimensions of natural resources research (Vaske, 2019). Identical to Phase 1, this new coastal resident data were weighted by

population proportions based on the most recent US Census information for number of households in the sampling areas. Identical to Phase 2, this new I-5 corridor resident data were weighted by demographics (e.g., age; male, female) based on the most recent US census information for this region. This weighting ensured that these samples were statistically representative of the broader target populations, and enabled direct comparisons across years.

Table 1. Sample sizes and response rates for the *longitudinal samples* (*different people over time*)

	Completed questionnaires (*n*)	
Site	Early data collection (2013 or 2016) [a]	Most recent data collection (2021) [b]
Coastal residents		
Communities of place		
Cape Falcon	70	49
Cascade Head	50	44
Otter Rock	69	42
Cape Perpetua	63	68
Redfish Rocks	74	48
Subtotal	326	251
Rest of the coast	270	222
Total	596 [c]	473 [d]
I-5 corridor residents	530 [e]	351 [f]
Total	1126	824

[a] Data collected in 2013 for coastal residents, and in 2016 for I-5 corridor residents.
[b] Data collected in 2021 for all residents.
[c] Total final response rate in 2013 = 27%.
[d] Total final response rate in 2021 = 20%.
[e] Total final response rate in 2016 = 20%.
[f] Total final response rate in 2021 = 14%.

Table 2. Sample sizes for the *panel sample* (*same people over time*)

Site	Completed questionnaires that match the same respondents across both the early (2013 or 2016) and most recent (2021) data collection (*n*) [a]
Coastal residents	
Communities of place	
Cape Falcon	15
Cascade Head	7
Otter Rock	13
Cape Perpetua	10
Redfish Rocks	16
Subtotal	61
Rest of the coast	38
Total	99
I-5 corridor residents	115
Total	214

[a] Early data collected in 2013 for coastal residents, and in 2016 for I-5 corridor residents.
Most recent data collected in 2021 for all residents with final response rate for all panel respondents in 2021 = 22%.

For the *panel samples* (*i.e., same people over time*), the sample size for those who completed multiple questionnaires over time (2013 or 2016 and again in 2021) was ***n* = 214** (22% response rate; Table 2). The samples were $n = 61$ in the communities of place, $n = 38$ on the rest of the coast (total for coast $n = 99$), and $n = 115$ in the I-5 corridor. An important difference between

these panel samples and the longitudinal samples is the panel samples involve a within-subjects design (same people over time) where the goal is to detect change over time in the same people, but these smaller samples (n = 214) are not necessarily representative of the population. The longitudinal samples involve a between-subjects design (different people over time) where the goal is for these larger samples (n = 824-1126) to be representative of the populations over time.

Results are grouped into subsections according to the objectives and questionnaire items. Within each subsection, analyses are conducted to reveal results from Phase 1 in 2013 (coast) and Phase 2 in 2016 (I-5 corridor) respondents, and compare them to Phase 3 in 2021 to examine any changes over time. Phase 1 results were reported in Needham et al. (2013) and Phase 2 results were in Needham et al. (2016a). Comparisons among the three phases are not possible for every questionnaire item, as some items were removed and replaced with different items over time.

Percentages, crosstabulations, and statistical tests were used in this report. These tests produce p-values and when a p-value for any test (i.e., χ^2, t, F, McNemar's test) 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 or differences. Effect sizes of .10 are "minimal" (Vaske, 2019) or "weak" (Cohen, 1988). Effect sizes of .30 are "medium" or "typical," and .50 or greater are "large" or "substantial;" larger effect sizes imply stronger relationships or differences. To highlight findings, data were recoded into major response categories (e.g., agree, disagree).

RESULTS

Oregon Marine Areas in General

Activity Participation in Oregon Marine Areas. Among the Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*, 98% of residents in the communities of place, 90% of those living along the rest of the coast, 92% of all coastal residents, and 92% of those living along the I-5 corridor (Portland to Ashland between the Coast and Cascade Mountain Ranges) had visited marine areas in Oregon before, whereas only 2-10% had never visited these areas. This question was not asked in the Phase 1 (2013) questionnaire, so comparisons over time cannot be made for coastal residents. In Phase 2 (2016), 88% of respondents from the I-5 corridor had visited marine areas in Oregon (compared to 92% in Phase 3). Respondents were then asked to select all of the activities in which they have ever participated at marine areas in

Oregon. Table 3 shows that sightseeing (88-93%), viewing marine animals (88-90%), and exploring tide pools (81-86%) were the most common activities in this state's marine areas among the Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*. Almost half of the respondents (44-49%) also said they had previously visited this state's marine reserves or protected areas. The least popular activities were commercial fishing (2-9%) and scuba diving or snorkeling (3-7%). There were a few statistically significant differences over time. For example, viewing marine animals and exploring tide pools were more popular for I-5 corridor residents in 2021 compared to 2016. Swimming in marine areas was less popular among residents in the communities of place and other coastal areas in 2021 than it was in 2013, whereas swimming was more popular among I-5 corridor residents in 2021 than it was in 2016. Non-charter recreational fishing, charter recreational fishing, and motorized boating were all less popular in 2021 than they were in 2013 for residents in the communities of place and other coastal areas. Charter recreational fishing was also less popular in 2021 than it was in 2016 for I-5 corridor residents. Responses to these questions for the *panel sample (i.e., same people over time)* were not examined because it was the same people over time and the question asked about activities in which they have *ever* participated, so the results should be almost identical across years.

Table 3. All activities participated in Oregon marine areas for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Sightseeing					
2013 vs. 2021 Communities of place	89	88	0.15	.699	.02
2013 vs. 2021 Rest of the coast	87	89	0.33	.565	.03
2013 vs. 2021 Coast total	88	89	0.29	.593	.02
2016 vs. 2021 I-5 corridor	89	93	2.82	.093	.06
Viewing marine animals (whales, seals)					
2013 vs. 2021 Communities of place	90	88	0.59	.444	.03
2013 vs. 2021 Rest of the coast	85	88	0.65	.421	.04
2013 vs. 2021 Coast total	86	88	0.41	.521	.02
2016 vs. 2021 I-5 corridor	**80**	**90**	**12.06**	**.001**	**.13**
Exploring tide pools					
2013 vs. 2021 Communities of place	83	85	0.42	.518	.03
2013 vs. 2021 Rest of the coast	75	81	1.89	.170	.06
2013 vs. 2021 Coast total	77	82	3.15	.076	.06
2016 vs. 2021 I-5 corridor	**76**	**86**	**11.02**	**.001**	**.12**
Swimming					
2013 vs. 2021 Communities of place	**34**	**17**	**19.69**	**< .001**	**.19**
2013 vs. 2021 Rest of the coast	40	33	2.00	.158	.07
2013 vs. 2021 Coast total	**38**	**29**	**9.47**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	**36**	**46**	**6.45**	**.011**	**.10**
Non-charter recreational fishing					
2013 vs. 2021 Communities of place	**48**	**31**	**16.76**	**< .001**	**.17**
2013 vs. 2021 Rest of the coast	**57**	**41**	**12.04**	**.001**	**.16**
2013 vs. 2021 Coast total	**55**	**38**	**27.67**	**< .001**	**.17**
2016 vs. 2021 I-5 corridor	32	29	0.69	.405	.03

Table 3 continued…

Motorized boating					
2013 vs. 2021 Communities of place	**42**	**29**	**10.45**	**.001**	**.14**
2013 vs. 2021 Rest of the coast	43	38	1.04	.309	.05
2013 vs. 2021 Coast total	**43**	**35**	**5.09**	**.024**	**.07**
2016 vs. 2021 I-5 corridor	26	25	0.18	.670	.02
Charter recreational fishing					
2013 vs. 2021 Communities of place	**33**	**22**	**7.38**	**.007**	**.11**
2013 vs. 2021 Rest of the coast	**32**	**24**	**4.21**	**.040**	**.10**
2013 vs. 2021 Coast total	**32**	**23**	**10.22**	**.001**	**.10**
2016 vs. 2021 I-5 corridor	**23**	**14**	**8.50**	**.004**	**.11**
Non-motorized boating (canoe, kayak)					
2013 vs. 2021 Communities of place	30	31	0.15	.702	.02
2013 vs. 2021 Rest of the coast	27	29	0.17	.677	.02
2013 vs. 2021 Coast total	28	29	0.32	.571	.02
2016 vs. 2021 I-5 corridor	21	23	0.59	.443	.03
Surfing / boogie boarding					
2013 vs. 2021 Communities of place	18	18	0.01	.985	.01
2013 vs. 2021 Rest of the coast	11	16	2.35	.125	.07
2013 vs. 2021 Coast total	13	17	2.70	.100	.05
2016 vs. 2021 I-5 corridor	**13**	**19**	**4.39**	**.036**	**.08**
Scuba diving / snorkeling					
2013 vs. 2021 Communities of place	**10**	**4**	**7.80**	**.005**	**.11**
2013 vs. 2021 Rest of the coast	5	7	0.76	.383	.04
2013 vs. 2021 Coast total	6	6	0.02	.899	.01
2016 vs. 2021 I-5 corridor	6	3	1.63	.202	.05
Commercial fishing					
2013 vs. 2021 Communities of place	11	9	0.60	.439	.03
2013 vs. 2021 Rest of the coast	10	5	2.82	.093	.08
2013 vs. 2021 Coast total	**10**	**6**	**4.22**	**.040**	**.06**
2016 vs. 2021 I-5 corridor	2	2	0.01	.988	.01
Visited marine reserves or protected areas [b]					
2013 vs. 2021 Communities of place	N/A	49	N/A	N/A	N/A
2013 vs. 2021 Rest of the coast	N/A	44	N/A	N/A	N/A
2013 vs. 2021 Coast total	N/A	45	N/A	N/A	N/A
2016 vs. 2021 I-5 corridor	N/A	48	N/A	N/A	N/A
Other [c]					
2013 vs. 2021 Communities of place	12	11	0.01	.989	.01
2013 vs. 2021 Rest of the coast	15	13	0.41	.524	.03
2013 vs. 2021 Coast total	14	12	0.61	.434	.03
2016 vs. 2021 I-5 corridor	9	13	3.12	.077	.07

[a] Cell entries are percentages (%) of respondents who have ever participated in the activity in Oregon's marine areas. Items in **bold** were statistically significant at $p < .05$.
[b] Question only asked in the 2021 questionnaires.
[c] 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 4 shows that sightseeing (43-63%), viewing marine animals (12-21%), exploring tide pools (8-14%), and non-charter recreational fishing (8-12%) were the most popular main activities among the Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*. The least popular activities were scuba diving or snorkeling, commercial fishing, charter recreational fishing, and visiting the state's marine reserves or protected areas (each 0-1%). There were a few statistically significant differences over time. For example,

sightseeing was more commonly listed as the top or main activity across all of the 2021 samples compared to the 2013 and 2016 samples. Non-charter recreational fishing was less often listed as the main activity across most of the 2021 samples compared to most 2013 and 2016 samples.

Table 4. Main activity participation in Oregon marine areas for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Sightseeing		
2013 vs. 2021 Communities of place	**31**	**43**
2013 vs. 2021 Rest of the coast	**36**	**50**
2013 vs. 2021 Coast total	**35**	**48**
2016 vs. 2021 I-5 corridor	**45**	**63**
Viewing marine animals (whales, seals)		
2013 vs. 2021 Communities of place	21	21
2013 vs. 2021 Rest of the coast	14	17
2013 vs. 2021 Coast total	16	18
2016 vs. 2021 I-5 corridor	11	12
Exploring tide pools		
2013 vs. 2021 Communities of place	12	14
2013 vs. 2021 Rest of the coast	6	8
2013 vs. 2021 Coast total	8	10
2016 vs. 2021 I-5 corridor	**17**	**8**
Swimming		
2013 vs. 2021 Communities of place	1	0
2013 vs. 2021 Rest of the coast	1	2
2013 vs. 2021 Coast total	1	1
2016 vs. 2021 I-5 corridor	3	4
Non-charter recreational fishing		
2013 vs. 2021 Communities of place	12	9
2013 vs. 2021 Rest of the coast	**25**	**12**
2013 vs. 2021 Coast total	**22**	**11**
2016 vs. 2021 I-5 corridor	**13**	**8**
Motorized boating		
2013 vs. 2021 Communities of place	3	2
2013 vs. 2021 Rest of the coast	4	1
2013 vs. 2021 Coast total	4	1
2016 vs. 2021 I-5 corridor	1	0
Charter recreational fishing		
2013 vs. 2021 Communities of place	2	0
2013 vs. 2021 Rest of the coast	2	1
2013 vs. 2021 Coast total	2	1
2016 vs. 2021 I-5 corridor	1	0
Non-motorized boating (canoe, kayak)		
2013 vs. 2021 Communities of place	3	3
2013 vs. 2021 Rest of the coast	2	2
2013 vs. 2021 Coast total	2	2
2016 vs. 2021 I-5 corridor	2	2
Surfing / boogie boarding		
2013 vs. 2021 Communities of place	4	3
2013 vs. 2021 Rest of the coast	1	3
2013 vs. 2021 Coast total	2	3
2016 vs. 2021 I-5 corridor	3	1

Table 4 continued…

Scuba diving / snorkeling		
2013 vs. 2021 Communities of place	2	0
2013 vs. 2021 Rest of the coast	0	0
2013 vs. 2021 Coast total	1	0
2016 vs. 2021 I-5 corridor	0	0
Commercial fishing		
2013 vs. 2021 Communities of place	4	1
2013 vs. 2021 Rest of the coast	3	1
2013 vs. 2021 Coast total	3	1
2016 vs. 2021 I-5 corridor	1	0
Visited marine reserves or protected areas [b]		
2013 vs. 2021 Communities of place	N/A	0
2013 vs. 2021 Rest of the coast	N/A	1
2013 vs. 2021 Coast total	N/A	1
2016 vs. 2021 I-5 corridor	N/A	1
Other [c]		
2013 vs. 2021 Communities of place	6	3
2013 vs. 2021 Rest of the coast	7	3
2013 vs. 2021 Coast total	6	3
2016 vs. 2021 I-5 corridor	4	2

[a] Cell entries are percentages (%) of respondents who indicated this was their main activity in Oregon's marine areas. 2013 vs. 2021 communities of place: $\chi^2 = 27.11$, $p = .007$, $V = .21$. 2013 vs. 2021 rest of the coast: $\chi^2 = 27.82$, $p = .003$, $V = .25$. 2013 vs. 2021 coast total: $\chi^2 = 52.08$, $p < .001$, $V = .23$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 44.92$, $p < .001$, $V = .24$. Items in **bold** represent a change of at least 5% over time.

[b] Question only asked in the 2021 questionnaires.

[c] Most common "other" activities listed include: beachcombing, clamming, crabbing, and hiking / walking.

For the *panel samples (i.e., same people over time)*, Table 5 shows that sightseeing increased dramatically over time as the top or main activity for residents in the communities of place, the coast in total, and the I-5 corridor. Viewing marine animals also increased dramatically over time as the top or main activity for residents at all sites along the coast (communities of place, rest of the coast, coast in total), but not for residents of the I-5 corridor. Exploring tide pools decreased over time as the top or main activity, especially for residents of the I-5 corridor. Non-charter recreational fishing and motorized boating also decreased over time as the top or main activity, especially for residents of the rest of the coast and the coast in total. Finally, non-motorized boating and commercial fishing also decreased over time as the top or main activity, especially for residents of the communities of place and the coast in total.

Table 5. Main activity participation in Oregon marine areas for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Sightseeing		
2013 vs. 2021 Communities of place	**20**	**46**
2013 vs. 2021 Rest of the coast	42	40
2013 vs. 2021 Coast total	**29**	**44**
2016 vs. 2021 I-5 corridor	**43**	**63**
Viewing marine animals (whales, seals)		
2013 vs. 2021 Communities of place	**22**	**36**
2013 vs. 2021 Rest of the coast	**6**	**17**
2013 vs. 2021 Coast total	**16**	**29**
2016 vs. 2021 I-5 corridor	12	13
Exploring tide pools		
2013 vs. 2021 Communities of place	**9**	**2**
2013 vs. 2021 Rest of the coast	6	3
2013 vs. 2021 Coast total	**8**	**2**
2016 vs. 2021 I-5 corridor	**28**	**8**
Swimming		
2013 vs. 2021 Communities of place	0	0
2013 vs. 2021 Rest of the coast	3	7
2013 vs. 2021 Coast total	1	2
2016 vs. 2021 I-5 corridor	2	4
Non-charter recreational fishing		
2013 vs. 2021 Communities of place	9	5
2013 vs. 2021 Rest of the coast	**22**	**17**
2013 vs. 2021 Coast total	**14**	**9**
2016 vs. 2021 I-5 corridor	4	3
Motorized boating		
2013 vs. 2021 Communities of place	2	0
2013 vs. 2021 Rest of the coast	**11**	**3**
2013 vs. 2021 Coast total	**6**	**1**
2016 vs. 2021 I-5 corridor	1	2
Charter recreational fishing		
2013 vs. 2021 Communities of place	0	4
2013 vs. 2021 Rest of the coast	3	3
2013 vs. 2021 Coast total	1	4
2016 vs. 2021 I-5 corridor	2	1
Non-motorized boating (canoe, kayak)		
2013 vs. 2021 Communities of place	**9**	**0**
2013 vs. 2021 Rest of the coast	3	3
2013 vs. 2021 Coast total	**7**	**1**
2016 vs. 2021 I-5 corridor	1	3
Surfing / boogie boarding		
2013 vs. 2021 Communities of place	2	5
2013 vs. 2021 Rest of the coast	0	0
2013 vs. 2021 Coast total	1	4
2016 vs. 2021 I-5 corridor	1	1
Scuba diving / snorkeling		
2013 vs. 2021 Communities of place	0	0
2013 vs. 2021 Rest of the coast	0	0
2013 vs. 2021 Coast total	0	0
2016 vs. 2021 I-5 corridor	1	1
Commercial fishing		
2013 vs. 2021 Communities of place	**7**	**2**
2013 vs. 2021 Rest of the coast	3	0
2013 vs. 2021 Coast total	**6**	**1**
2016 vs. 2021 I-5 corridor	1	1

Table 5 continued…

Visited marine reserves or protected areas [b]		
2013 vs. 2021 Communities of place	N/A	0
2013 vs. 2021 Rest of the coast	N/A	0
2013 vs. 2021 Coast total	N/A	0
2016 vs. 2021 I-5 corridor	N/A	0
Other [c]		
2013 vs. 2021 Communities of place	**19**	**0**
2013 vs. 2021 Rest of the coast	3	7
2013 vs. 2021 Coast total	**12**	**2**
2016 vs. 2021 I-5 corridor	3	1

[a] Cell entries are percentages (%) of respondents who indicated this was their main activity in Oregon's marine areas. Items in **bold** represent a change of at least 5% over time.
[b] Question only asked in the 2021 questionnaires.
[c] Most common "other" activities listed include: beachcombing, clamming, crabbing, and hiking / walking.

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 6 shows that approximately two-thirds or more of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* believed that wildlife (73-78%), forests (61-63%), other marine animals (64-68%), marine areas (i.e., ocean; 64-77%), rivers and streams (65-67%), marine fish (59-69%), and bays and estuaries (59-72%) were moderately or very healthy in the state. Wildlife were perceived as the most ecologically healthy in Oregon with no statistically significant differences over time. There were, however, a few significant differences over time. Forests in Oregon were perceived as significantly less healthy by all samples in 2021 compared to earlier (2013, 2016). In addition, marine fish and other marine animals in Oregon were perceived as significantly less healthy by all coastal populations in 2021 compared to earlier in 2013. However, there were no differences in these perceptions of marine fish and other marine animals in Oregon over time for the I-5 corridor samples. For the *panel sample (i.e., same people across time)*, almost all perceptions of ecological health indicators declined (i.e., less healthy) over time, but this decline was only statistically significant for perceptions of forest health among the rest of the coast sample and total coast sample (Table 7).

Table 6. Perceived ecological health of marine areas and other natural resources in Oregon for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Wildlife in Oregon					
2013 vs. 2021 Communities of place	75	74	0.13	.719	.02
2013 vs. 2021 Rest of the coast	78	73	1.25	.263	.05
2013 vs. 2021 Coast total	77	73	1.77	.183	.04
2016 vs. 2021 I-5 corridor	78	78	0.02	.887	.01
Forests in Oregon					
2013 vs. 2021 Communities of place	**70**	**61**	**4.77**	**.029**	**.10**
2013 vs. 2021 Rest of the coast	**77**	**62**	**11.88**	**.001**	**.17**
2013 vs. 2021 Coast total	**75**	**61**	**20.35**	**< .001**	**.15**
2016 vs. 2021 I-5 corridor	**74**	**63**	**10.57**	**.001**	**.12**
Other marine animals in Oregon					
2013 vs. 2021 Communities of place	**73**	**64**	**5.46**	**.019**	**.10**
2013 vs. 2021 Rest of the coast	**75**	**66**	**4.27**	**.039**	**.10**
2013 vs. 2021 Coast total	**75**	**65**	**9.67**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	71	68	0.93	.334	.04
Marine areas (ocean) in Oregon					
2013 vs. 2021 Communities of place	73	67	2.01	.156	.06
2013 vs. 2021 Rest of the coast	73	64	3.35	.067	.09
2013 vs. 2021 Coast total	**73**	**65**	**6.43**	**.011**	**.08**
2016 vs. 2021 I-5 corridor	71	77	3.66	.056	.07
Rivers and streams in Oregon					
2013 vs. 2021 Communities of place	70	67	0.41	.524	.03
2013 vs. 2021 Rest of the coast	71	65	1.89	.169	.07
2013 vs. 2021 Coast total	71	65	3.06	.080	.06
2016 vs. 2021 I-5 corridor	70	65	1.87	.171	.05
Marine fish in Oregon					
2013 vs. 2021 Communities of place	**69**	**59**	**5.72**	**.017**	**.11**
2013 vs. 2021 Rest of the coast	**73**	**62**	**5.09**	**.024**	**.11**
2013 vs. 2021 Coast total	**72**	**61**	**11.13**	**.001**	**.11**
2016 vs. 2021 I-5 corridor	69	69	0.01	.957	.01
Bays and estuaries in Oregon					
2013 2021 Communities of place	66	64	0.38	.540	.03
2013 vs. 2021 Rest of the coast	66	59	2.02	.155	.07
2013 vs. 2021 Coast total	66	60	3.21	.073	.06
2016 vs. 2021 I-5 corridor	65	72	3.14	.076	.07

[a] Cell entries are percentages (%) of respondents who perceived the resource to be "moderately or very healthy" (4 – 8 on scale). Items in **bold** were statistically significant at $p < .05$.

Table 7. Perceived ecological health of marine areas and other natural resources in Oregon for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Wildlife in Oregon			
2013 vs. 2021 Communities of place	66	59	.344
2013 vs. 2021 Rest of the coast	87	79	.962
2013 vs. 2021 Coast total	74	66	.332
2016 vs. 2021 I-5 corridor	76	74	.678
Forests in Oregon			
2013 vs. 2021 Communities of place	62	51	.146
2013 vs. 2021 Rest of the coast	**89**	**65**	**.021**
2013 vs. 2021 Coast total	**72**	**56**	**.004**
2016 vs. 2021 I-5 corridor	64	54	.080
Other marine animals in Oregon			
2013 vs. 2021 Communities of place	64	62	.998
2013 vs. 2021 Rest of the coast	84	79	.976
2013 vs. 2021 Coast total	72	68	.824
2016 vs. 2021 I-5 corridor	67	66	.824
Marine areas (ocean) in Oregon			
2013 vs. 2021 Communities of place	68	61	.424
2013 vs. 2021 Rest of the coast	81	77	.988
2013 vs. 2021 Coast total	73	67	.503
2016 vs. 2021 I-5 corridor	67	60	.362
Rivers and streams in Oregon			
2013 vs. 2021 Communities of place	63	56	.523
2013 vs. 2021 Rest of the coast	78	68	.453
2013 vs. 2021 Coast total	69	60	.265
2016 vs. 2021 I-5 corridor	69	64	.345
Marine fish in Oregon			
2013 vs. 2021 Communities of place	58	59	.999
2013 vs. 2021 Rest of the coast	76	65	.453
2013 vs. 2021 Coast total	65	61	.851
2016 vs. 2021 I-5 corridor	57	56	.988
Bays and estuaries in Oregon			
2013 vs. 2021 Communities of place	55	57	.998
2013 vs. 2021 Rest of the coast	73	65	.687
2013 vs. 2021 Coast total	62	60	.997
2016 vs. 2021 I-5 corridor	62	63	.999

[a] Cell entries are percentages (%) of respondents who perceived the resource to be "moderately or very healthy" (4 – 8 on scale). Items in **bold** were statistically significant at $p < .05$.

Beliefs about Oregon Marine Areas. Respondents were asked the extent that they disagreed or agreed with eight statements about marine areas in Oregon. Table 8 shows that the highest proportions (67-84%) of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* believed the government should do more to help protect marine areas in Oregon. In addition, 35-55% agreed that people who fish commercially are harming marine areas in Oregon, whereas 18-40% agreed that fishing is not harming marine areas in Oregon. Overall, 27-31% agreed that the condition of marine areas in Oregon has improved in recent years, and 22-35% agreed that managers are doing everything they can to protect marine areas in this state. Furthermore, 17-18% agreed that people fishing recreationally are harming Oregon's marine areas, 7-21% agreed

that people who purchase and consume seafood are harming marine areas in Oregon, and only 5-14% agreed that laws protecting marine areas in Oregon are too strict.

Table 8. Beliefs about Oregon marine areas for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
The government should do more to help protect marine areas in Oregon					
2013 vs. 2021 Communities of place	**65**	**77**	**9.20**	**.002**	**.13**
2013 vs. 2021 Rest of the coast	**45**	**67**	**22.79**	**< .001**	**.22**
2013 vs. 2021 Coast total	**50**	**70**	**40.09**	**< .001**	**.20**
2016 vs. 2021 I-5 corridor	**69**	**84**	**23.70**	**< .001**	**.17**
People who fish commercially are harming marine areas in Oregon					
2013 vs. 2021 Communities of place	46	43	0.26	.610	.02
2013 vs. 2021 Rest of the coast	39	35	0.68	.408	.04
2013 vs. 2021 Coast total	41	37	1.02	.313	.03
2016 vs. 2021 I-5 corridor	**39**	**55**	**19.76**	**< .001**	**.16**
The condition of marine areas in Oregon has improved in recent years					
2013 vs. 2021 Communities of place	36	31	1.34	.248	.05
2013 vs. 2021 Rest of the coast	34	29	1.09	.296	.05
2013 vs. 2021 Coast total	34	30	2.29	.130	.05
2016 vs. 2021 I-5 corridor	31	27	1.45	.229	.04
Fishing is *not* harming marine areas in Oregon					
2013 vs. 2021 Communities of place	29	22	2.86	.091	.07
2013 vs. 2021 Rest of the coast	42	40	0.11	.739	.02
2013 vs. 2021 Coast total	38	36	0.84	.360	.03
2016 vs. 2021 I-5 corridor	**27**	**18**	**8.54**	**.003**	**.11**
Managers are doing everything they can to protect marine areas in Oregon					
2013 vs. 2021 Communities of place	**26**	**35**	**4.36**	**.037**	**.09**
2013 vs. 2021 Rest of the coast	31	29	0.22	.640	.02
2013 vs. 2021 Coast total	30	30	0.05	.820	.01
2016 vs. 2021 I-5 corridor	21	22	0.05	.816	.01
People who purchase / consume seafood are harming marine areas in Oregon					
2013 vs. 2021 Communities of place	**20**	**13**	**5.02**	**.025**	**.10**
2013 vs. 2021 Rest of the coast	**15**	**7**	**7.24**	**.007**	**.12**
2013 vs. 2021 Coast total	**16**	**8**	**13.02**	**< .001**	**.11**
2016 vs. 2021 I-5 corridor	16	21	2.67	.102	.06
People who fish recreationally are harming marine areas in Oregon					
2013 vs. 2021 Communities of place	23	18	2.08	.150	.06
2013 vs. 2021 Rest of the coast	11	17	2.89	.089	.08
2013 vs. 2021 Coast total	14	17	1.56	.211	.04
2016 vs. 2021 I-5 corridor	15	17	0.84	.359	.03
Laws protecting marine areas in Oregon are already too strict					
2013 vs. 2021 Communities of place	**16**	**7**	**12.55**	**< .001**	**.15**
2013 vs. 2021 Rest of the coast	**24**	**14**	**7.41**	**.006**	**.13**
2013 vs. 2021 Coast total	**22**	**12**	**17.41**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	8	5	2.12	.146	.05

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

There were some statistically significant differences among these Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* over time. For example, there was a substantial increase over time in the percent of residents across all locations who agreed that the government should do more to help protect marine areas in Oregon (Table 8). There was also an increase over time in the percent of I-5 corridor residents who agreed that people who fish commercially are harming marine areas in Oregon, and a decrease among these residents who agreed that fishing is not harming marine areas in Oregon. There was no change over time for these variables among all of the coastal samples. There were also decreases over time in the percent of coastal residents who agreed that people who purchase and consume seafood are harming marine areas in Oregon and laws protecting marine areas in Oregon are already too strict. There was no change over time for these two variables among I-5 corridor residents.

For the *panel sample (i.e., same people across time)*, respondents in all areas were now (2021) more likely to agree that the government should do more to help protect marine areas in Oregon, but this was only statistically significant for the rest of the coast and the total coast residents (Table 9). Residents of the communities of place were now (2021) significantly more likely to agree that the condition of marine areas in Oregon has improved in recent years compared to what they said in 2013. These residents of the communities of place were also significantly less likely to agree now (2021) that fishing is not harming marine areas in Oregon compared to what they said in 2013. Respondents in all areas were now (2021) less likely to agree that people who purchase and consume seafood are harming marine areas in Oregon, but this was only statistically significant for the communities of place and total coast residents.

Table 9. Beliefs about Oregon marine areas for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
The government should do more to help protect marine areas in Oregon			
2013 vs. 2021 Communities of place	69	76	.267
2013 vs. 2021 Rest of the coast	**32**	**65**	**< .001**
2013 vs. 2021 Coast total	**55**	**72**	**.001**
2016 vs. 2021 I-5 corridor	80	81	.996
People who fish commercially are harming marine areas in Oregon			
2013 vs. 2021 Communities of place	53	46	.146
2013 vs. 2021 Rest of the coast	40	38	.983
2013 vs. 2021 Coast total	47	43	.327
2016 vs. 2021 I-5 corridor	49	50	.851
The condition of marine areas in Oregon has improved in recent years			
2013 vs. 2021 Communities of place	**28**	**44**	**.049**
2013 vs. 2021 Rest of the coast	37	42	.989
2013 vs. 2021 Coast total	31	43	.064
2016 vs. 2021 I-5 corridor	36	30	.201
Fishing is *not* harming marine areas in Oregon			
2013 vs. 2021 Communities of place	**27**	**14**	**.047**
2013 vs. 2021 Rest of the coast	46	46	.999
2013 vs. 2021 Coast total	34	26	.122
2016 vs. 2021 I-5 corridor	26	21	.383
Managers are doing everything they can to protect marine areas in Oregon			
2013 vs. 2021 Communities of place	22	28	.815
2013 vs. 2021 Rest of the coast	26	38	.388
2013 vs. 2021 Coast total	24	32	.362
2016 vs. 2021 I-5 corridor	23	24	.839
People who purchase / consume seafood are harming marine areas in Oregon			
2013 vs. 2021 Communities of place	**27**	**14**	**.021**
2013 vs. 2021 Rest of the coast	13	8	.891
2013 vs. 2021 Coast total	**22**	**12**	**.049**
2016 vs. 2021 I-5 corridor	17	11	.359
People who fish recreationally are harming marine areas in Oregon			
2013 vs. 2021 Communities of place	20	21	.754
2013 vs. 2021 Rest of the coast	13	14	.993
2013 vs. 2021 Coast total	17	18	.791
2016 vs. 2021 I-5 corridor	13	15	.664
Laws protecting marine areas in Oregon are already too strict			
2013 vs. 2021 Communities of place	14	7	.125
2013 vs. 2021 Rest of the coast	21	22	.996
2013 vs. 2021 Coast total	17	13	.344
2016 vs. 2021 I-5 corridor	4	5	.992

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

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, B, and C) 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 10 shows that 60-76% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* had visited at least one of the reserve sites, whereas 24-40% had not visited. There were no statistically significant changes over time or substantial differences among phases and samples over time in visitation to Oregon's marine reserves. I-5 corridor residents were slightly more likely over time (67% in 2021, 60% in 2016) to have visited at least one of the reserves, but this 7% increase in visitation over time was not statistically significant.

Table 10. Previous visitation to the Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
2013 vs. 2021 Communities of place	74	76	0.27	.605	.02
2013 vs. 2021 Rest of the coast	64	60	0.70	.402	.04
2013 vs. 2021 Coast total	67	64	0.65	.419	.03
2016 vs. 2021 I-5 corridor	60	67	3.61	.058	.07

[a] Cell entries are percentages (%) who said "yes" they had previously visited at least one of the reserves.

Table 11. Previous visitation to the Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
2013 vs. 2021 Communities of place	79	71	.359
2013 vs. 2021 Rest of the coast	61	53	.754
2013 vs. 2021 Coast total	72	64	.265
2016 vs. 2021 I-5 corridor	65	69	.883

[a] Cell entries are percentages (%) who said "yes" they had previously visited at least one of the reserves.

For the *panel sample (i.e., same people across time)*, there were also no significant changes over time (Table 11). I-5 corridor residents were slightly more likely over time (69% in 2021 vs. 65% in 2016) to have visited at least one of the marine reserves, but this 4% increase in visitation was not statistically significant. It is difficult to explain the results for the communities of place, rest of the coast, and coast total, as the percentages in 2021 were *less* than in 2013, which is confusing given these are the *same* people and the question asked if they had *ever* visited the sites. Although speculative, it is possible that in 2013, they were not quite sure about where the reserves were located and what the boundaries were (given the reserves were new at that time), so they may have overestimated their visitation at that time, but now that the reserves have been

established for several years, these people are more knowledgeable about the reserve boundaries and their most recent responses (in 2021) are more accurate than what they reported earlier.

Respondents were then asked which of these sites they had visited. Results in Table 12 show that among Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* who said they had previously visited a site (i.e., not all respondents in the sample), the largest proportions had previously visited Otter Rock (56-73% of those who had visited a site), Cascade Head (52-74%), or Cape Perpetua (47-62%; Table 12). Fewer had visited Cape Falcon (38-42%) or Redfish Rocks (9-37%). There were only a few statistically significant changes over time or substantial differences among samples over time in the specific Oregon marine reserves previously visited. Residents of the communities of place and coast in total were slightly more likely over time to have visited Cascade Head. Conversely, residents of the I-5 corridor in the 2021 sample were slightly less likely to have visited Redfish Rocks compared to the earlier 2016 sample.

Table 12. Oregon marine reserve sites previously visited for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Otter Rock					
2013 vs. 2021 Communities of place	77	73	0.92	.339	.05
2013 vs. 2021 Rest of the coast	65	56	2.19	.139	.09
2013 vs. 2021 Coast total	68	61	3.75	.053	.07
2016 vs. 2021 I-5 corridor	69	73	0.59	.444	.04
Cascade Head					
2013 vs. 2021 Communities of place	**62**	**74**	**6.36**	**.012**	**.13**
2013 vs. 2021 Rest of the coast	46	52	1.03	.310	.06
2013 vs. 2021 Coast total	**50**	**58**	**3.87**	**.049**	**.08**
2016 vs. 2021 I-5 corridor	63	63	0.01	.924	.01
Cape Perpetua					
2013 vs. 2021 Communities of place	59	56	0.27	.601	.03
2013 vs. 2021 Rest of the coast	56	62	0.83	.363	.06
2013 vs. 2021 Coast total	57	60	0.66	.416	.03
2016 vs. 2021 I-5 corridor	43	47	0.99	.321	.05
Cape Falcon					
2013 vs. 2021 Communities of place	33	40	2.35	.125	.08
2013 vs. 2021 Rest of the coast	37	38	0.07	.787	.02
2013 vs. 2021 Coast total	36	39	0.70	.403	.03
2016 vs. 2021 I-5 corridor	38	42	0.61	.434	.04
Redfish Rocks					
2013 vs. 2021 Communities of place	17	19	0.22	.637	.02
2013 vs. 2021 Rest of the coast	45	37	1.60	.206	.08
2013 vs. 2021 Coast total	37	32	1.63	.201	.05
2016 vs. 2021 I-5 corridor	**16**	**9**	**4.34**	**.033**	**.10**

[a] Cell entries are percentages (%) of only those respondents who had previously visited a site (i.e., not all respondents in sample).

For the *panel sample (i.e., same people across time)*, there were also only a few significant differences over time with those saying in 2021 that they were *less* likely than they said in 2013 or 2016 that they had previously visited Otter Rock (Table 13). Again, it is difficult to explain

most of the results in Table 13, as almost all of the percentages in 2021 were *less* than in 2013, which is confusing because these are the *same* people and the question asked if they had *ever* visited the sites. Although speculative, perhaps in 2013 and 2016 they were not quite sure about where the reserves were located and what the boundaries were given that the reserves were new at that time, so they overestimated their visitation. However, now that the reserves have been established for several years, these people may be more knowledgeable about the reserves, so their most recent responses in 2021 may be more accurate than what they reported earlier.

Table 13. Oregon marine reserve sites previously visited for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Otter Rock			
2013 vs. 2021 Communities of place	**67**	**37**	**.003**
2013 vs. 2021 Rest of the coast	**82**	**50**	**.031**
2013 vs. 2021 Coast total	**71**	**41**	**< .001**
2016 vs. 2021 I-5 corridor	62	56	.648
Cascade Head			
2013 vs. 2021 Communities of place	52	42	.581
2013 vs. 2021 Rest of the coast	55	39	.508
2013 vs. 2021 Coast total	53	41	.286
2016 vs. 2021 I-5 corridor	56	56	.998
Cape Perpetua			
2013 vs. 2021 Communities of place	52	42	.727
2013 vs. 2021 Rest of the coast	68	56	.625
2013 vs. 2021 Coast total	57	46	.388
2016 vs. 2021 I-5 corridor	49	52	.454
Cape Falcon			
2013 vs. 2021 Communities of place	42	30	.687
2013 vs. 2021 Rest of the coast	55	61	.902
2013 vs. 2021 Coast total	46	39	.754
2016 vs. 2021 I-5 corridor	37	30	.791
Redfish Rocks			
2013 vs. 2021 Communities of place	31	28	.453
2013 vs. 2021 Rest of the coast	55	28	.219
2013 vs. 2021 Coast total	39	28	.092
2016 vs. 2021 I-5 corridor	18	16	.936

[a] Cell entries are percentages (%) of only those respondents who had previously visited a site (i.e., not all respondents in sample). Items in **bold** were statistically significant at $p < .05$.

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 14 show that more than the majority (57-65%) of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*

felt they understood the purpose of these reserves. Another 48-58% felt they understood the role of science in these reserves, 45-68% were familiar with these reserves, 28-37% understood the role of public involvement in these reserves, 24-48% felt informed about the topic of marine reserves in Oregon, 20-39% felt knowledgeable about these reserves, 27-39% understood where the reserves were located, 21-37% understood how the reserves would be managed, and 20-30% understood the rules and regulations associated with these reserves. Across almost all of these self-assessed knowledge questions, residents of the communities of place nearest the reserves felt most knowledgeable, whereas those along the I-5 corridor felt least knowledgeable.

There were some statistically significant differences over time. For example, residents of the communities of place in 2021 reported significantly higher understanding of: (a) the role of science in these reserves, (b) rules / regulations of these reserves, and (c) how these reserves would be managed compared to residents of these locations in 2013 (Table 14). Residents of the rest of the coast in 2021 reported significantly lower: (a) familiarity with these reserves, (b) level of being informed about these reserves, and (c) knowledge about these reserves compared to residents of these locations in 2013. Residents of the coast in total in 2021 reported significantly higher understanding about the role of science in these reserves, but significantly lower: (a) familiarity with these reserves, (b) level of being informed about these reserves, and (c) knowledge about these reserves compared to residents of these locations in 2013. Residents of the I-5 corridor in 2021 reported significantly higher: (a) familiarity with these reserves, (b) understanding of the purpose of these reserves, (c) understanding about the role of science in these reserves, (d) understanding of where these reserves are located, and (e) understanding of how these reserves would be managed compared to residents of the I-5 corridor in 2016. For the *panel sample (i.e., same people across time)*, there were some slight increases and decreases in responses to these nine self-assessed knowledge items over time (i.e., 2013 and 2016 vs. 2021), but none of these changes over time were statistically significant (Table 15).

Table 14. Self-assessed knowledge about Oregon marine reserves for the *longitudinal samples* (*different people over time*)

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Understand the purpose of these reserves [a]					
2013 vs. 2021 Communities of place	61	65	0.58	.445	.03
2013 vs. 2021 Rest of the coast	54	57	0.19	.666	.02
2013 vs. 2021 Coast total	56	59	0.57	.451	.02
2016 vs. 2021 I-5 corridor	**50**	**62**	**10.43**	**.001**	**.12**
Understand the role of science in these reserves [a]					
2013 vs. 2021 Communities of place	**49**	**58**	**4.29**	**.038**	**.09**
2013 vs. 2021 Rest of the coast	42	48	1.40	.237	.06
2013 vs. 2021 Coast total	**44**	**50**	**4.18**	**.041**	**.07**
2016 vs. 2021 I-5 corridor	**40**	**48**	**5.03**	**.025**	**.08**
Familiarity with these reserves [b]					
2013 vs. 2021 Communities of place	70	68	0.31	.580	.02
2013 vs. 2021 Rest of the coast	**71**	**57**	**9.72**	**.002**	**.14**
2013 vs. 2021 Coast total	**71**	**60**	**13.43**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**35**	**45**	**6.39**	**.012**	**.09**
Understand the role of public involvement in these reserves [a]					
2013 vs. 2021 Communities of place	29	37	3.62	.057	.08
2013 vs. 2021 Rest of the coast	31	34	0.53	.468	.03
2013 vs. 2021 Coast total	30	35	2.20	.138	.05
2016 vs. 2021 I-5 corridor	25	28	1.00	.317	.04
Informed about these reserves [c]					
2013 vs. 2021 Communities of place	41	48	2.58	.109	.07
2013 vs. 2021 Rest of the coast	**45**	**34**	**6.35**	**.012**	**.12**
2013 vs. 2021 Coast total	**44**	**38**	**5.00**	**.025**	**.07**
2016 vs. 2021 I-5 corridor	23	24	0.01	.972	.01
Knowledgeable about these reserves [d]					
2013 vs. 2021 Communities of place	37	39	0.26	.613	.02
2013 vs. 2021 Rest of the coast	**41**	**30**	**5.37**	**.020**	**.11**
2013 vs. 2021 Coast total	**40**	**33**	**5.61**	**.018**	**.07**
2016 vs. 2021 I-5 corridor	21	20	0.28	.599	.02
Understand where these reserves are located [a]					
2013 vs. 2021 Communities of place	33	39	2.38	.123	.07
2013 vs. 2021 Rest of the coast	35	34	0.06	.808	.01
2013 vs. 2021 Coast total	34	35	0.07	.795	.01
2016 vs. 2021 I-5 corridor	**17**	**27**	**10.03**	**.002**	**.12**
Understand rules / regulations of these reserves [a]					
2013 vs. 2021 Communities of place	**21**	**30**	**5.55**	**.019**	**.10**
2013 vs. 2021 Rest of the coast	22	24	0.12	.731	.02
2013 vs. 2021 Coast total	22	25	1.40	.236	.04
2016 2021 I-5 corridor	17	20	0.88	.349	.03
Understand how these reserves would be managed [a]					
2013 vs. 2021 Communities of place	**24**	**37**	**11.21**	**.001**	**.15**
2013 vs. 2021 Rest of the coast	27	24	0.63	.429	.04
2013 vs. 2021 Coast total	26	28	0.11	.743	.01
2016 vs. 2021 I-5 corridor	**15**	**21**	**5.14**	**.023**	**.08**

[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.

Items in **bold** were statistically significant at $p < .05$.

Table 15. Self-assessed knowledge about Oregon marine reserves for the *panel sample* (*same people over time*)

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Understand the purpose of these reserves [a]			
2013 vs. 2021 Communities of place	75	82	.344
2013 vs. 2021 Rest of the coast	63	55	.754
2013 vs. 2021 Coast total	71	72	.824
2016 vs. 2021 I-5 corridor	55	56	.860
Understand the role of science in these reserves [a]			
2013 vs. 2021 Communities of place	64	68	.607
2013 vs. 2021 Rest of the coast	53	52	.968
2013 vs. 2021 Coast total	60	62	.839
2016 vs. 2021 I-5 corridor	50	54	.499
Familiarity with these reserves [b]			
2013 vs. 2021 Communities of place	86	91	.289
2013 vs. 2021 Rest of the coast	82	76	.687
2013 vs. 2021 Coast total	84	86	.791
2016 vs. 2021 I-5 corridor	44	56	.099
Understand the role of public involvement in these reserves [a]			
2013 vs. 2021 Communities of place	43	45	.815
2013 vs. 2021 Rest of the coast	39	30	.508
2013 vs. 2021 Coast total	41	40	.916
2016 vs. 2021 I-5 corridor	26	28	.845
Informed about these reserves [c]			
2013 vs. 2021 Communities of place	70	66	.424
2013 vs. 2021 Rest of the coast	49	47	.922
2013 vs. 2021 Coast total	62	59	.405
2016 vs. 2021 I-5 corridor	25	25	.824
Knowledgeable about these reserves [d]			
2013 vs. 2021 Communities of place	57	55	.804
2013 vs. 2021 Rest of the coast	40	36	.961
2013 vs. 2021 Coast total	50	48	.678
2016 vs. 2021 I-5 corridor	21	24	.503
Understand where these reserves are located [a]			
2013 vs. 2021 Communities of place	48	57	.332
2013 vs. 2021 Rest of the coast	50	33	.227
2013 vs. 2021 Coast total	48	48	.997
2016 vs. 2021 I-5 corridor	18	26	.248
Understand rules / regulations of these reserves [a]			
2013 vs. 2021 Communities of place	38	41	.973
2013 vs. 2021 Rest of the coast	34	27	.655
2013 vs. 2021 Coast total	36	36	.993
2016 2021 I-5 corridor	16	18	.804
Understand how these reserves would be managed [a]			
2013 vs. 2021 Communities of place	43	48	.607
2013 vs. 2021 Rest of the coast	34	31	.924
2013 vs. 2021 Coast total	39	42	.664
2016 vs. 2021 I-5 corridor	19	24	.648

[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.

Items in **bold** were statistically significant at $p < .05$.

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 16 show responses to these variables measuring factual knowledge for Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*. The only two items answered correctly by the majority of these respondents across all locations were that the government has been considering marine reserves in Oregon for several years (51-62%) and commercial fishing would not be allowed in all of the reserves (52-61%). The question answered correctly by the fewest of these residents was that the government has already established five marine reserve sites (19-30%). In total, 47-59% of these respondents knew there have been opportunities for public involvement in decisions about these areas, 46-54% knew that keeping fish caught would not be allowed in all marine reserves, 49-64% knew that it was false that only scientists and no other people would be allowed in all marine reserves, 32-59% knew that the government has approved marine reserves for Oregon, and 47-55% correctly identified ODFW as the agency or

organization currently responsible for the marine reserves. Fewer than 45% of these respondents, however, answered the other factual knowledge questions correctly. The total factual knowledge score out of 11 questions showed that this knowledge was low among Phase 3 respondents, with average scores of only 42-49% of questions answered correctly.

There were some statistically significant differences over time. For example, residents of the communities of place in 2021 were significantly more likely than those in 2013 to know that: (a) only scientists and no other people would be allowed in all marine reserves is false, (b) the government has approved marine reserves for this state, (c) ODFW is the agency organization currently responsible for marine reserves in Oregon, and (d) non-extractive recreation / tourism activities (e.g., surfing, swimming) would be allowed in all marine reserves. In total, however, the overall factual knowledge score for residents of the communities of place did not significantly change over time and remained low across years (increased slightly from 46% of the questions answered correctly in 2013 to 49% in 2021).

Residents of the rest of the coast in 2021 were significantly more likely than those in 2013 to know that ODFW is the agency organization currently responsible for marine reserves in Oregon. However, these residents were also significantly less likely than those in 2013 to know that: (a) the government has been considering marine reserves for the past several years, (b) there have been opportunities for public involvement in agency discussions about marine reserves, and (c) keeping fish caught in all of the marine reserves is not allowed. In total, however, the total factual knowledge score for residents of the rest of the coast did not significantly change over time, remained low across years, and, in fact, decreased slightly from 48% of the questions answered correctly in 2013 to 43% in 2021.

Residents of the coast in total in 2021 were significantly more likely than those in 2013 to know that ODFW is the agency organization currently responsible for marine reserves in Oregon. However, these residents were also significantly less likely than those in 2013 to know that: (a) the government has been considering marine reserves for the past several years, (b) there have been opportunities for public involvement in agency discussions about marine reserves, and (c) keeping fish caught in all of the marine reserves would not be allowed. In total, however, the total factual knowledge score for residents of the coast in total did not significantly change over time, remained low across years, and, in fact, decreased slightly from 47% answered correctly in 2013 to 45% in 2021.

Residents of the I-5 corridor in 2021 were significantly more likely than those in 2016 to know that: (a) there have been opportunities for public involvement in agency discussions about marine reserves, (b) keeping fish caught in marine reserves would not be allowed, (c) only scientists and no other people would be allowed in all marine reserves is false, (d) non-extractive recreation / tourism activities (e.g., surfing, swimming) would be allowed in all marine reserves, and (e) the government has already established five marine reserve sites. In addition, the total factual knowledge score for these residents increased significantly over time (from 36% of the questions answered correctly in 2016 to 42% in 2021), but still remained low across years.

For the *panel sample (i.e., same people across time)*, there were many slight increases and decreases in the 11 factual knowledge items over time (i.e., 2013 / 2016 vs. 2021; Table 17). The decreased percentages over time (i.e., less likely to answer correctly in 2021 than they did in 2013 or 2016) suggest that factual knowledge for some of these respondents has waned as more time has elapsed since reserve establishment. However, none of these decreases over time were statistically significant. There were some statistically significant increases in factual knowledge over time. For example, residents of the communities of place were significantly more likely to know in 2021 that the government has approved marine reserves for this state, ODFW is the agency currently responsible for marine reserves in Oregon, and the government has established five marine reserve sites. Residents of the coast in total were also significantly more likely to know in 2021 that ODFW is the agency currently responsible for marine reserves in Oregon. I-5 corridor residents were significantly more likely to know in 2021 that there have been opportunities for public involvement in agency discussions about marine reserves and the government has approved marine reserves for this state. Despite these findings, the total factual knowledge scores for residents in the panel sample (i.e., same people across time) in all locations remained low across years and did not significantly change over time.

Table 16. Factual knowledge about Oregon marine reserves for the *longitudinal samples* (*different people over time*)

	Correct Response [a]	Percent answered correctly (%) Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 or t value	p value	ϕ or r_{pb}
The government has been considering marine reserves for the past several years	True					
2013 vs. 2021 Communities of place		68	62	2.55	.110	.07
2013 vs. 2021 Rest of the coast		**72**	**57**	**10.19**	**.001**	**.15**
2013 vs. 2021 Coast total		**71**	**59**	**16.43**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor		47	51	1.04	.309	.04
Commercial fishing would be allowed in all marine reserves	False					
2013 vs. 2021 Communities of place		62	60	0.28	.599	.02
2013 vs. 2021 Rest of the coast		68	61	2.18	.140	.07
2013 vs. 2021 Coast total		67	61	3.34	.068	.06
2016 vs. 2021 I-5 corridor		50	52	0.21	.651	.02
There have been opportunities for public involvement in agency discussions about marine reserves	True					
2013 vs. 2021 Communities of place		60	59	0.05	.829	.01
2013 vs. 2021 Rest of the coast		**58**	**47**	**5.45**	**.020**	**.11**
2013 vs. 2021 Coast total		**58**	**50**	**7.06**	**.008**	**.08**
2016 vs. 2021 I-5 corridor		**44**	**55**	**9.27**	**.002**	**.11**
Keeping fish caught in marine reserves would be allowed in all reserves	False					
2013 vs. 2021 Communities of place		59	52	2.04	.153	.06
2013 vs. 2021 Rest of the coast		**57**	**46**	**6.59**	**.010**	**.12**
2013 vs. 2021 Coast total		**58**	**47**	**10.97**	**.001**	**.11**
2016 vs. 2021 I-5 corridor		**43**	**54**	**6.73**	**.009**	**.09**
Only scientists and no other people would be allowed in all marine reserves	False					
2013 vs. 2021 Communities of place		**54**	**64**	**6.29**	**.012**	**.11**
2013 vs. 2021 Rest of the coast		54	49	1.21	.272	.05
2013 vs. 2021 Coast total		54	53	0.11	.740	.01
2016 vs. 2021 I-5 corridor		**52**	**63**	**9.19**	**.002**	**.11**
The government has approved marine reserves for this state	True					
2013 vs. 2021 Communities of place		**43**	**59**	**14.46**	**< .001**	**.16**
2013 vs. 2021 Rest of the coast		47	46	0.03	.872	.01
2013 vs. 2021 Coast total		46	50	1.23	.267	.04
2016 vs. 2021 I-5 corridor		29	32	0.39	.532	.02
What agency organization is currently responsible for marine reserves in Oregon	ODFW					
2013 vs. 2021 Communities of place		**30**	**47**	**17.37**	**< .001**	**.18**
2013 vs. 2021 Rest of the coast		**35**	**55**	**16.80**	**< .001**	**.19**
2013 vs. 2021 Coast total		**34**	**53**	**35.17**	**< .001**	**.19**
2016 vs. 2021 I-5 corridor		47	52	2.30	.129	.06
New developments such as wave energy or fish farms would be allowed in all marine reserves	False					
2013 vs. 2021 Communities of place		36	33	0.64	.422	.03
2013 vs. 2021 Rest of the coast		36	32	0.52	.472	.03
2013 vs. 2021 Coast total		36	32	1.09	.296	.03
2016 vs. 2021 I-5 corridor		25	29	1.65	.199	.05

Table 16 continued…

All marine reserves would include coastal lands such as beaches and coastlines	False					
2013 vs. 2021 Communities of place		36	36	0.01	.978	.01
2013 vs. 2021 Rest of the coast		34	29	1.02	.312	.05
2013 vs. 2021 Coast total		34	31	1.26	.262	.04
2016 2021 I-5 corridor		29	25	1.49	.223	.04
Non-extractive recreation / tourism activities (e.g., surfing, swimming) would be allowed in all marine reserves	True					
2013 vs. 2021 Communities of place		**32**	**43**	**6.38**	**.012**	**.11**
2013 vs. 2021 Rest of the coast		34	28	1.60	.205	.06
2013 vs. 2021 Coast total		34	32	0.21	.648	.02
2016 vs. 2021 I-5 corridor		**24**	**32**	**5.77**	**.016**	**.09**
The government has established five marine reserve sites	True					
2013 vs. 2021 Communities of place		29	30	0.15	.701	.02
2013 vs. 2021 Rest of the coast		30	25	1.13	.288	.05
2013 vs. 2021 Coast total		30	27	1.03	.311	.03
2016 vs. 2021 I-5 corridor		**14**	**19**	**4.22**	**.040**	**.08**
Total factual knowledge score (average percent correct [%] out of 11) [b]	--					
2013 vs. 2021 Communities of place		46	49	1.14	.255	.05
2013 vs. 2021 Rest of the coast		48	43	1.59	.112	.08
2013 vs. 2021 Coast total		47	45	1.29	.197	.04
2016 vs. 2021 I-5 corridor		**36**	**42**	**2.87**	**.004**	**.11**

[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 (r_{pb}) correlation effect sizes.
Items in **bold** were statistically significant at $p < .05$.

Table 17. Factual knowledge about Oregon marine reserves for the *panel sample* (*same people over time*)

	Correct Response [a]	Percent answered correctly (%)		McNemar's test *p* value
		Early data collection (2013 or 2016)	Most recent data collection (2021)	
The government has been considering marine reserves for the past several years	True			
2013 vs. 2021 Communities of place		87	79	.549
2013 vs. 2021 Rest of the coast		76	73	.816
2013 vs. 2021 Coast total		83	77	.523
2016 vs. 2021 I-5 corridor		54	64	.121
Commercial fishing would be allowed in all marine reserves	False			
2013 vs. 2021 Communities of place		79	78	.984
2013 vs. 2021 Rest of the coast		76	67	.754
2013 vs. 2021 Coast total		78	74	.701
2016 vs. 2021 I-5 corridor		56	51	.572
There have been opportunities for public involvement in agency discussions about marine reserves	True			
2013 vs. 2021 Communities of place		77	71	.629
2013 vs. 2021 Rest of the coast		74	61	.424
2013 vs. 2021 Coast total		76	67	.281
2016 vs. 2021 I-5 corridor		**46**	**58**	**.047**
Keeping fish caught in marine reserves would be allowed in all reserves	False			
2013 vs. 2021 Communities of place		75	72	.906
2013 vs. 2021 Rest of the coast		68	61	.727
2013 vs. 2021 Coast total		73	68	.678
2016 vs. 2021 I-5 corridor		50	49	.972
Only scientists and no other people would be allowed in all marine reserves	False			
2013 vs. 2021 Communities of place		69	70	.968
2013 vs. 2021 Rest of the coast		66	52	.344
2013 vs. 2021 Coast total		68	63	.572
2016 vs. 2021 I-5 corridor		53	56	.522
The government has approved marine reserves for this state	True			
2013 vs. 2021 Communities of place		**63**	**78**	**.049**
2013 vs. 2021 Rest of the coast		61	52	.071
2013 vs. 2021 Coast total		62	68	.200
2016 vs. 2021 I-5 corridor		**30**	**42**	**.041**
What agency organization is currently responsible for marine reserves in Oregon	ODFW			
2013 vs. 2021 Communities of place		**50**	**67**	**.048**
2013 vs. 2021 Rest of the coast		42	55	.109
2013 vs. 2021 Coast total		**47**	**62**	**.006**
2016 vs. 2021 I-5 corridor		43	49	.311
New developments such as wave energy or fish farms would be allowed in all marine reserves	False			
2013 vs. 2021 Communities of place		54	50	.791
2013 vs. 2021 Rest of the coast		37	52	.424
2013 vs. 2021 Coast total		48	51	.851
2016 vs. 2021 I-5 corridor		34	28	.487

Table 17 continued…

All marine reserves would include coastal lands such as beaches and coastlines	False			
2013 vs. 2021 Communities of place		43	31	.189
2013 vs. 2021 Rest of the coast		45	39	.796
2013 vs. 2021 Coast total		44	34	.392
2016 2021 I-5 corridor		38	35	.880
Non-extractive recreation / tourism activities (e.g., surfing, swimming) would be allowed in all marine reserves	True			
2013 vs. 2021 Communities of place		43	35	.286
2013 vs. 2021 Rest of the coast		45	36	.549
2013 vs. 2021 Coast total		43	36	.163
2016 vs. 2021 I-5 corridor		26	33	.229
The government has established five marine reserve sites	True			
2013 vs. 2021 Communities of place		**43**	**59**	**.031**
2013 vs. 2021 Rest of the coast		47	36	.508
2013 vs. 2021 Coast total		44	50	.248
2016 vs. 2021 I-5 corridor		16	21	.405
Total factual knowledge score (average percent correct [%] out of 11) [b]	--			
2013 vs. 2021 Communities of place		61	62	.761
2013 vs. 2021 Rest of the coast		54	53	.712
2013 vs. 2021 Coast total		58	58	.998
2016 vs. 2021 I-5 corridor		41	45	.081

[a] All questions also included an "Unsure" response category coded as "incorrect" in the analysis.
[b] Tests of statistical significant are paired *t*-tests with Cohen's *d* effect sizes of: (a) 2013 vs. 2021 communities of place = .04, (b) 2013 vs. 2021 Rest of the coast = .07, (c) 2013 vs. 2021 Coast total = .01, and (d) 2016 vs. 2021 I-5 corridor = .17. Items in **bold** were statistically significant at $p < .05$.

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 18 shows extremely low levels of agreement with these statements among Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*, with only 18-30% agreeing that it is easy to access and find information about marine reserves in Oregon. Only 7-21% of these respondents agreed that managers have done a good job communicating with the public about these marine reserves. Residents in the communities of place were most likely to agree with these statements, whereas residents of the I-5 corridor were least likely to agree. There were slight increases over time (2013 or 2016 vs. 2021) in agreement with these two statements. However, these increases were only statistically significant for residents in the communities of place and coast in total for the statement "it is easy to access / find information about marine reserves in Oregon," and there still remains low levels of agreement with both

statements. For the *panel sample (i.e., the same people across time),* there were no statistically significant differences across time in responses to these two statements (Table 19).

Table 18. Beliefs about current information regarding Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
It is easy to access / find information about marine reserves in Oregon					
2013 vs. 2021 Communities of place	**22**	**30**	**4.20**	**.040**	**.09**
2013 vs. 2021 Rest of the coast	16	23	3.14	.077	.08
2013 vs. 2021 Coast total	**18**	**25**	**7.33**	**.007**	**.09**
2016 vs. 2021 I-5 corridor	17	18	0.11	.735	.01
Managers have done a good job communicating with the public about marine reserves in Oregon					
2013 vs. 2021 Communities of place	18	21	0.88	.347	.04
2013 vs. 2021 Rest of the coast	12	13	0.09	.770	.01
2013 vs. 2021 Coast total	13	15	0.51	.476	.02
2016 vs. 2021 I-5 corridor	7	7	0.02	.879	.01

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

Table 19. Beliefs about current information regarding Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
It is easy to access / find information about marine reserves in Oregon			
2013 vs. 2021 Communities of place	28	33	.678
2013 vs. 2021 Rest of the coast	18	17	.911
2013 vs. 2021 Coast total	24	27	.711
2016 vs. 2021 I-5 corridor	18	17	.832
Managers have done a good job communicating with the public about marine reserves in Oregon			
2013 vs. 2021 Communities of place	34	39	.581
2013 vs. 2021 Rest of the coast	13	14	.891
2013 vs. 2021 Coast total	26	30	.678
2016 vs. 2021 I-5 corridor	6	10	.344

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

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 20 shows that none of these sources were used by the majority (more than 50%) of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* across all of the locations to obtain information about these reserves. Newspapers (46-79%), television news / programs (42-62%), discussions with family or friends

(44-63%), and radio news / programs (44-64%) were the most commonly used sources by these respondents, whereas attending meetings or presentations (8-30%) and discussing the reserves with government agency employees (10-21%) were the least cited sources. Residents in the communities of place were the most likely to use many of these sources of information, whereas residents of the I-5 corridor were the least likely to use most of the sources.

There were several statistically significant differences over time. For example, residents of the communities of place in 2021 were significantly more likely than those in 2013 to learn about Oregon's marine reserves from magazine articles or books, environmental or community groups, government agency websites, social websites (e.g., Facebook, Twitter), and other websites (Table 20). Residents of the rest of the coast in 2021 were significantly more likely than those in 2013 to learn about Oregon's marine reserves from government agency websites, social websites (e.g., Facebook, Twitter), and other websites. However, these residents were also significantly less likely than those in 2013 to learn about these reserves from newspaper articles, television news / programs, friends or family, radio news / programs, work or school, government agency employees, and meetings or presentations. Residents of the coast in total in 2021 were significantly more likely than those in 2013 to learn about Oregon's marine reserves from government agency websites, social websites (e.g., Facebook, Twitter), and other websites. However, these residents were also significantly less likely than those in 2013 to learn about these reserves from newspaper articles, television news / programs, friends or family, radio news / programs, work or school, and government agency employees. Residents of the I-5 corridor in 2021 were significantly more likely than those in 2016 to learn about Oregon's marine reserves from environmental or community groups, and government agency websites.

Table 20. Sources of information to learn about Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Read newspaper articles about marine reserves in Oregon					
2013 vs. 2021 Communities of place	78	79	0.19	.660	.02
2013 vs. 2021 Rest of the coast	**80**	**68**	**9.55**	**.002**	**.14**
2013 vs. 2021 Coast total	**80**	**71**	**10.91**	**.001**	**.11**
2016 vs. 2021 I-5 corridor	49	46	0.69	.405	.03
Watched television news / programs about marine reserves in Oregon					
2013 vs. 2021 Communities of place	57	62	1.62	.203	.06
2013 vs. 2021 Rest of the coast	**68**	**51**	**13.95**	**< .001**	**.18**
2013 vs. 2021 Coast total	**65**	**54**	**13.64**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	47	42	1.66	.197	.05
Discussed marine reserves in Oregon with friends or family members					
2013 vs. 2021 Communities of place	63	63	0.01	.911	.01
2013 vs. 2021 Rest of the coast	**69**	**51**	**16.37**	**< .001**	**.19**
2013 vs. 2021 Coast total	**68**	**54**	**19.93**	**< .001**	**.14**
2016 vs. 2021 I-5 corridor	44	44	0.01	.974	.01
Listened to radio news / programs about marine reserves in Oregon					
2013 vs. 2021 Communities of place	60	64	0.91	.339	.04
2013 vs. 2021 Rest of the coast	**64**	**51**	**8.07**	**.004**	**.13**
2013 vs. 2021 Coast total	**63**	**54**	**7.91**	**.005**	**.09**
2016 vs. 2021 I-5 corridor	40	44	1.02	.312	.04
Read magazine articles or books about marine reserves in Oregon					
2013 vs. 2021 Communities of place	**61**	**73**	**7.68**	**.006**	**.12**
2013 vs. 2021 Rest of the coast	65	60	1.48	.224	.06
2013 vs. 2021 Coast total	64	63	0.18	.668	.01
2016 vs. 2021 I-5 corridor	38	39	0.08	.780	.01
Read about marine reserves in Oregon on any other websites					
2013 vs. 2021 Communities of place	**29**	**50**	**22.92**	**< .001**	**.21**
2013 vs. 2021 Rest of the coast	**30**	**39**	**4.33**	**.037**	**.10**
2013 vs. 2021 Coast total	**30**	**41**	**15.51**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	31	35	1.31	.253	.04
Read about marine reserves in Oregon fishing regulations brochures					
2013 vs. 2021 Communities of place	48	45	0.28	.598	.02
2013 vs. 2021 Rest of the coast	48	49	0.01	.910	.01
2013 vs. 2021 Coast total	48	48	0.01	.974	.01
2016 vs. 2021 I-5 corridor	30	30	0.01	.936	.01
Learned about marine reserves in Oregon from environmental or community groups					
2013 vs. 2021 Communities of place	**43**	**60**	**15.09**	**< .001**	**.17**
2013 vs. 2021 Rest of the coast	45	45	0.01	.905	.01
2013 vs. 2021 Coast total	45	49	2.27	.132	.05
2016 vs. 2021 I-5 corridor	**28**	**38**	**8.42**	**.004**	**.11**
Learned about marine reserves in Oregon from work or school					
2013 vs. 2021 Communities of place	25	22	0.86	.353	.04
2013 vs. 2021 Rest of the coast	**36**	**26**	**4.44**	**.035**	**.10**
2013 vs. 2021 Coast total	**33**	**25**	**7.03**	**.008**	**.08**
2016 vs. 2021 I-5 corridor	27	30	0.88	.349	.03

Table 20 continued…

Read about marine reserves in Oregon on government agency websites					
2013 vs. 2021 Communities of place	**28**	**39**	**6.99**	**.008**	**.11**
2013 vs. 2021 Rest of the coast	**28**	**39**	**5.98**	**.014**	**.12**
2013 vs. 2021 Coast total	**28**	**39**	**12.96**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**23**	**36**	**13.95**	**< .001**	**.14**
Read about marine reserves in Oregon on social websites (e.g., Facebook, Twitter)					
2013 vs. 2021 Communities of place	**16**	**41**	**40.07**	**< .001**	**.27**
2013 vs. 2021 Rest of the coast	**22**	**35**	**9.84**	**.002**	**.15**
2013 vs. 2021 Coast total	**20**	**36**	**31.66**	**< .001**	**.18**
2016 vs. 2021 I-5 corridor	22	28	3.66	.056	.07
Discussed marine reserves in Oregon with government agency employees					
2013 vs. 2021 Communities of place	21	21	0.02	.885	.01
2013 vs. 2021 Rest of the coast	**27**	**18**	**4.62**	**.032**	**.10**
2013 vs. 2021 Coast total	**25**	**19**	**6.09**	**.014**	**.08**
2016 vs. 2021 I-5 corridor	12	10	0.28	.594	.02
Attended meetings or presentations about marine reserves in Oregon					
2013 vs. 2021 Communities of place	25	30	1.64	.201	.06
2013 vs. 2021 Rest of the coast	**30**	**22**	**4.00**	**.045**	**.09**
2013 vs. 2021 Coast total	29	24	3.04	.082	.06
2016 vs. 2021 I-5 corridor	11	8	2.73	.099	.06

[a] Cell entries are percentages (%) of respondents who have used the information source at least once to learn about these reserves. Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time)*, there were many slight increases and decreases in the sources of information over time (i.e., 2013 or 2016 vs. 2021), but most of these were not statistically significant (Table 21). However, residents of the communities of place were significantly more likely to read about Oregon's marine reserves on social websites (e.g., Facebook, Twitter) and any other websites over time. Conversely, residents of the rest of the coast were less likely to discuss Oregon's marine reserves with government agency employees and attend meetings or presentations about these marine reserves over time. Residents of the coast in total were also less likely to attend meetings or presentations about these marine reserves over time, but were more likely to read about marine reserves in Oregon on social websites (e.g., Facebook, Twitter) over time.

Table 21. Sources of information to learn about Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Read newspaper articles about marine reserves in Oregon			
2013 vs. 2021 Communities of place	85	93	.289
2013 vs. 2021 Rest of the coast	84	74	.288
2013 vs. 2021 Coast total	85	86	.956
2016 vs. 2021 I-5 corridor	55	62	.458
Watched television news / programs about marine reserves in Oregon			
2013 vs. 2021 Communities of place	66	72	.454
2013 vs. 2021 Rest of the coast	71	65	.727
2013 vs. 2021 Coast total	68	69	.839
2016 vs. 2021 I-5 corridor	54	50	.345
Discussed marine reserves in Oregon with friends or family members			
2013 vs. 2021 Communities of place	84	78	.607
2013 vs. 2021 Rest of the coast	71	74	.864
2013 vs. 2021 Coast total	79	77	.678
2016 vs. 2021 I-5 corridor	38	41	.815
Listened to radio news / programs about marine reserves in Oregon			
2013 vs. 2021 Communities of place	64	63	.926
2013 vs. 2021 Rest of the coast	71	71	.992
2013 vs. 2021 Coast total	67	66	.981
2016 vs. 2021 I-5 corridor	41	44	.690
Read magazine articles or books about marine reserves in Oregon			
2013 vs. 2021 Communities of place	65	76	.286
2013 vs. 2021 Rest of the coast	68	65	.813
2013 vs. 2021 Coast total	66	72	.473
2016 vs. 2021 I-5 corridor	39	46	.210
Read about marine reserves in Oregon on any other websites			
2013 vs. 2021 Communities of place	**34**	**50**	**.048**
2013 vs. 2021 Rest of the coast	33	24	.687
2013 vs. 2021 Coast total	34	40	.248
2016 vs. 2021 I-5 corridor	27	28	.972
Read about marine reserves in Oregon fishing regulations brochures			
2013 vs. 2021 Communities of place	53	62	.359
2013 vs. 2021 Rest of the coast	51	59	.625
2013 vs. 2021 Coast total	52	61	.210
2016 vs. 2021 I-5 corridor	27	24	.523
Learned about marine reserves in Oregon from environmental or community groups			
2013 vs. 2021 Communities of place	65	67	.892
2013 vs. 2021 Rest of the coast	43	38	.816
2013 vs. 2021 Coast total	57	56	.916
2016 vs. 2021 I-5 corridor	38	42	.743
Learned about marine reserves in Oregon from work or school			
2013 vs. 2021 Communities of place	27	24	.813
2013 vs. 2021 Rest of the coast	34	33	.957
2013 vs. 2021 Coast total	30	27	.754
2016 vs. 2021 I-5 corridor	23	25	.896

Table 21 continued…

Read about marine reserves in Oregon on government agency websites			
2013 vs. 2021 Communities of place	43	53	.180
2013 vs. 2021 Rest of the coast	24	35	.344
2013 vs. 2021 Coast total	36	47	.064
2016 vs. 2021 I-5 corridor	25	29	.458
Read about marine reserves in Oregon on social websites (e.g., Facebook, Twitter)			
2013 vs. 2021 Communities of place	**18**	**38**	**.012**
2013 vs. 2021 Rest of the coast	22	27	.759
2013 vs. 2021 Coast total	**20**	**34**	**.036**
2016 vs. 2021 I-5 corridor	18	14	.454
Discussed marine reserves in Oregon with government agency employees			
2013 vs. 2021 Communities of place	33	31	.804
2013 vs. 2021 Rest of the coast	**27**	**9**	**.043**
2013 vs. 2021 Coast total	31	23	.189
2016 vs. 2021 I-5 corridor	16	13	.332
Attended meetings or presentations about marine reserves in Oregon			
2013 vs. 2021 Communities of place	46	43	.727
2013 vs. 2021 Rest of the coast	**40**	**15**	**.016**
2013 vs. 2021 Coast total	**43**	**33**	**.035**
2016 vs. 2021 I-5 corridor	9	11	.897

[a] Cell entries are percentages (%) of respondents who have used the information source at least once to learn about these reserves. Items in **bold** were statistically significant at $p < .05$.

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 22 show that the greatest proportions of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* would prefer to receive information about these reserves from newspaper articles (10-24%) or television news and related programs (14-19%). The least preferred sources of information included friends or family (1%), government agency employees (1-4%), and work or school (0-6%). There were a few statistically significant differences over time. For example, newspaper articles, television news / programs, and meetings or presentations were less preferred sources of information about Oregon marine reserves in 2021 compared to before (i.e., in 2013 or 2016). Conversely, government agency websites, social websites (e.g., Facebook, Twitter), and environmental or community groups were more preferred sources of information about Oregon marine reserves in 2021 compared to before (i.e., in 2013 or 2016).

Table 22. Preferred source of information about Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Newspaper articles		
2013 vs. 2021 Communities of place	**29**	**24**
2013 vs. 2021 Rest of the coast	25	21
2013 vs. 2021 Coast total	26	22
2016 vs. 2021 I-5 corridor	**21**	**10**
Television news / programs		
2013 vs. 2021 Communities of place	**19**	**14**
2013 vs. 2021 Rest of the coast	**27**	**19**
2013 vs. 2021 Coast total	**25**	**17**
2016 vs. 2021 I-5 corridor	20	16
Meetings or presentations		
2013 vs. 2021 Communities of place	10	9
2013 vs. 2021 Rest of the coast	**12**	**7**
2013 vs. 2021 Coast total	12	8
2016 vs. 2021 I-5 corridor	4	5
Radio news / programs		
2013 vs. 2021 Communities of place	9	8
2013 vs. 2021 Rest of the coast	**4**	**9**
2013 vs. 2021 Coast total	5	9
2016 vs. 2021 I-5 corridor	14	11
Government agency websites		
2013 vs. 2021 Communities of place	**4**	**10**
2013 vs. 2021 Rest of the coast	8	9
2013 vs. 2021 Coast total	7	9
2016 vs. 2021 I-5 corridor	**8**	**14**
Social websites (e.g., Facebook, Twitter)		
2013 vs. 2021 Communities of place	**2**	**7**
2013 vs. 2021 Rest of the coast	**1**	**8**
2013 vs. 2021 Coast total	**1**	**8**
2016 vs. 2021 I-5 corridor	8	10
Fishing regulations brochures		
2013 vs. 2021 Communities of place	9	8
2013 vs. 2021 Rest of the coast	5	8
2013 vs. 2021 Coast total	6	8
2016 vs. 2021 I-5 corridor	6	7
Magazine articles or books		
2013 vs. 2021 Communities of place	5	6
2013 vs. 2021 Rest of the coast	8	5
2013 vs. 2021 Coast total	7	5
2016 vs. 2021 I-5 corridor	6	9
Environmental or community groups		
2013 vs. 2021 Communities of place	6	9
2013 vs. 2021 Rest of the coast	**2**	**7**
2013 vs. 2021 Coast total	**3**	**8**
2016 vs. 2021 I-5 corridor	4	6
Other websites		
2013 vs. 2021 Communities of place	5	3
2013 vs. 2021 Rest of the coast	4	4
2013 vs. 2021 Coast total	4	3
2016 vs. 2021 I-5 corridor	6	6
Work or school		
2013 vs. 2021 Communities of place	1	2
2013 vs. 2021 Rest of the coast	1	0
2013 vs. 2021 Coast total	1	1
2016 vs. 2021 I-5 corridor	3	6

Table 22 continued…

Government agency employees		
2013 vs. 2021 Communities of place	2	1
2013 vs. 2021 Rest of the coast	2	4
2013 vs. 2021 Coast total	2	3
2016 vs. 2021 I-5 corridor	1	1
Friends or family members		
2013 vs. 2021 Communities of place	0	1
2013 vs. 2021 Rest of the coast	1	1
2013 vs. 2021 Coast total	1	1
2016 vs. 2021 I-5 corridor	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. 2013 vs. 2021 communities of place: $\chi^2 = 20.22$, $p = .063$, $V = .21$. 2013 vs. 2021 rest of the coast: $\chi^2 = 30.14$, $p = .003$, $V = .29$. 2013 vs. 2021 coast total: $\chi^2 = 44.88$, $p < .001$, $V = .24$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 30.23$, $p = .003$, $V = .21$. Items in **bold** represent a change of at least 5% over time.

For the *panel sample (i.e., same people across time)*, newspaper articles and meetings / presentations were less preferred sources of information about the Oregon marine reserves in 2021 compared to before (i.e., in 2013 or 2016; Table 23). Government agency websites, fishing regulations brochures, and radio news / programs were more preferred sources of information about this state's marine reserves in 2021 compared to before (i.e., in 2013 or 2016). Television news / programs were less preferred sources of information about Oregon's marine reserves in 2021 compared to before (i.e., in 2013 or 2016) for those living in the communities of place. However, television news / programs were more preferred sources of information for residents on the rest of the coast and for those along the I-5 corridor.

Table 23. Preferred source of information about Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Newspaper articles		
2013 vs. 2021 Communities of place	21	20
2013 vs. 2021 Rest of the coast	**39**	**19**
2013 vs. 2021 Coast total	**27**	**20**
2016 vs. 2021 I-5 corridor	**33**	**22**
Television news / programs		
2013 vs. 2021 Communities of place	**19**	**12**
2013 vs. 2021 Rest of the coast	**13**	**29**
2013 vs. 2021 Coast total	17	19
2016 vs. 2021 I-5 corridor	**14**	**22**
Meetings or presentations		
2013 vs. 2021 Communities of place	**23**	**8**
2013 vs. 2021 Rest of the coast	**13**	**3**
2013 vs. 2021 Coast total	**20**	**6**
2016 vs. 2021 I-5 corridor	4	3
Government agency websites		
2013 vs. 2021 Communities of place	**7**	**12**
2013 vs. 2021 Rest of the coast	**4**	**10**
2013 vs. 2021 Coast total	**6**	**11**
2016 vs. 2021 I-5 corridor	**8**	**13**
Fishing regulations brochures		
2013 vs. 2021 Communities of place	5	8
2013 vs. 2021 Rest of the coast	**4**	**13**
2013 vs. 2021 Coast total	**5**	**10**
2016 vs. 2021 I-5 corridor	5	7
Radio news / programs		
2013 vs. 2021 Communities of place	**2**	**10**
2013 vs. 2021 Rest of the coast	9	10
2013 vs. 2021 Coast total	**5**	**10**
2016 vs. 2021 I-5 corridor	9	11
Social websites (e.g., Facebook, Twitter)		
2013 vs. 2021 Communities of place	7	6
2013 vs. 2021 Rest of the coast	0	0
2013 vs. 2021 Coast total	5	4
2016 vs. 2021 I-5 corridor	6	6
Magazine articles or books		
2013 vs. 2021 Communities of place	**0**	**8**
2013 vs. 2021 Rest of the coast	4	3
2013 vs. 2021 Coast total	2	6
2016 vs. 2021 I-5 corridor	6	2
Other websites		
2013 vs. 2021 Communities of place	7	4
2013 vs. 2021 Rest of the coast	4	3
2013 vs. 2021 Coast total	6	4
2016 vs. 2021 I-5 corridor	8	5
Environmental or community groups		
2013 vs. 2021 Communities of place	7	10
2013 vs. 2021 Rest of the coast	0	3
2013 vs. 2021 Coast total	5	7
2016 vs. 2021 I-5 corridor	3	7
Work or school		
2013 vs. 2021 Communities of place	0	0
2013 vs. 2021 Rest of the coast	4	0
2013 vs. 2021 Coast total	2	0
2016 vs. 2021 I-5 corridor	1	1

Table 23 continued…

Government agency employees		
2013 vs. 2021 Communities of place	2	2
2013 vs. 2021 Rest of the coast	4	3
2013 vs. 2021 Coast total	3	3
2016 vs. 2021 I-5 corridor	1	1
Friends or family members		
2013 vs. 2021 Communities of place	0	0
2013 vs. 2021 Rest of the coast	0	3
2013 vs. 2021 Coast total	0	1
2016 vs. 2021 I-5 corridor	1	2

[a] Cell entries are percentages (%) of all respondents who indicated this would be their preferred source of information about Oregon's marine reserves. Items in **bold** represent a change of at least 5% over time.

Beliefs about Oregon Marine Reserves. The questionnaires contained several questions measuring beliefs about marine reserves and protection in Oregon. For example, respondents were asked their opinion regarding the protection versus human utilization (i.e., use) of marine areas in this state. Table 24 shows that 70-89% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* believed in protecting Oregon's marine areas with little or no human utilization, whereas 10-29% believed in utilizing these marine areas with little or no protection. The majority (53-72%) of these respondents believed that marine areas should mostly be protected with just a little utilization, whereas only 9-25% 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 (17-20%) or fully utilized with no protection (1-4%). There were a few statistically significant differences over time. Residents of all areas in 2021 were more likely than those in 2013 and 2016 to think that Oregon's marine areas should either be fully protected with almost no utilization or mostly protected with just a little utilization. These changes over time were statistically significant in most areas. In addition, residents of all areas in 2021 were less likely than those in 2013 and 2016 to think that Oregon's marine areas should be mostly utilized with just a little protection with this change over time being statistically significant across all areas.

For the *panel sample (i.e., same people across time)*, residents of all areas were more likely in 2021 than they were in 2013 and 2016 to think that Oregon's marine areas should be fully protected with almost no utilization (Table 25). This change over time was most pronounced in the communities of place. In addition, residents of all areas were less likely in 2021 than they were in 2013 and 2016 to think that Oregon's marine areas should be mostly utilized with just a little protection.

Table 24. Opinions about protection versus utilization of Oregon marine areas for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Should fully *protect* marine areas with almost no utilization		
2013 vs. 2021 Communities of place	17	20
2013 vs. 2021 Rest of the coast	**11**	**17**
2013 vs. 2021 Coast total	**12**	**18**
2016 vs. 2021 I-5 corridor	**12**	**17**
Should mostly *protect* marine areas with just a little utilization		
2013 vs. 2021 Communities of place	**55**	**67**
2013 vs. 2021 Rest of the coast	**45**	**53**
2013 vs. 2021 Coast total	**48**	**57**
2016 vs. 2021 I-5 corridor	70	72
Should mostly *utilize* marine areas with just a little protection		
2013 vs. 2021 Communities of place	**25**	**13**
2013 vs. 2021 Rest of the coast	**41**	**25**
2013 vs. 2021 Coast total	**37**	**22**
2016 vs. 2021 I-5 corridor	**18**	**9**
Should fully *utilize* marine areas with almost no protection		
2013 vs. 2021 Communities of place	3	1
2013 vs. 2021 Rest of the coast	3	4
2013 vs. 2021 Coast total	3	3
2016 vs. 2021 I-5 corridor	1	1

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 18.92$, $p < .001$, $V = .18$. 2013 vs. 2021 rest of the coast: $\chi^2 = 13.22$, $p = .004$, $V = .17$. 2013 vs. 2021 coast total: $\chi^2 = 26.12$, $p < .001$, $V = .16$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 13.76$, $p = .003$, $V = .14$. Items in **bold** represent a change of at least 5% over time.

Table 25. Opinions about protection versus utilization of Oregon marine areas for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Should fully *protect* marine areas with almost no utilization		
2013 vs. 2021 Communities of place	**20**	**38**
2013 vs. 2021 Rest of the coast	**14**	**19**
2013 vs. 2021 Coast total	**18**	**32**
2016 vs. 2021 I-5 corridor	17	18
Should mostly *protect* marine areas with just a little utilization		
2013 vs. 2021 Communities of place	**55**	**45**
2013 vs. 2021 Rest of the coast	**39**	**56**
2013 vs. 2021 Coast total	49	49
2016 vs. 2021 I-5 corridor	**67**	**73**
Should mostly *utilize* marine areas with just a little protection		
2013 vs. 2021 Communities of place	**25**	**15**
2013 vs. 2021 Rest of the coast	**44**	**22**
2013 vs. 2021 Coast total	**32**	**17**
2016 vs. 2021 I-5 corridor	**15**	**7**
Should fully *utilize* marine areas with almost no protection		
2013 vs. 2021 Communities of place	0	2
2013 vs. 2021 Rest of the coast	3	3
2013 vs. 2021 Coast total	1	2
2016 vs. 2021 I-5 corridor	1	2

[a] Cell entries are percentages (%). Items in **bold** represent a change of at least 5% over time.

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 26 show that Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* overwhelmingly agreed (91-97%) that scientific research should be allowed in these marine reserves. In addition, the majority (53-59%) of these respondents agreed that non-extractive recreation and tourism activities should also be allowed (e.g., surf, swim). Only 23-33% of these respondents, however, agreed that recreational fishing should be allowed, and the fewest thought that commercial fishing should be allowed (7-19%). There were a few statistically significant changes over time. Residents of both the communities of place and the I-5 corridor in 2021 were significantly more likely than residents in these locations in 2013 or 2016 to agree that scientific research should be allowed in marine reserves in Oregon. Residents of both the rest of the coast and the coast in total in 2021 were significantly less likely than residents in these locations in 2013 to agree that recreational fishing should be allowed in marine reserves in Oregon.

Table 26. Beliefs about what should be allowed in Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Scientific research should be allowed in marine reserves in Oregon					
2013 vs. 2021 Communities of place	**88**	**94**	**5.46**	**.019**	**.10**
2013 vs. 2021 Rest of the coast	89	91	0.40	.529	.03
2013 vs. 2021 Coast total	88	91	2.22	.136	.05
2016 vs. 2021 I-5 corridor	**89**	**97**	**16.64**	**< .001**	**.14**
Non-extractive recreation / tourism activities (e.g., surfing, swimming) should be allowed in marine reserves in Oregon					
2013 vs. 2021 Communities of place	56	54	0.12	.735	.02
2013 vs. 2021 Rest of the coast	60	59	0.04	.845	.01
2013 vs. 2021 Coast total	59	58	0.11	.739	.01
2016 vs. 2021 I-5 corridor	52	53	0.04	.847	.01
Recreational fishing should be allowed in marine reserves in Oregon					
2013 vs. 2021 Communities of place	27	23	1.32	.251	.05
2013 vs. 2021 Rest of the coast	**43**	**33**	**4.31**	**.038**	**.10**
2013 vs. 2021 Coast total	**39**	**30**	**7.30**	**.007**	**.09**
2016 vs. 2021 I-5 corridor	27	29	0.26	.611	.02
Commercial fishing should be allowed in marine reserves in Oregon					
2013 vs. 2021 Communities of place	13	12	0.11	.742	.01
2013 vs. 2021 Rest of the coast	25	19	2.28	.131	.07
2013 vs. 2021 Coast total	22	17	3.43	.064	.06
2016 vs. 2021 I-5 corridor	8	7	0.30	.584	.02

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

Table 27. Beliefs about what should be allowed in Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Scientific research should be allowed in marine reserves in Oregon			
2013 vs. 2021 Communities of place	95	93	.879
2013 vs. 2021 Rest of the coast	87	85	.912
2013 vs. 2021 Coast total	92	90	.899
2016 vs. 2021 I-5 corridor	92	96	.289
Non-extractive recreation / tourism activities (e.g., surfing, swimming) should be allowed in marine reserves in Oregon			
2013 vs. 2021 Communities of place	**69**	**53**	**.044**
2013 vs. 2021 Rest of the coast	**63**	**36**	**.035**
2013 vs. 2021 Coast total	**67**	**47**	**.006**
2016 vs. 2021 I-5 corridor	51	52	.878
Recreational fishing should be allowed in marine reserves in Oregon			
2013 vs. 2021 Communities of place	18	20	.882
2013 vs. 2021 Rest of the coast	**37**	**15**	**.016**
2013 vs. 2021 Coast total	26	19	.189
2016 vs. 2021 I-5 corridor	23	21	.845
Commercial fishing should be allowed in marine reserves in Oregon			
2013 vs. 2021 Communities of place	12	10	.875
2013 vs. 2021 Rest of the coast	**29**	**15**	**.025**
2013 vs. 2021 Coast total	18	12	.227
2016 vs. 2021 I-5 corridor	6	5	.972

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time)*, residents of all coastal samples (i.e., communities of place, rest of the coast, coast in total) were significantly less likely to agree in 2021 (compared to 2013) that non-extractive recreation / tourism activities (e.g., surfing, swimming) should be allowed in marine reserves in Oregon (Table 27). Residents of the rest of the coast were also less likely to agree in 2021 (compared to 2013) that both recreational and commercial fishing should be allowed in marine reserves in Oregon.

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 28 shows resident opinions about groups that *could benefit* from these reserves. Results showed that the only groups the majority of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* believed could benefit from these reserves are scientists / researchers (86-95%), people who live along the Oregon coast (57-69%), and government agencies (55-65%). Fewer respondents believed that people recreating in marine areas (39-43%), local businesses (40-53%), people who do not live on the coast (36-49%), and people who fish recreationally (22-34%) or commercially (11-26%) could benefit.

Table 28. Beliefs that groups could *benefit* from the Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Scientists / researchers					
2013 vs. 2021 Communities of place	90	93	2.14	.144	.06
2013 vs. 2021 Rest of the coast	85	86	0.18	.671	.02
2013 vs. 2021 Coast total	86	88	0.77	.381	.03
2016 vs. 2021 I-5 corridor	**90**	**95**	**5.16**	**.023**	**.08**
People who live along the Oregon coast					
2013 vs. 2021 Communities of place	**48**	**69**	**22.91**	**< .001**	**.21**
2013 vs. 2021 Rest of the coast	**41**	**57**	**11.35**	**.001**	**.16**
2013 vs. 2021 Coast total	**43**	**60**	**28.94**	**< .001**	**.17**
2016 vs. 2021 I-5 corridor	**58**	**67**	**6.99**	**.008**	**.10**
Government agencies					
2013 vs. 2021 Communities of place	**52**	**65**	**9.44**	**.002**	**.13**
2013 vs. 2021 Rest of the coast	48	55	2.09	.149	.07
2013 vs. 2021 Coast total	**49**	**57**	**7.08**	**.008**	**.09**
2016 vs. 2021 I-5 corridor	57	57	0.03	.874	.01
People who recreate in marine areas					
2013 vs. 2021 Communities of place	**32**	**43**	**6.55**	**.010**	**.11**
2013 vs. 2021 Rest of the coast	**30**	**39**	**4.32**	**.038**	**.10**
2013 vs. 2021 Coast total	**30**	**40**	**10.19**	**.001**	**.10**
2016 vs. 2021 I-5 corridor	38	41	0.62	.433	.03
Local businesses					
2013 vs. 2021 Communities of place	**34**	**44**	**5.40**	**.020**	**.10**
2013 vs. 2021 Rest of the coast	**23**	**40**	**14.62**	**< .001**	**.18**
2013 vs. 2021 Coast total	**26**	**41**	**24.72**	**< .001**	**.16**
2016 vs. 2021 I-5 corridor	**38**	**53**	**16.90**	**< .001**	**.15**
People who *do not* live along Oregon coast					
2013 vs. 2021 Communities of place	**31**	**46**	**11.78**	**.001**	**.15**
2013 vs. 2021 Rest of the coast	**24**	**36**	**8.09**	**.004**	**.14**
2013 vs. 2021 Coast total	**26**	**39**	**19.36**	**< .001**	**.14**
2016 vs. 2021 I-5 corridor	**36**	**49**	**11.76**	**.001**	**.13**
People who fish recreationally					
2013 vs. 2021 Communities of place	28	34	2.48	.115	.07
2013 vs. 2021 Rest of the coast	**23**	**32**	**5.16**	**.023**	**.11**
2013 vs. 2021 Coast total	**24**	**33**	**9.53**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	23	22	0.01	.933	.01
People who fish commercially					
2013 vs. 2021 Communities of place	24	26	0.30	.584	.02
2013 vs. 2021 Rest of the coast	**14**	**22**	**4.12**	**.042**	**.10**
2013 vs. 2021 Coast total	**16**	**23**	**5.85**	**.016**	**.08**
2016 vs. 2021 I-5 corridor	14	11	1.41	.236	.04

[a] Cell entries are percentages (%) of respondents who said group could "slightly or strongly benefit" from the reserves. Items in **bold** were statistically significant at $p < .05$.

Table 29. Beliefs that groups could *benefit* from the Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Scientists / researchers			
2013 vs. 2021 Communities of place	98	92	.219
2013 vs. 2021 Rest of the coast	89	86	.687
2013 vs. 2021 Coast total	95	90	.146
2016 vs. 2021 I-5 corridor	95	96	.993
People who live along the Oregon coast			
2013 vs. 2021 Communities of place	53	58	.424
2013 vs. 2021 Rest of the coast	34	33	.926
2013 vs. 2021 Coast total	46	49	.557
2016 vs. 2021 I-5 corridor	58	68	.121
Government agencies			
2013 vs. 2021 Communities of place	59	64	.845
2013 vs. 2021 Rest of the coast	49	53	.812
2013 vs. 2021 Coast total	55	60	.743
2016 vs. 2021 I-5 corridor	52	56	.392
People who recreate in marine areas			
2013 vs. 2021 Communities of place	48	40	.523
2013 vs. 2021 Rest of the coast	24	37	.302
2013 vs. 2021 Coast total	39	39	.990
2016 vs. 2021 I-5 corridor	42	45	.652
Local businesses			
2013 vs. 2021 Communities of place	38	41	.774
2013 vs. 2021 Rest of the coast	11	26	.109
2013 vs. 2021 Coast total	27	36	.134
2016 vs. 2021 I-5 corridor	44	51	.324
People who *do not* live along Oregon coast			
2013 vs. 2021 Communities of place	38	49	.238
2013 vs. 2021 Rest of the coast	24	24	.996
2013 vs. 2021 Coast total	32	40	.230
2016 vs. 2021 I-5 corridor	44	52	.175
People who fish recreationally			
2013 vs. 2021 Communities of place	37	30	.648
2013 vs. 2021 Rest of the coast	16	31	.146
2013 vs. 2021 Coast total	29	31	.720
2016 vs. 2021 I-5 corridor	36	28	.243
People who fish commercially			
2013 vs. 2021 Communities of place	38	30	.454
2013 vs. 2021 Rest of the coast	8	23	.227
2013 vs. 2021 Coast total	26	27	.897
2016 vs. 2021 I-5 corridor	22	16	.405

[a] Cell entries are percentages (%) of respondents who said group could "slightly or strongly benefit" from the reserves. Items in **bold** were statistically significant at $p < .05$.

There were several statistically significant changes over time among these Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*. Residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were more likely than those in 2013 and 2016 to think that people who live along the Oregon coast, people who do not live along this coast, and local businesses could benefit from Oregon's marine reserves (Table 28). Residents of all areas along the coast (i.e., communities of place, rest of coast, coast in total) in 2021 were more likely than those in 2013 to think that people who recreate in marine areas could benefit

from Oregon's marine reserves. Residents of the communities of place and coast in total in 2021 were more likely than those in 2013 to think that government agencies could benefit from Oregon's marine reserves. Residents of the rest of the coast and the coast in total in 2021 were more likely than those in 2013 to think that people who fish recreationally and/or commercially could benefit from Oregon's marine reserves. Residents of the I-5 corridor in 2021 were more likely than those in 2016 to think that scientists / researchers could benefit from Oregon's marine reserves. For the *panel sample (i.e., same people across time)*, there were slight increases and decreases over time (i.e., 2013 / 2016 to 2021) in the groups they thought could benefit from the Oregon's marine reserves, but none of these changes were statistically significant (Table 29).

Conversely, Table 30 shows the groups that the largest proportions of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* believed *could be harmed* by these marine reserves are people who fish commercially (60-81%) or recreationally (47-59%). Fewer than 40% of these respondents thought that people who recreate in marine areas (34-39%), local businesses (16-26%), and people who live along the Oregon coast (14-24%) could be harmed by these reserves. These residents believed the groups least likely to be harmed include scientists or researchers (0-2%), government agencies (2-5%), and people who do not live along the Oregon coast (4-10%). There were several statistically significant differences over time. For example, residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were less likely than those in 2013 and 2016 to think that local businesses and government agencies could be harmed by Oregon's marine reserves. Residents of all areas along the coast (i.e., communities of place, rest of coast, coast in total) in 2021 were less likely than those in 2013 to think that people who fish commercially could be harmed by Oregon's marine reserves. Residents of the rest of the coast and the coast in total in 2021 were less likely than those in 2013 to think that people who live along the Oregon coast could be harmed by Oregon's marine reserves. Residents of the I-5 corridor in 2021 were less likely than those in 2016 to think that scientists / researchers and people who do not live along Oregon coast could be harmed by Oregon's marine reserves.

Table 30. Beliefs that groups could *be harmed* by the Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
People who fish commercially					
2013 vs. 2021 Communities of place	**68**	**60**	**4.16**	**.041**	**.09**
2013 vs. 2021 Rest of the coast	**78**	**65**	**8.38**	**.004**	**.14**
2013 vs. 2021 Coast total	**75**	**64**	**14.60**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	77	81	1.36	.244	.04
People who fish recreationally					
2013 vs. 2021 Communities of place	50	47	0.50	.479	.03
2013 vs. 2021 Rest of the coast	62	55	1.84	.175	.07
2013 vs. 2021 Coast total	59	53	3.31	.069	.06
2016 vs. 2021 I-5 corridor	57	59	0.27	.604	.02
People who recreate in marine areas					
2013 vs. 2021 Communities of place	38	34	0.73	.395	.04
2013 vs. 2021 Rest of the coast	46	39	1.36	.244	.06
2013 vs. 2021 Coast total	44	39	2.68	.101	.05
2016 vs. 2021 I-5 corridor	36	38	0.40	.529	.02
Local businesses					
2013 vs. 2021 Communities of place	**34**	**16**	**20.46**	**< .001**	**.19**
2013 vs. 2021 Rest of the coast	**44**	**26**	**16.42**	**< .001**	**.19**
2013 vs. 2021 Coast total	**42**	**23**	**35.66**	**< .001**	**.19**
2016 vs. 2021 I-5 corridor	**27**	**19**	**6.08**	**.014**	**.09**
People who live along the Oregon coast					
2013 vs. 2021 Communities of place	19	14	2.66	.103	.07
2013 vs. 2021 Rest of the coast	**37**	**24**	**8.61**	**.003**	**.14**
2013 vs. 2021 Coast total	**32**	**21**	**15.29**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	18	17	0.29	.590	.02
People who *do not* live along Oregon coast					
2013 vs. 2021 Communities of place	9	10	0.02	.886	.01
2013 vs. 2021 Rest of the coast	13	8	2.79	.095	.08
2013 vs. 2021 Coast total	12	8	3.02	.082	.06
2016 vs. 2021 I-5 corridor	**9**	**4**	**9.00**	**.003**	**.11**
Government agencies					
2013 vs. 2021 Communities of place	**8**	**3**	**6.63**	**.010**	**.11**
2013 vs. 2021 Rest of the coast	**11**	**5**	**6.57**	**.010**	**.12**
2013 vs. 2021 Coast total	**10**	**4**	**14.30**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**7**	**2**	**10.58**	**.001**	**.11**
Scientists / researchers					
2013 vs. 2021 Communities of place	2	1	0.09	.763	.01
2013 vs. 2021 Rest of the coast	5	2	3.57	.059	.09
2013 vs. 2021 Coast total	**4**	**2**	**4.98**	**.046**	**.07**
2016 vs. 2021 I-5 corridor	**2**	**0**	**5.73**	**.017**	**.08**

[a] Cell entries are percentages (%) of respondents who said group could be "slightly or strongly harmed" by the reserves. Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time)*, there were many slight increases and decreases over time (i.e., 2013 / 2016 to 2021) in the groups they thought could be harmed from the Oregon's marine reserves, but only two of these changes were statistically significant (Table 31). Residents of the rest of the coast in 2021 were significantly less likely than they were in 2013 to think that people who fish commercially could be harmed by Oregon's marine reserves.

In addition, residents of the communities of place in 2021 were significantly less likely than they were in 2013 to think that local businesses could be harmed by these marine reserves.

Table 31. Beliefs that groups could *be harmed* by the Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
People who fish commercially			
2013 vs. 2021 Communities of place	59	60	.982
2013 vs. 2021 Rest of the coast	**90**	**71**	**.046**
2013 vs. 2021 Coast total	71	64	.345
2016 vs. 2021 I-5 corridor	69	76	.473
People who fish recreationally			
2013 vs. 2021 Communities of place	43	52	.523
2013 vs. 2021 Rest of the coast	74	57	.180
2013 vs. 2021 Coast total	55	54	.868
2016 vs. 2021 I-5 corridor	51	60	.108
People who recreate in marine areas			
2013 vs. 2021 Communities of place	27	37	.332
2013 vs. 2021 Rest of the coast	42	40	.926
2013 vs. 2021 Coast total	33	38	.473
2016 vs. 2021 I-5 corridor	34	39	.608
Local businesses			
2013 vs. 2021 Communities of place	**38**	**19**	**.006**
2013 vs. 2021 Rest of the coast	42	43	.984
2013 vs. 2021 Coast total	39	28	.076
2016 vs. 2021 I-5 corridor	20	24	.690
People who live along the Oregon coast			
2013 vs. 2021 Communities of place	20	13	.344
2013 vs. 2021 Rest of the coast	42	36	.804
2013 vs. 2021 Coast total	28	22	.327
2016 vs. 2021 I-5 corridor	21	14	.189
People who *do not* live along Oregon coast			
2013 vs. 2021 Communities of place	7	7	.997
2013 vs. 2021 Rest of the coast	5	15	.375
2013 vs. 2021 Coast total	6	10	.344
2016 vs. 2021 I-5 corridor	8	8	.998
Government agencies			
2013 vs. 2021 Communities of place	7	2	.796
2013 vs. 2021 Rest of the coast	8	8	.997
2013 vs. 2021 Coast total	7	4	.819
2016 vs. 2021 I-5 corridor	4	1	.375
Scientists / researchers			
2013 vs. 2021 Communities of place	0	0	.999
2013 vs. 2021 Rest of the coast	3	3	.999
2013 vs. 2021 Coast total	1	1	.999
2016 vs. 2021 I-5 corridor	0	1	.917

[a] Cell entries are percentages (%) of respondents who said group could be "slightly or strongly harmed" by the reserves. Items in **bold** were statistically significant at $p < .05$.

In only the Phase 3 (2021) questionnaire, respondents were also asked the extent that they believed these groups *have already* either been harmed by or benefitted from the marine reserves in Oregon. This question was not asked in the Phase 1 or 2 questionnaires. Across all locations (i.e., communities of place, rest of coast, coast in total, I-5 corridor), these respondents believed

the groups that have *already benefitted* the most from these reserves are scientists / researchers (80-84%), followed by people who live along the coast (49-56%), government agencies (48-58%), local businesses (29-39%), people who do not live on the coast (31-35%), and people recreating in marine areas (27-33%). Fewer respondents believed that people who fish recreationally (21-24%) or commercially (13-19%) have already benefitted from these marine reserves in Oregon. Across all locations, these respondents believed the groups that have *already been harmed* the most from these reserves are people who fish commercially (53-65%) or recreationally (42-51%). Fewer than 30% of these respondents thought that people who recreate in marine areas (26-30%), local businesses (14-25%), and people who live along the Oregon coast (9-22%) have already been harmed by these reserves. These residents believed the groups that have been harmed the least include scientists or researchers (2-3%), government agencies (4-5%), and people who do not live along the Oregon coast (2-9%). There were minimal differences among the locations.

Attitudes toward Oregon Marine Reserves. The questionnaires contained four pairs of opposing words, each on 5-point semantic differential scales (e.g., dislike – like, negative – positive), for measuring specific attitudes toward establishing marine reserves in Oregon. Table 32 shows findings where Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* expressed positive attitudes toward the marine reserves in Oregon (average attitude = 3.93-4.42 / 5.00). These residents believed that marine reserves in Oregon are beneficial (69-85%) and positive (69-90%), thought these areas are good (67-89%), and liked the idea of these reserves (70-90%). Residents of the I-5 corridor and the communities of place expressed the most positive attitudes, whereas those living along the rest of the coast expressed the least positive attitudes. There were several statistically significant differences over time, as residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were more likely than those in 2013 and 2016 to have more favorable attitudes toward marine reserves in Oregon. The percentages and mean responses in 2021 were all higher than those from earlier (2013, 2016). This increase in favorable attitudes over time was statistically significant in 14 of the 20 comparisons shown in Table 32.

Table 32. Attitudes toward establishing marine reserves in Oregon for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 or *t* value	*p* value	ϕ or r_{pb}
Marine reserves in Oregon are beneficial					
2013 vs. 2021 Communities of place	79	81	0.27	.600	.02
2013 vs. 2021 Rest of the coast	61	69	2.37	.124	.08
2013 vs. 2021 Coast total	**66**	**72**	**3.84**	**.050**	**.06**
2016 vs. 2021 I-5 corridor	82	85	0.80	.373	.03
Marine reserves in Oregon are positive					
2013 vs. 2021 Communities of place	76	82	2.70	.101	.07
2013 vs. 2021 Rest of the coast	**58**	**69**	**5.32**	**.021**	**.11**
2013 vs. 2021 Coast total	**62**	**72**	**9.97**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	**81**	**90**	**9.41**	**.002**	**.11**
Marine reserves in Oregon are good					
2013 vs. 2021 Communities of place	76	82	3.59	.058	.08
2013 vs. 2021 Rest of the coast	**55**	**67**	**5.98**	**.014**	**.12**
2013 vs. 2021 Coast total	**60**	**71**	**11.61**	**.001**	**.11**
2016 vs. 2021 I-5 corridor	**81**	**89**	**7.90**	**.005**	**.10**
I like the idea of marine reserves in Oregon					
2013 vs. 2021 Communities of place	**74**	**85**	**9.51**	**.002**	**.13**
2013 vs. 2021 Rest of the coast	**57**	**70**	**8.09**	**.004**	**.14**
2013 vs. 2021 Coast total	**61**	**74**	**17.49**	**< .001**	**.14**
2016 vs. 2021 I-5 corridor	**79**	**90**	**15.63**	**< .001**	**.14**
Average (mean) attitude [b]					
2013 vs. 2021 Communities of place	**4.06**	**4.35**	**2.94**	**.003**	**.13**
2013 vs. 2021 Rest of the coast	**3.59**	**3.93**	**2.75**	**.006**	**.13**
2013 vs. 2021 Coast total	**3.70**	**4.04**	**4.05**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	4.31	4.42	1.77	.078	.06

[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. Test value is *t*-test and point-biserial correlation effect size (r_{pb}). Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time)*, residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were more likely than they were in 2013 and 2016 to have slightly more favorable attitudes about marine reserves in Oregon (Table 33). Almost all of the percentages and mean responses in 2021 were higher than those from earlier (2013, 2016). This increase in favorable attitudes over time was statistically significant in 7 of the 20 comparisons shown in Table 33.

Table 33. Attitudes toward establishing marine reserves in Oregon for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's or paired *t* test *p* value
Marine reserves in Oregon are beneficial			
2013 vs. 2021 Communities of place	85	89	.219
2013 vs. 2021 Rest of the coast	56	70	.453
2013 vs. 2021 Coast total	73	81	.092
2016 vs. 2021 I-5 corridor	88	91	.581
Marine reserves in Oregon are positive			
2013 vs. 2021 Communities of place	83	82	.727
2013 vs. 2021 Rest of the coast	53	70	.219
2013 vs. 2021 Coast total	71	77	.180
2016 vs. 2021 I-5 corridor	86	87	.912
Marine reserves in Oregon are good			
2013 vs. 2021 Communities of place	79	80	.625
2013 vs. 2021 Rest of the coast	**49**	**77**	**.008**
2013 vs. 2021 Coast total	**67**	**79**	**.006**
2016 vs. 2021 I-5 corridor	88	92	.344
I like the idea of marine reserves in Oregon			
2013 vs. 2021 Communities of place	78	83	.063
2013 vs. 2021 Rest of the coast	51	70	.219
2013 vs. 2021 Coast total	**68**	**78**	**.012**
2016 vs. 2021 I-5 corridor	**84**	**92**	**.035**
Average (mean) attitude [b]			
2013 vs. 2021 Communities of place	**4.14**	**4.45**	**.008**
2013 vs. 2021 Rest of the coast	**3.30**	**3.94**	**.005**
2013 vs. 2021 Coast total	**3.81**	**4.25**	**< .001**
2016 vs. 2021 I-5 corridor	4.55	4.46	.155

[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. Test value is paired *t*-test and Cohen's *d* effect sizes of: (a) 2013 vs. 2021 communities of place = .39, (b) 2013 vs. 2021 Rest of the coast = .54, (c) 2013 vs. 2021 Coast total = .45, and (d) 2016 vs. 2021 I-5 corridor = .14.

Items in **bold** were statistically significant at $p < .05$.

A second approach for measuring attitudes toward marine reserves in Oregon was context-specific and addressed both affective 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.

Results in Table 34 present respondent beliefs toward potential *advantages* of these marine reserves, and show strong agreement among Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* that marine reserves in Oregon would allow scientists to monitor these areas (83-95%), allow depleted populations to recover (79-93%), improve our understanding of marine areas (80-93%), improve scientific understanding of marine areas (79-92%), protect the diversity of marine species (79-91%), benefit marine areas in general (76-93%), and increase species populations (75-90%). These residents were least likely to agree that these marine reserves would improve the economy (41-42%), benefit local communities (56-63%), and increase tourism (54-64%). Residents of the I-5 corridor and the communities of place generally had the most agreement regarding these potential advantages, whereas those living along the rest of the coast often had the least agreement. There were several statistically significant differences over time, as residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were more likely than those in 2013 and 2016 to have more favorable attitudes toward all of these potential advantages of Oregon's marine reserves. The percentages in 2021 were all higher than those from earlier (2013, 2016). These increases in favorable attitudes toward all of the potential advantages over time were statistically significant in 35 of the 44 comparisons shown in Table 34.

For the *panel sample (i.e., same people across time)*, residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were more likely than they were in 2013 and 2016 to have more favorable attitudes toward almost all of the potential advantages of Oregon's marine reserves (Table 35). In total, 37 of the 44 percentages in 2021 were higher than those from earlier (2013, 2016). However, these increases in favorable attitudes toward the potential advantages over time were statistically significant in only 7 of the 44 comparisons shown in Table 35.

Table 34. Attitudes toward potential *advantages* of Oregon marine reserves for *longitudinal samples* (*different people over time*) [a]

Marine reserves in Oregon would:	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Allow scientists to monitor marine areas					
2013 vs. 2021 Communities of place	**86**	**95**	**12.33**	**< .001**	**.15**
2013 vs. 2021 Rest of the coast	78	83	1.97	.161	.07
2013 vs. 2021 Coast total	**80**	**86**	**6.41**	**.011**	**.08**
2016 vs. 2021 I-5 corridor	**91**	**95**	**5.39**	**.020**	**.08**
Allow depleted populations to recover					
2013 vs. 2021 Communities of place	82	87	2.54	.111	.07
2013 vs. 2021 Rest of the coast	74	79	1.73	.189	.06
2013 vs. 2021 Coast total	**76**	**81**	**3.91**	**.048**	**.06**
2016 vs. 2021 I-5 corridor	**86**	**93**	**8.26**	**.004**	**.10**
Improve our understanding of marine areas					
2013 vs. 2021 Communities of place	**84**	**90**	**3.90**	**.048**	**.08**
2013 vs. 2021 Rest of the coast	73	80	3.30	.069	.09
2013 vs. 2021 Coast total	**76**	**83**	**7.33**	**.007**	**.09**
2016 vs. 2021 I-5 corridor	**85**	**93**	**13.80**	**< .001**	**.13**
Improve scientific understanding of marine areas					
2013 vs. 2021 Communities of place	**81**	**90**	**8.52**	**.004**	**.12**
2013 vs. 2021 Rest of the coast	72	79	3.60	.058	.09
2013 vs. 2021 Coast total	**74**	**82**	**9.31**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	**85**	**92**	**8.17**	**.004**	**.10**
Protect the diversity of marine species					
2013 vs. 2021 Communities of place	83	88	2.27	.132	.06
2013 vs. 2021 Rest of the coast	**70**	**79**	**4.83**	**.028**	**.10**
2013 vs. 2021 Coast total	**73**	**81**	**9.09**	**.003**	**.10**
2016 vs. 2021 I-5 corridor	**85**	**91**	**5.99**	**.014**	**.09**
Benefit marine areas in general					
2013 vs. 2021 Communities of place	**82**	**89**	**4.57**	**.033**	**.09**
2013 vs. 2021 Rest of the coast	**68**	**76**	**4.11**	**.043**	**.09**
2013 vs. 2021 Coast total	**71**	**80**	**8.72**	**.003**	**.09**
2016 vs. 2021 I-5 corridor	**85**	**93**	**10.76**	**.001**	**.12**
Increase marine species populations					
2013 vs. 2021 Communities of place	**80**	**89**	**8.26**	**.004**	**.12**
2013 vs. 2021 Rest of the coast	68	75	2.03	.155	.07
2013 vs. 2021 Coast total	**71**	**78**	**6.40**	**.011**	**.08**
2016 vs. 2021 I-5 corridor	**80**	**90**	**13.75**	**< .001**	**.13**
Improve the ability to manage marine areas					
2013 vs. 2021 Communities of place	**66**	**76**	**6.41**	**.011**	**.11**
2013 vs. 2021 Rest of the coast	54	62	2.72	.099	.08
2013 vs. 2021 Coast total	**57**	**66**	**7.31**	**.007**	**.09**
2016 vs. 2021 I-5 corridor	67	74	3.73	.054	.07
Increase tourism					
2013 vs. 2021 Communities of place	**43**	**60**	**15.10**	**< .001**	**.17**
2013 vs. 2021 Rest of the coast	**38**	**54**	**10.25**	**.001**	**.15**
2013 vs. 2021 Coast total	**39**	**55**	**23.93**	**< .001**	**.16**
2016 vs. 2021 I-5 corridor	**54**	**64**	**7.40**	**.007**	**.10**
Benefit people in local communities					
2013 vs. 2021 Communities of place	**48**	**63**	**12.94**	**< .001**	**.15**
2013 vs. 2021 Rest of the coast	**43**	**56**	**7.06**	**.008**	**.13**
2013 vs. 2021 Coast total	**44**	**58**	**17.34**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	**49**	**58**	**5.81**	**.016**	**.09**
Improve the economy					
2013 vs. 2021 Communities of place	**32**	**42**	**5.32**	**.021**	**.10**
2013 vs. 2021 Rest of the coast	**29**	**41**	**8.24**	**.004**	**.14**
2013 vs. 2021 Coast total	**30**	**42**	**15.89**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	**27**	**41**	**16.07**	**< .001**	**.15**

[a] Cell entries are percentages (%) who "agreed" with the statement. Items in **bold** were statistically significant at $p < .05$.

Table 35. Attitudes toward potential *advantages* of Oregon marine reserves for the *panel sample* (*same people over time*) [a]

Marine reserves in Oregon would:	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Allow scientists to monitor marine areas			
2013 vs. 2021 Communities of place	92	93	.986
2013 vs. 2021 Rest of the coast	68	78	.375
2013 vs. 2021 Coast total	83	88	.344
2016 vs. 2021 I-5 corridor	96	97	.989
Allow depleted populations to recover			
2013 vs. 2021 Communities of place	88	90	.922
2013 vs. 2021 Rest of the coast	68	81	.125
2013 vs. 2021 Coast total	81	87	.180
2016 vs. 2021 I-5 corridor	95	90	.227
Improve our understanding of marine areas			
2013 vs. 2021 Communities of place	85	92	.219
2013 vs. 2021 Rest of the coast	59	70	.453
2013 vs. 2021 Coast total	76	84	.092
2016 vs. 2021 I-5 corridor	94	92	.727
Improve scientific understanding of marine areas			
2013 vs. 2021 Communities of place	90	91	.998
2013 vs. 2021 Rest of the coast	57	70	.219
2013 vs. 2021 Coast total	77	83	.289
2016 vs. 2021 I-5 corridor	95	94	.687
Protect the diversity of marine species			
2013 vs. 2021 Communities of place	87	92	.453
2013 vs. 2021 Rest of the coast	65	78	.219
2013 vs. 2021 Coast total	79	87	.092
2016 vs. 2021 I-5 corridor	93	94	.981
Benefit marine areas in general			
2013 vs. 2021 Communities of place	85	95	.125
2013 vs. 2021 Rest of the coast	62	76	.125
2013 vs. 2021 Coast total	**77**	**88**	**.012**
2016 vs. 2021 I-5 corridor	94	92	.727
Increase marine species populations			
2013 vs. 2021 Communities of place	90	88	.912
2013 vs. 2021 Rest of the coast	**56**	**78**	**.016**
2013 vs. 2021 Coast total	77	84	.210
2016 vs. 2021 I-5 corridor	87	91	.302
Improve the ability to manage marine areas			
2013 vs. 2021 Communities of place	72	80	.332
2013 vs. 2021 Rest of the coast	**43**	**64**	**.039**
2013 vs. 2021 Coast total	**61**	**74**	**.029**
2016 vs. 2021 I-5 corridor	74	76	.971
Increase tourism			
2013 vs. 2021 Communities of place	49	58	.238
2013 vs. 2021 Rest of the coast	43	38	.754
2013 vs. 2021 Coast total	47	50	.572
2016 vs. 2021 I-5 corridor	62	66	.608
Benefit people in local communities			
2013 vs. 2021 Communities of place	**49**	**68**	**.012**
2013 vs. 2021 Rest of the coast	40	46	.774
2013 vs. 2021 Coast total	**46**	**60**	**.020**
2016 vs. 2021 I-5 corridor	63	58	.442
Improve the economy			
2013 vs. 2021 Communities of place	48	59	.077
2013 vs. 2021 Rest of the coast	27	32	.774
2013 vs. 2021 Coast total	40	49	.087
2016 vs. 2021 I-5 corridor	**32**	**49**	**.003**

[a] Cell entries are percentages (%) who "agreed" with the statement. Items in **bold** were statistically significant at $p < .05$.

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 36 present the extent that respondents believed that potential *advantages* of these marine reserves are *good*, and show that Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* overwhelmingly felt that these advantages would be good with positive evaluations ranging from lows of 60-78% for "increasing tourism" to highs of 91-97% for "allowing depleted populations to recover." Residents of the I-5 corridor and the communities of place were generally more likely to consider almost all of these advantages to be positive (i.e., good), whereas those living along the rest of the coast often had lower evaluations. There were several statistically significant differences over time, as residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were more likely than those in 2013 and 2016 to believe that almost all of the potential advantages of Oregon marine reserves were "good," as most percentages in 2021 were higher than those from earlier (2013, 2016). This was especially the case for "improving the ability to manage marine areas." However, for all of the coastal areas (i.e., communities of place, rest of coast, coast in total), "increasing tourism" was less likely to be seen as "good" by residents of these areas in 2021 compared to 2013. These changes in affective evaluations over time were statistically significant in 19 of the 44 comparisons shown in Table 36.

For the *panel sample (i.e., same people across time)*, there were not many significant changes in these affective evaluations over time (Table 37). However, residents in the communities of place and the coast in total were significantly more likely in 2021 than in 2013 to consider "improving the ability to manage marine areas" as good, and significantly less likely in 2021 to consider "increasing tourism" as good. Residents of the I-5 corridor were more significantly likely in 2021 than in 2016 to consider "increasing marine species populations" as good.

Table 36. Affective evaluations of *advantages* of Oregon marine reserves for *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Allowing depleted populations to recover					
2013 vs. 2021 Communities of place	94	95	0.15	.699	.02
2013 vs. 2021 Rest of the coast	88	91	1.25	.263	.05
2013 vs. 2021 Coast total	89	92	1.92	.165	.04
2016 vs. 2021 I-5 corridor	96	97	0.59	.444	.03
Protecting the diversity of marine species					
2013 vs. 2021 Communities of place	**88**	**94**	**4.24**	**.040**	**.09**
2013 vs. 2021 Rest of the coast	83	88	2.14	.144	.07
2013 vs. 2021 Coast total	**85**	**90**	**5.22**	**.022**	**.07**
2016 vs. 2021 I-5 corridor	94	96	1.41	.235	.04
Improving our understanding of marine areas					
2013 vs. 2021 Communities of place	**88**	**95**	**7.16**	**.007**	**.11**
2013 vs. 2021 Rest of the coast	83	89	3.15	.076	.08
2013 vs. 2021 Coast total	**85**	**91**	**8.14**	**.004**	**.09**
2016 vs. 2021 I-5 corridor	94	95	0.54	.462	.03
Improving scientific understanding of marine areas					
2013 vs. 2021 Communities of place	88	92	2.60	.107	.07
2013 vs. 2021 Rest of the coast	82	88	2.62	.106	.08
2013 vs. 2021 Coast total	**84**	**89**	**5.60**	**.018**	**.08**
2016 vs. 2021 I-5 corridor	93	96	1.48	.224	.04
Allowing scientists to monitor marine areas					
2013 vs. 2021 Communities of place	**87**	**94**	**7.23**	**.007**	**.12**
2013 vs. 2021 Rest of the coast	81	87	2.54	.111	.08
2013 vs. 2021 Coast total	**82**	**88**	**6.72**	**.010**	**.08**
2016 vs. 2021 I-5 corridor	92	95	3.39	.066	.07
Benefitting marine areas in general					
2013 vs. 2021 Communities of place	86	91	3.78	.052	.08
2013 vs. 2021 Rest of the coast	79	85	2.74	.098	.08
2013 vs. 2021 Coast total	**81**	**87**	**6.38**	**.012**	**.08**
2016 vs. 2021 I-5 corridor	92	95	3.35	.067	.07
Benefitting people in local communities					
2013 vs. 2021 Communities of place	85	88	0.69	.407	.04
2013 vs. 2021 Rest of the coast	83	89	3.16	.075	.08
2013 vs. 2021 Coast total	**84**	**89**	**4.92**	**.027**	**.07**
2016 vs. 2021 I-5 corridor	**90**	**95**	**6.91**	**.009**	**.09**
Improving the ability to manage marine areas					
2013 vs. 2021 Communities of place	**76**	**85**	**7.79**	**.005**	**.12**
2013 vs. 2021 Rest of the coast	**72**	**84**	**8.64**	**.003**	**.14**
2013 vs. 2021 Coast total	**73**	**84**	**18.13**	**< .001**	**.14**
2016 vs. 2021 I-5 corridor	**84**	**90**	**6.29**	**.012**	**.09**
Improving the economy					
2013 vs. 2021 Communities of place	83	87	2.22	.137	.06
2013 vs. 2021 Rest of the coast	83	83	0.02	.900	.01
2013 vs. 2021 Coast total	83	84	0.45	.504	.02
2016 vs. 2021 I-5 corridor	**83**	**95**	**24.13**	**< .001**	**.17**
Increasing marine species populations					
2013 vs. 2021 Communities of place	84	89	3.24	.072	.08
2013 vs. 2021 Rest of the coast	81	87	3.18	.075	.08
2013 vs. 2021 Coast total	**82**	**87**	**6.38**	**.012**	**.08**
2016 vs. 2021 I-5 corridor	**82**	**94**	**24.79**	**< .001**	**.17**
Increasing tourism					
2013 vs. 2021 Communities of place	67	60	3.09	.079	.08
2013 vs. 2021 Rest of the coast	**78**	**66**	**7.41**	**.006**	**.13**
2013 vs. 2021 Coast total	**75**	**64**	**12.77**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	72	78	3.14	.076	.06

[a] Cell entries are percentages (%)who evaluated the potential advantage as "*good*." Items in **bold** were statistically significant at $p < .05$.

Table 37. Affective evaluations of potential *advantages* of Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Allowing depleted populations to recover			
2013 vs. 2021 Communities of place	98	100	.958
2013 vs. 2021 Rest of the coast	86	82	.375
2013 vs. 2021 Coast total	94	93	.687
2016 vs. 2021 I-5 corridor	100	98	.962
Protecting the diversity of marine species			
2013 vs. 2021 Communities of place	90	92	.925
2013 vs. 2021 Rest of the coast	84	85	.978
2013 vs. 2021 Coast total	88	89	.929
2016 vs. 2021 I-5 corridor	96	93	.872
Improving our understanding of marine areas			
2013 vs. 2021 Communities of place	93	95	.986
2013 vs. 2021 Rest of the coast	76	81	.794
2013 vs. 2021 Coast total	87	90	.727
2016 vs. 2021 I-5 corridor	97	97	.992
Improving scientific understanding of marine areas			
2013 vs. 2021 Communities of place	90	97	.250
2013 vs. 2021 Rest of the coast	78	79	.921
2013 vs. 2021 Coast total	86	90	.727
2016 vs. 2021 I-5 corridor	96	96	.999
Allowing scientists to monitor marine areas			
2013 vs. 2021 Communities of place	90	95	.250
2013 vs. 2021 Rest of the coast	73	82	.687
2013 vs. 2021 Coast total	84	90	.180
2016 vs. 2021 I-5 corridor	94	97	.125
Benefitting marine areas in general			
2013 vs. 2021 Communities of place	87	95	.125
2013 vs. 2021 Rest of the coast	70	81	.264
2013 vs. 2021 Coast total	81	90	.180
2016 vs. 2021 I-5 corridor	97	97	.998
Benefitting people in local communities			
2013 vs. 2021 Communities of place	88	95	.219
2013 vs. 2021 Rest of the coast	92	88	.375
2013 vs. 2021 Coast total	90	92	.902
2016 vs. 2021 I-5 corridor	90	95	.070
Improving the ability to manage marine areas			
2013 vs. 2021 Communities of place	**77**	**91**	**.012**
2013 vs. 2021 Rest of the coast	65	69	.884
2013 vs. 2021 Coast total	**72**	**83**	**.031**
2016 vs. 2021 I-5 corridor	94	90	.344
Improving the economy			
2013 vs. 2021 Communities of place	85	90	.453
2013 vs. 2021 Rest of the coast	89	88	.625
2013 vs. 2021 Coast total	87	89	.891
2016 vs. 2021 I-5 corridor	90	93	.629
Increasing marine species populations			
2013 vs. 2021 Communities of place	95	98	.625
2013 vs. 2021 Rest of the coast	84	81	.687
2013 vs. 2021 Coast total	91	92	.933
2016 vs. 2021 I-5 corridor	**85**	**93**	**.022**
Increasing tourism			
2013 vs. 2021 Communities of place	**74**	**54**	**.027**
2013 vs. 2021 Rest of the coast	75	61	.180
2013 vs. 2021 Coast total	**74**	**57**	**.005**
2016 vs. 2021 I-5 corridor	76	71	.383

[a] Cell entries are percentages (%)who evaluated the potential advantage as "*good*." Items in **bold** were statistically significant at $p < .05$.

Results in Table 38 present respondent beliefs toward potential *disadvantages* of these marine reserves and show that 41-66% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* agreed that the reserves would reduce commercial fishing, and 30-47% agreed they would reduce recreational fishing. More than 30% also agreed that the reserves would be difficult to enforce (43-49%), cost a lot to manage (30-43%), and prevent people from using these areas (30-43%). These residents were least likely to agree that the marine reserves would not be effective in conserving marine areas (6-17%) and may cause some species to become overpopulated (19-27%). Residents of the communities of place were generally least likely to agree with these disadvantages.

Table 38. Attitudes toward *disadvantages* of Oregon marine reserves for *longitudinal samples* (*different people over time*) [a]

Marine reserves in Oregon would:	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Reduce commercial fishing					
2013 vs. 2021 Communities of place	**64**	**41**	**29.88**	**< .001**	**.23**
2013 vs. 2021 Rest of the coast	59	54	1.27	.259	.05
2013 vs. 2021 Coast total	**60**	**50**	**9.94**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	59	66	3.04	.081	.06
Reduce recreational fishing					
2013 vs. 2021 Communities of place	**55**	**30**	**35.79**	**< .001**	**.25**
2013 vs. 2021 Rest of the coast	50	44	1.79	.181	.06
2013 vs. 2021 Coast total	**52**	**40**	**12.30**	**< .001**	**.11**
2016 vs. 2021 I-5 corridor	50	47	0.69	.406	.03
Be difficult to enforce					
2013 vs. 2021 Communities of place	51	43	3.73	.053	.08
2013 vs. 2021 Rest of the coast	53	49	1.17	.280	.05
2013 vs. 2021 Coast total	53	47	3.47	.062	.06
2016 vs. 2021 I-5 corridor	49	48	0.12	.727	.01
Cost a lot to manage					
2013 vs. 2021 Communities of place	**49**	**30**	**19.59**	**< .001**	**.19**
2013 vs. 2021 Rest of the coast	**57**	**43**	**9.44**	**.002**	**.15**
2013 vs. 2021 Coast total	**55**	**39**	**24.24**	**< .001**	**.16**
2016 vs. 2021 I-5 corridor	**46**	**30**	**18.76**	**< .001**	**.16**
Prevent people from using the reserve areas					
2013 vs. 2021 Communities of place	**51**	**30**	**24.82**	**< .001**	**.21**
2013 vs. 2021 Rest of the coast	52	43	3.69	.055	.09
2013 vs. 2021 Coast total	**52**	**39**	**14.72**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	44	40	0.93	.336	.04
Cause some species to become overpopulated					
2013 vs. 2021 Communities of place	**32**	**19**	**12.28**	**< .001**	**.15**
2013 vs. 2021 Rest of the coast	32	27	1.02	.313	.05
2013 vs. 2021 Coast total	**32**	**25**	**5.30**	**.021**	**.07**
2016 vs. 2021 I-5 corridor	31	26	1.92	.166	.05
Not be effective in conserving marine areas					
2013 vs. 2021 Communities of place	**14**	**9**	**3.85**	**.050**	**.08**
2013 vs. 2021 Rest of the coast	18	17	0.04	.849	.01
2013 vs. 2021 Coast total	17	15	0.71	.400	.03
2016 vs. 2021 I-5 corridor	7	6	0.19	.660	.02

[a] Cell entries are percentages (%)who "agreed" with the statement. Items in **bold** were statistically significant at $p < .05$.

There were some statistically significant differences over time among these Phase 3 *longitudinal respondents (i.e., 2021; different people over time).* Residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were less likely than those in 2013 and 2016 to agree with almost all of these potential disadvantages of Oregon marine reserves (Table 38). Almost all of the percentages in 2021 were lower than those from earlier (2013, 2016). This was especially the case for "cost a lot to manage" where agreement across all areas was significantly lower in 2021 compared to earlier (2013, 2016). Not all differences over time, however, were statistically significant. The only other significant differences were for residents of the communities of place and the coast in total where these residents were less likely in 2021 (compared to 2013) to agree that the marine reserves would reduce commercial and recreational fishing, prevent people from using the reserve areas, and cause some species to become overpopulated. Residents of the communities of place in 2021 were also less likely than those in 2013 to agree that these marine reserves would not be effective in conserving marine areas.

For the *panel sample (i.e., same people across time),* residents in 2021 were either slightly less likely or slightly more likely than they were in 2013 or 2016 to agree with these potential disadvantages of Oregon marine reserves (Table 39). Most of these changes over time, however, were not statistically significant. Residents of the communities of place and the coast in total were significantly less likely in 2021 (compared to 2013) to agree that Oregon's marine reserves would cost a lot to manage and prevent people from using the reserve areas. Residents of the I-5 corridor were also significantly less likely in 2021 (compared to 2016) to agree that Oregon's marine reserves would cost a lot to manage.

Table 39. Attitudes toward potential *disadvantages* of Oregon marine reserves for the *panel sample* (*same people over time*) [a]

Marine reserves in Oregon would:	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Reduce commercial fishing			
2013 vs. 2021 Communities of place	71	58	.134
2013 vs. 2021 Rest of the coast	68	68	.997
2013 vs. 2021 Coast total	69	61	.163
2016 vs. 2021 I-5 corridor	58	65	.324
Reduce recreational fishing			
2013 vs. 2021 Communities of place	57	45	.077
2013 vs. 2021 Rest of the coast	54	51	.754
2013 vs. 2021 Coast total	56	47	.076
2016 vs. 2021 I-5 corridor	48	44	.627
Be difficult to enforce			
2013 vs. 2021 Communities of place	48	52	.916
2013 vs. 2021 Rest of the coast	60	47	.267
2013 vs. 2021 Coast total	52	50	.618
2016 vs. 2021 I-5 corridor	46	41	.337
Cost a lot to manage			
2013 vs. 2021 Communities of place	**54**	**31**	**.007**
2013 vs. 2021 Rest of the coast	54	49	.453
2013 vs. 2021 Coast total	**54**	**38**	**.003**
2016 vs. 2021 I-5 corridor	**39**	**29**	**.035**
Prevent people from using the reserve areas			
2013 vs. 2021 Communities of place	**69**	**47**	**.013**
2013 vs. 2021 Rest of the coast	53	47	.815
2013 vs. 2021 Coast total	**63**	**47**	**.026**
2016 vs. 2021 I-5 corridor	41	34	.121
Cause some species to become overpopulated			
2013 vs. 2021 Communities of place	27	19	.454
2013 vs. 2021 Rest of the coast	39	30	.344
2013 vs. 2021 Coast total	31	23	.169
2016 vs. 2021 I-5 corridor	23	23	.978
Not be effective in conserving marine areas			
2013 vs. 2021 Communities of place	5	16	.109
2013 vs. 2021 Rest of the coast	28	20	.453
2013 vs. 2021 Coast total	13	18	.629
2016 vs. 2021 I-5 corridor	6	5	.892

[a] Cell entries are percentages (%) who "agreed" with the statement. Items in **bold** were statistically significant at $p < .05$.

Results in Table 40 present the extent that Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* believed these potential *disadvantages* of the marine reserves are *bad*. In total, 76-88% of these respondents indicated that the reserves not being effective in conserving marine areas would be bad. Another 53-69% of these respondents considered that it would be bad if these reserves caused some species to become overpopulated, and 49-65% believed that costly management of the reserves would be bad. Approximately half (46-58%) of these respondents indicated that it would be bad if these reserves were difficult to enforce. Another 30-56% thought it would be bad if these reserves reduced recreational fishing, 29-47% believed it would be bad to prevent people from using these areas, and 19-43% thought it would be bad if these reserves reduced commercial fishing.

Table 40. Affective evaluations of *disadvantages* of Oregon marine reserves for *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Not being effective in conserving marine areas					
2013 vs. 2021 Communities of place	**74**	**82**	**5.22**	**.022**	**.10**
2013 vs. 2021 Rest of the coast	**68**	**76**	**3.99**	**.046**	**.10**
2013 vs. 2021 Coast total	**69**	**78**	**9.18**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	83	88	2.47	.116	.06
Causing some species to become overpopulated					
2013 vs. 2021 Communities of place	**64**	**53**	**6.37**	**.012**	**.11**
2013 vs. 2021 Rest of the coast	61	65	0.52	.471	.03
2013 vs. 2021 Coast total	62	62	0.01	.915	.01
2016 vs. 2021 I-5 corridor	67	69	0.23	.633	.02
Costing a lot to manage					
2013 vs. 2021 Communities of place	**66**	**49**	**15.38**	**< .001**	**.17**
2013 vs. 2021 Rest of the coast	**74**	**65**	**3.81**	**.050**	**.09**
2013 vs. 2021 Coast total	**72**	**61**	**12.61**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**66**	**57**	**5.10**	**.024**	**.08**
Being difficult to enforce					
2013 vs. 2021 Communities of place	54	46	3.22	.073	.08
2013 vs. 2021 Rest of the coast	60	52	2.76	.097	.08
2013 vs. 2021 Coast total	**58**	**51**	**5.99**	**.014**	**.08**
2016 vs. 2021 I-5 corridor	59	58	0.05	.818	.01
Reducing recreational fishing					
2013 vs. 2021 Communities of place	**51**	**35**	**14.80**	**< .001**	**.17**
2013 vs. 2021 Rest of the coast	**66**	**56**	**4.23**	**.040**	**.10**
2013 vs. 2021 Coast total	**62**	**51**	**12.83**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**40**	**30**	**6.74**	**.009**	**.09**
Preventing people from using the reserve areas					
2013 vs. 2021 Communities of place	**43**	**31**	**8.50**	**.004**	**.13**
2013 vs. 2021 Rest of the coast	51	47	0.58	.446	.04
2013 vs. 2021 Coast total	49	43	3.37	.066	.06
2016 vs. 2021 I-5 corridor	**38**	**29**	**6.37**	**.012**	**.09**
Reducing commercial fishing					
2013 vs. 2021 Communities of place	**40**	**30**	**5.44**	**.020**	**.10**
2013 vs. 2021 Rest of the coast	**55**	**43**	**6.59**	**.010**	**.12**
2013 vs. 2021 Coast total	**52**	**40**	**13.11**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**29**	**19**	**10.95**	**.001**	**.12**

[a] Cell entries are percentages (%) who evaluated the potential disadvantages as "*bad*." Items in **bold** were statistically significant at $p < .05$.

There were some statistically significant differences over time among these Phase 3 *longitudinal respondents (i.e., 2021; different people over time)*. Residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were *less* likely than those in 2013 and 2016 to believe that Oregon marine reserves costing a lot to manage and reducing both recreational and commercial fishing would be bad (Table 40). Residents of all coastal locations (i.e., communities of place, rest of coast, coast in total) were *more* likely in 2021 than those in 2013 to think it would be bad if the Oregon marine reserves were not being effective in conserving marine areas. Residents of the communities of place in 2021 were *less* likely than those in 2013 to believe that Oregon marine reserves causing some species to become overpopulated and preventing people from using the reserve areas would be bad. I-5 corridor

residents in 2021 were also *less* likely than those in 2016 to believe that preventing people from using the reserve areas would be bad. Finally, coastal residents in total in 2021 were *less* likely than those in 2013 to believe that these reserves being difficult to enforce would be bad.

Table 41. Affective evaluations of potential *disadvantages* of Oregon marine reserves for *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Not being effective in conserving marine areas			
2013 vs. 2021 Communities of place	74	87	.118
2013 vs. 2021 Rest of the coast	61	69	.754
2013 vs. 2021 Coast total	69	81	.108
2016 vs. 2021 I-5 corridor	92	89	.893
Causing some species to become overpopulated			
2013 vs. 2021 Communities of place	53	54	.922
2013 vs. 2021 Rest of the coast	68	78	.388
2013 vs. 2021 Coast total	58	63	.442
2016 vs. 2021 I-5 corridor	68	60	.265
Costing a lot to manage			
2013 vs. 2021 Communities of place	67	60	.648
2013 vs. 2021 Rest of the coast	**75**	**45**	**.035**
2013 vs. 2021 Coast total	70	55	.058
2016 vs. 2021 I-5 corridor	70	67	.597
Being difficult to enforce			
2013 vs. 2021 Communities of place	62	58	.804
2013 vs. 2021 Rest of the coast	63	42	.180
2013 vs. 2021 Coast total	63	52	.200
2016 vs. 2021 I-5 corridor	77	65	.108
Reducing recreational fishing			
2013 vs. 2021 Communities of place	52	43	.359
2013 vs. 2021 Rest of the coast	68	52	.180
2013 vs. 2021 Coast total	58	46	.087
2016 vs. 2021 I-5 corridor	34	36	.988
Preventing people from using the reserve areas			
2013 vs. 2021 Communities of place	30	36	.664
2013 vs. 2021 Rest of the coast	49	47	.954
2013 vs. 2021 Coast total	37	40	.728
2016 vs. 2021 I-5 corridor	34	33	.974
Reducing commercial fishing			
2013 vs. 2021 Communities of place	44	37	.607
2013 vs. 2021 Rest of the coast	57	55	.898
2013 vs. 2021 Coast total	49	43	.690
2016 vs. 2021 I-5 corridor	**30**	**20**	**.015**

[a] Cell entries are percentages (%) who evaluated the potential disadvantages as "*bad*." Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time),* there were not many significant changes in affective evaluations over time (Table 41). However, residents along the rest of the coast were less likely in 2021 than in 2013 to consider "costing a lot to manage" as bad. Residents of the I-5 corridor were less likely in 2021 than in 2016 to consider "reducing commercial fishing" 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 in

Oregon. 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 42 shows that 78-94% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* would vote in support of marine reserves in Oregon. This indicates overwhelming majority support for the marine reserves in Oregon. Respondents along the I-5 corridor and the communities of place were most likely to vote in support, whereas those along the rest of the coast were least likely. There were statistically significant differences over time, as residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were significantly more likely than those in 2013 and 2016 to say they would vote in support of (i.e., vote for) marine reserves in Oregon. Voting in support ranged from 78% to 94% in 2021 compared to 65% to 90% in 2013 / 2016.

Table 42. Intended voting behavior associated with Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

I would vote:	Early data collection (2013 or 2016)	Most recent data collection (2021)
For establishing marine reserves in Oregon		
2013 vs. 2021 Communities of place	**82**	**89**
2013 vs. 2021 Rest of the coast	**65**	**78**
2013 vs. 2021 Coast total	**69**	**81**
2016 vs. 2021 I-5 corridor	**90**	**94**
Against establishing marine reserves in Oregon		
2013 vs. 2021 Communities of place	**18**	**11**
2013 vs. 2021 Rest of the coast	**35**	**22**
2013 vs. 2021 Coast total	**31**	**19**
2016 vs. 2021 I-5 corridor	**10**	**6**

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 5.54$, $p = .019$, $\phi = .10$. 2013 vs. 2021 rest of the coast: $\chi^2 = 9.56$, $p = .002$, $\phi = .14$. 2013 vs. 2021 coast total: $\chi^2 = 18.24$, $p < .001$, $\phi = .13$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 4.32$, $p = .038$, $\phi = .08$. Items in **bold** were statistically significant at $p < .05$.

Table 43. Intended voting behavior associated with Oregon marine reserves for the *panel sample* (*same people over time*) [a]

I would vote:	Early data collection (2013 or 2016)	Most recent data collection (2021)
For establishing marine reserves in Oregon		
2013 vs. 2021 Communities of place	82	90
2013 vs. 2021 Rest of the coast	58	73
2013 vs. 2021 Coast total	**73**	**84**
2016 vs. 2021 I-5 corridor	96	95
Against establishing marine reserves in Oregon		
2013 vs. 2021 Communities of place	18	10
2013 vs. 2021 Rest of the coast	42	27
2013 vs. 2021 Coast total	**27**	**16**
2016 vs. 2021 I-5 corridor	4	5

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: McNemar's test $p = .125$. 2013 vs. 2021 rest of the coast: McNemar's test $p = .219$. 2013 vs. 2021 coast total: McNemar's test $p = .022$. 2016 vs. 2021 I-5 corridor: McNemar's test $p = .500$. Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time)*, residents of all coastal areas (i.e., communities of place, rest of coast, coast in total) in 2021 were more likely than they were in 2013 to say they would vote in support of (i.e., vote for) marine reserves in Oregon (Table 43). Voting in support for these reserves among these coastal residents ranged from 73% to 90% in 2021 compared to 58% to 82% in 2013. This difference over time, however, was only statistically significant for coastal residents in total. There were no significant differences between 2016 and 2021 in voting behavior among I-5 corridor residents.

Most Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* were extremely certain (54-66%) or moderately certain (29-38%) in these voting intentions (Table 44). Almost no respondents (1-3%) were not certain. There were some statistically significant changes over time, as residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were significantly more likely than those in 2013 and 2016 to say that they were extremely certain of these voting intentions, with these differences across time being statistically significant for both the coast in total and the I-5 corridor. For the *panel sample (i.e., same people across time)*, residents of all areas in 2021 were also more likely than they were in 2013 and 2016 to say they were extremely certain of these voting intentions with these differences across time being statistically significant for both the coast in total and the I-5 corridor (Table 45).

Table 44. Certainty of intended voting behavior associated with Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Extremely certain		
2013 vs. 2021 Communities of place	56	66
2013 vs. 2021 Rest of the coast	44	54
2013 vs. 2021 Coast total	**47**	**57**
2016 vs. 2021 I-5 corridor	**49**	**62**
Moderately certain		
2013 vs. 2021 Communities of place	35	29
2013 vs. 2021 Rest of the coast	43	38
2013 vs. 2021 Coast total	**41**	**36**
2016 vs. 2021 I-5 corridor	**40**	**30**
Slightly certain		
2013 vs. 2021 Communities of place	6	4
2013 vs. 2021 Rest of the coast	9	6
2013 vs. 2021 Coast total	**8**	**6**
2016 vs. 2021 I-5 corridor	**7**	**5**
Not certain		
2013 vs. 2021 Communities of place	3	1
2013 vs. 2021 Rest of the coast	4	2
2013 vs. 2021 Coast total	**4**	**2**
2016 vs. 2021 I-5 corridor	**3**	**3**

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 7.31$, $p = .063$, $V = .11$. 2013 vs. 2021 rest of the coast: $\chi^2 = 5.37$, $p = .146$, $V = .11$. 2013 vs. 2021 coast total: $\chi^2 = 12.08$, $p = .007$, $V = .11$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 12.26$, $p = .007$, $V = .13$. Items in **bold** were statistically significant at $p < .05$.

Table 45. Certainty of intended voting behavior associated with Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Extremely certain		
2013 vs. 2021 Communities of place	61	73
2013 vs. 2021 Rest of the coast	38	57
2013 vs. 2021 Coast total	**52**	**67**
2016 vs. 2021 I-5 corridor	**52**	**56**
Moderately certain		
2013 vs. 2021 Communities of place	33	22
2013 vs. 2021 Rest of the coast	49	27
2013 vs. 2021 Coast total	**39**	**24**
2016 vs. 2021 I-5 corridor	**38**	**32**
Slightly certain		
2013 vs. 2021 Communities of place	3	2
2013 vs. 2021 Rest of the coast	8	8
2013 vs. 2021 Coast total	**5**	**4**
2016 vs. 2021 I-5 corridor	**6**	**9**
Not certain		
2013 vs. 2021 Communities of place	3	3
2013 vs. 2021 Rest of the coast	5	8
2013 vs. 2021 Coast total	**4**	**5**
2016 vs. 2021 I-5 corridor	**4**	**3**

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 15.57$, $p = .076$, $V = .29$. 2013 vs. 2021 rest of the coast: $\chi^2 = 15.10$, $p = .088$, $V = .39$. 2013 vs. 2021 coast total: $\chi^2 = 27.10$, $p = .001$, $V = .31$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 31.86$, $p < .001$, $V = .32$. Items in **bold** were statistically significant at $p < .05$.

In addition, respondents also indicated the extent that 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 46 show that the majority of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* agreed they would be in favor of implementing marine reserves in Oregon (70-89%), and they intended to support having these reserves (69-89%). Only 3-12% of these respondents agreed they were against establishing marine reserves in Oregon. Respondents along the I-5 corridor and the communities of place were most likely to be in favor and intend to support these reserves, whereas those along the rest of the coast were least likely. There were statistically significant changes over time, as residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were significantly more likely than those in 2013 and 2016 to agree that they would be in favor of implementing marine reserves in Oregon and they would support having these reserves. They were also significantly less likely than those in 2013 and 2016 to agree that they would be against establishing these reserves.

Table 46. Behavioral intentions associated with Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
I would likely be in favor of implementing marine reserves in Oregon					
2013 vs. 2021 Communities of place	**69**	**82**	**11.34**	**.001**	**.14**
2013 vs. 2021 Rest of the coast	**58**	**70**	**7.36**	**.007**	**.13**
2013 vs. 2021 Coast total	**61**	**73**	**17.06**	**< .001**	**.13**
2016 vs. 2021 I-5 corridor	**76**	**89**	**21.51**	**< .001**	**.16**
I intend to support having marine reserves in Oregon					
2013 vs. 2021 Communities of place	**69**	**82**	**13.02**	**< .001**	**.15**
2013 vs. 2021 Rest of the coast	**53**	**69**	**12.17**	**< .001**	**.17**
2013 vs. 2021 Coast total	**57**	**73**	**25.74**	**< .001**	**.16**
2016 vs. 2021 I-5 corridor	**75**	**89**	**21.13**	**< .001**	**.16**
I am against establishing marine reserves in Oregon					
2013 vs. 2021 Communities of place	**12**	**5**	**7.93**	**.005**	**.12**
2013 vs. 2021 Rest of the coast	**21**	**12**	**6.03**	**.014**	**.12**
2013 vs. 2021 Coast total	**19**	**10**	**13.29**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	5	3	2.11	.146	.05

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

Table 47. Behavioral intentions associated with Oregon marine reserves for the *panel sample* (*same people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
I would likely be in favor of implementing marine reserves in Oregon			
2013 vs. 2021 Communities of place	77	82	.453
2013 vs. 2021 Rest of the coast	55	58	.796
2013 vs. 2021 Coast total	69	73	.581
2016 vs. 2021 I-5 corridor	84	87	.629
I intend to support having marine reserves in Oregon			
2013 vs. 2021 Communities of place	**72**	**87**	**.004**
2013 vs. 2021 Rest of the coast	**47**	**69**	**.008**
2013 vs. 2021 Coast total	**63**	**80**	**< .001**
2016 vs. 2021 I-5 corridor	84	88	.227
I am against establishing marine reserves in Oregon			
2013 vs. 2021 Communities of place	10	8	.913
2013 vs. 2021 Rest of the coast	21	9	.063
2013 vs. 2021 Coast total	14	8	.070
2016 vs. 2021 I-5 corridor	4	5	.926

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement.
Items in **bold** were statistically significant at $p < .05$.

For the *panel sample (i.e., same people across time)*, residents of all areas (i.e., communities of place, rest of coast, coast in total, I-5 corridor) in 2021 were *more* likely than they were in 2013 and 2016 to agree that they would be in favor of implementing marine reserves in Oregon and they would support having these reserves (Table 47). They were also generally *less* likely than they were in 2013 and 2016 to agree that they would be against establishing these reserves.

These differences over time were statistically significant for intentions to support these reserves among residents of all the coastal areas (i.e., communities of place, rest of coast, coast in total).

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 48 shows the largest percentages (61-64%) of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* would likely still visit these marine sites the same amount, whereas 27-29% would likely visit these sites more often. Only 9-11% of these respondents reported they would visit less often. There were only a couple of statistically significant differences over time. Residents living along the rest of the coast and the coast in total were more likely in 2021 to say they would visit the same amount compared to residents who responded in 2013. For the *panel sample (i.e., same people across time)*, there were some increases and decreases in responses over time (i.e., 2013 and 2016 vs. 2021), but none of these changes over time were statistically significant (Table 49).

Table 48. Potential changes in behavior in response to Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

I would visit the marine sites(s):	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
The same amount					
2013 vs. 2021 Communities of place	52	61	3.47	.063	.08
2013 vs. 2021 Rest of the coast	**43**	**62**	**16.20**	**< .001**	**.19**
2013 vs. 2021 Coast total	**45**	**62**	**26.02**	**< .001**	**.17**
2016 vs. 2021 I-5 corridor	67	64	0.68	.409	.03
More often					
2013 vs. 2021 Communities of place	23	29	2.26	.132	.07
2013 vs. 2021 Rest of the coast	21	27	1.42	.233	.06
2013 vs. 2021 Coast total	22	27	3.26	.071	.06
2016 vs. 2021 I-5 corridor	23	27	2.17	.141	.06
Less often					
2013 vs. 2021 Communities of place	11	10	0.04	.834	.01
2013 vs. 2021 Rest of the coast	14	11	0.48	.490	.03
2013 vs. 2021 Coast total	13	11	0.76	.384	.03
2016 vs. 2021 I-5 corridor	10	9	0.62	.432	.03

[a] Cell entries are percentages (%) of respondents who said they would engage in the action.
Items in **bold** were statistically significant at $p < .05$.

Table 49. Potential changes in behavior in response to Oregon marine reserves for the *panel sample* (*same people over time*) [a]

I would visit the marine sites(s):	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
The same amount			
2013 vs. 2021 Communities of place	52	58	.832
2013 vs. 2021 Rest of the coast	42	50	.424
2013 vs. 2021 Coast total	48	55	.405
2016 vs. 2021 I-5 corridor	68	63	.418
More often			
2013 vs. 2021 Communities of place	20	23	.912
2013 vs. 2021 Rest of the coast	5	18	.375
2013 vs. 2021 Coast total	14	21	.481
2016 vs. 2021 I-5 corridor	19	27	.265
Less often			
2013 vs. 2021 Communities of place	17	19	.988
2013 vs. 2021 Rest of the coast	14	32	.125
2013 vs. 2021 Coast total	16	24	.210
2016 vs. 2021 I-5 corridor	13	11	.955

[a] Cell entries are percentages (%) of respondents who said they would engage in the action.
Items in **bold** were statistically significant at $p < .05$.

Trust in ODFW to Manage Oregon Marine Reserves. Residents were asked the extent that they disagreed or agreed with nine statements measuring their level of 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 50 show that 69-75% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* agreed that they trusted ODFW to provide truthful information about these marine reserves, and 69-71% trusted this agency to manage these reserves using the best available information about non-human species. Approximately half to two-thirds of these respondents (55-68%) agreed with the other statements measuring trust. There were some differences across time. In almost all cases, agreement with the statements was higher (i.e., more trust) in Phase 3 (2021) compared with Phases 1 (2013) and 2 (2016), and these increases in trust over time were statistically significant in 12 of the 36 comparisons. The largest increases over time were for the statement "I trust ODFW to use public input to inform management of marine reserves" (significant increase in trust across time for all of the locations) and "I trust ODFW to make good decisions regarding management of marine reserves" (significant increase in trust across time for all of the coastal locations). For the *panel sample (i.e., same people across time)*, there were some slight increases and decreases in responses over time (i.e., 2013 and 2016 vs. 2021), but none of these changes over time were statistically significant (Table 51).

Table 50. Trust in ODFW to manage Oregon marine reserves for the *longitudinal samples* (*different people over time*) [a]

I trust ODFW to:	Early data collection (2013 or 2016)	Most recent data collection (2021)	χ^2 value	*p* value	ϕ
Provide truthful information about marine reserves					
2013 vs. 2021 Communities of place	66	70	1.22	.269	.05
2013 vs. 2021 Rest of the coast	63	69	1.86	.173	.07
2013 vs. 2021 Coast total	64	70	3.51	.061	.06
2016 vs. 2021 I-5 corridor	69	75	2.91	.088	.06
Manage marine reserves using the best available information about non-human species in these areas (e.g., fish, birds)					
2013 vs. 2021 Communities of place	65	71	1.75	.186	.06
2013 vs. 2021 Rest of the coast	63	69	1.91	.167	.07
2013 vs. 2021 Coast total	**63**	**70**	**3.87**	**.049**	**.06**
2016 vs. 2021 I-5 corridor	67	71	0.79	.374	.03
Make good decisions regarding management of marine reserves					
2013 vs. 2021 Communities of place	**58**	**67**	**4.09**	**.043**	**.09**
2013 vs. 2021 Rest of the coast	**52**	**66**	**7.36**	**.007**	**.13**
2013 vs. 2021 Coast total	**54**	**66**	**13.69**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	64	68	1.04	.309	.04
Manage marine reserves using the best available information about human uses of these areas					
2013 vs. 2021 Communities of place	58	66	2.91	.088	.08
2013 vs. 2021 Rest of the coast	56	65	3.37	.066	.09
2013 vs. 2021 Coast total	**57**	**65**	**6.58**	**.010**	**.08**
2016 vs. 2021 I-5 corridor	65	64	0.07	.794	.01
Provide the best available information about marine reserves					
2013 vs. 2021 Communities of place	65	64	0.04	.839	.01
2013 vs. 2021 Rest of the coast	60	65	0.93	.334	.05
2013 vs. 2021 Coast total	62	65	1.02	.313	.03
2016 vs. 2021 I-5 corridor	62	65	0.64	.425	.03
Work with other organizations to inform management of marine reserves					
2013 vs. 2021 Communities of place	61	66	1.37	.242	.05
2013 vs. 2021 Rest of the coast	**52**	**64**	**5.90**	**.015**	**.12**
2013 vs. 2021 Coast total	**54**	**64**	**9.73**	**.002**	**.10**
2016 vs. 2021 I-5 corridor	60	66	2.10	.147	.05
Use public input to inform management of marine reserves					
2013 vs. 2021 Communities of place	**51**	**62**	**5.98**	**.014**	**.11**
2013 vs. 2021 Rest of the coast	**48**	**60**	**6.28**	**.012**	**.12**
2013 vs. 2021 Coast total	**49**	**61**	**13.00**	**< .001**	**.12**
2016 vs. 2021 I-5 corridor	**51**	**62**	**8.72**	**.003**	**.11**
Provide me with enough information to decide what actions I should take regarding marine reserves					
2013 vs. 2021 Communities of place	**58**	**66**	**4.19**	**.041**	**.09**
2013 vs. 2021 Rest of the coast	53	57	0.41	.521	.03
2013 vs. 2021 Coast total	54	59	2.02	.155	.05
2016 vs. 2021 I-5 corridor	60	64	1.57	.210	.05
Provide timely information about marine reserves					
2013 vs. 2021 Communities of place	56	63	2.82	.093	.07
2013 vs. 2021 Rest of the coast	54	56	0.11	.745	.02
2013 vs. 2021 Coast total	55	58	0.89	.347	.03
2016 vs. 2021 I-5 corridor	56	55	0.18	.671	.02

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement. Items in **bold** were statistically significant at $p < .05$.

Table 51. Trust in ODFW to manage Oregon marine reserves for the *panel sample* (*same people over time*) [a]

I trust ODFW to:	Early data collection (2013 or 2016)	Most recent data collection (2021)	McNemar's test *p* value
Provide truthful information about marine reserves			
2013 vs. 2021 Communities of place	66	74	.332
2013 vs. 2021 Rest of the coast	60	52	.891
2013 vs. 2021 Coast total	63	66	.585
2016 vs. 2021 I-5 corridor	69	79	.052
Manage marine reserves using the best available information about non-human species in these areas (e.g., fish, birds)			
2013 vs. 2021 Communities of place	66	67	.922
2013 vs. 2021 Rest of the coast	54	52	.916
2013 vs. 2021 Coast total	62	61	.955
2016 vs. 2021 I-5 corridor	71	76	.345
Manage marine reserves using the best available information about human uses of these areas			
2013 vs. 2021 Communities of place	63	67	.664
2013 vs. 2021 Rest of the coast	49	61	.180
2013 vs. 2021 Coast total	57	64	.201
2016 vs. 2021 I-5 corridor	67	71	.473
Make good decisions regarding management of marine reserves			
2013 vs. 2021 Communities of place	53	64	.307
2013 vs. 2021 Rest of the coast	46	47	.952
2013 vs. 2021 Coast total	50	58	.511
2016 vs. 2021 I-5 corridor	66	71	.424
Provide the best available information about marine reserves			
2013 vs. 2021 Communities of place	66	68	.629
2013 vs. 2021 Rest of the coast	54	46	.424
2013 vs. 2021 Coast total	61	60	.946
2016 vs. 2021 I-5 corridor	66	72	.377
Work with other organizations to inform management of marine reserves			
2013 vs. 2021 Communities of place	61	65	.804
2013 vs. 2021 Rest of the coast	46	41	.454
2013 vs. 2021 Coast total	55	56	.860
2016 vs. 2021 I-5 corridor	62	70	.311
Provide me with enough information to decide what actions I should take regarding marine reserves			
2013 vs. 2021 Communities of place	63	62	.916
2013 vs. 2021 Rest of the coast	57	49	.629
2013 vs. 2021 Coast total	60	57	.743
2016 vs. 2021 I-5 corridor	60	63	.473
Provide timely information about marine reserves			
2013 vs. 2021 Communities of place	67	60	.332
2013 vs. 2021 Rest of the coast	49	42	.607
2013 vs. 2021 Coast total	60	53	.215
2016 vs. 2021 I-5 corridor	59	67	.136
Use public input to inform management of marine reserves			
2013 vs. 2021 Communities of place	46	59	.152
2013 vs. 2021 Rest of the coast	46	47	.927
2013 vs. 2021 Coast total	46	55	.324
2016 vs. 2021 I-5 corridor	54	60	.405

[a] Cell entries are percentages (%) of respondents who "agreed" with the statement. Items in **bold** were statistically significant at $p < .05$.

The questionnaire for Phase 3 (2021) also asked respondents to answer 10 additional questions related to their beliefs about ODFW in general, not specific to this agency's ability to address and manage marine reserves in Oregon. These additional questions were not asked in the Phase 1 (coastal residents in 2013) or Phase 2 (I-5 corridor residents in 2016) questionnaires. Table 52 shows that 67-78% of Phase 3 (2021) respondents agreed that ODFW has legitimate experts with high knowledge, 62-70% agreed that ODFW is a highly credible agency, and 57-63% agreed that ODFW is highly capable and trustworthy. Approximately half of these respondents (48-57%) agreed that ODFW shares similar values as them, 37-46% agreed that ODFW does a good job of communicating with the public, and 33-40% agreed that ODFW operates in a transparent way. Across all of these positive belief statements, residents in the communities of place and the I-5 corridor were most likely to agree, whereas those along the rest of the coast were least likely to agree. For the negative belief statements, 13-17% agreed that they do not believe ODFW thinks the same way as them, 3-11% agreed that they think ODFW is dishonest, and 2-12% agreed that they believe ODFW does not operate fairly. Residents along the rest of the coast were most likely to agree with these three negative belief statements, whereas residents of the communities of place and the I-5 corridor were least likely to agree.

Table 52. Beliefs about ODFW among Phase 3 (2021) respondents only [a]

I believe ODFW:	Communities of place	Rest of the coast	Coast total	I-5 corridor
Positive beliefs				
Has legitimate experts with high knowledge	77	67	70	78
Is a highly credible agency	70	62	64	67
Is highly capable	63	57	59	61
Is trustworthy	63	57	58	59
Shares similar values as I do	57	48	50	49
Does a good job communicating with the public	46	37	39	33
Operates in a transparent way	40	33	35	39
Negative beliefs				
Does *not* think the same way as I do	13	17	16	13
Is dishonest	3	11	9	4
Does *not* operate fairly	2	12	9	7

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

Emotions Associated with Oregon Marine Reserves. The questionnaire for Phase 3 (2021) also asked respondents about their emotions in response to the marine reserves in Oregon. Respondents were asked to rate how 11 separate emotions represented how they felt about the idea of marine reserves in Oregon on 8-point scales of 1 "not at all" to 8 "extremely." For analysis purposes, answers were recoded into dichotomous responses of "not at all or slightly" (1 – 4 on scale) and "moderately or extremely" (5 – 8 on scale). These questions measuring

emotions were not asked in the Phase 1 (coastal residents in 2013) or Phase 2 (I-5 corridor residents in 2016) questionnaires. Table 53 shows that Phase 3 (2021) respondents were most likely to be "interested" (69-88%), "joyful" (57-68%), "excited" (56-68%), "calm" (55-71%), "relaxed" (54-70%), and "energetic" (48-60%) in response to marine reserves in Oregon. Residents in the communities of place and along the I-5 corridor were most likely to feel these positive emotions in response to Oregon's marine reserves, whereas those along the rest of the coast were least likely. Only 10-19% of respondents felt "surprised" by these reserves. In terms of negative emotions, only 5-12% were "fearful," 6-12% felt "sad," 3-6% were "disgusted," and 2-7% felt "angry" in response to the marine reserves in Oregon.

Table 53. Emotions associated with Oregon marine reserves among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
Positive emotions				
Interested	88	69	74	88
Joyful	68	57	60	68
Excited	68	56	59	67
Calm	62	55	57	71
Relaxed	61	54	56	70
Energetic	60	48	51	55
Surprised	19	15	16	10
Negative emotions				
Fearful	9	12	11	5
Sad	7	12	11	6
Disgusted	6	6	6	3
Angry	3	7	6	2

[a] Cell entries are percentages (%) of respondents who said this was "moderately or extremely" how they felt about marine reserves in Oregon (5 – 8 on scale).

Assigned Values for Oregon Marine Reserves. The questionnaires for both Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) asked residents to evaluate the importance of 23 assigned values associated with Oregon's marine reserves. These questions were not asked in the Phase 1 (coastal residents, 2013) questionnaire. Responses were on 9-point scales of 0 "not important" to 8 "extremely important." Table 54 shows the most extremely important values for Oregon's marine reserves among Phase 3 (2021) respondents only were "protect endangered species" (72-85% extremely important), "protect habitat for marine species" (72-86%), "protect water quality" (72-86%), "preserve unique wild plants or animals" (71-86%), "protect marine species, water, or plants that have value even if humans do not benefit from them" (67-84%), "protect endangered places" (70-83%), "preserve natural areas for scientific discovery or study" (64-75%), and "knowing that future generations will have marine reserves" (62-80%). The least important assigned values were "provide income for the tourism industry" (17-33% extremely important), "provide spiritual inspiration" (18-22%), "provide recreation opportunities" (27-

38%), and "provide opportunities to maintain or regain physical or mental health through contact with nature" (33-47%).

Table 54. Assigned values for Oregon marine reserves among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
Protect endangered species	84	72	75	85
Protect habitat for marine species	83	72	75	86
Protect water quality	80	72	74	86
Preserve unique wild plants or animals	79	71	73	86
Protect marine species, water, or plants that have value even if humans do not benefit from them	79	67	70	84
Protect endangered places	78	70	72	83
Preserve natural areas for scientific discovery or study	75	64	67	74
Knowing that future generations will have marine reserves	74	62	65	80
Protect air quality	72	63	66	77
Foster a moral or ethical obligation to respect or protect nature or other living things	70	63	64	79
Protect nature to ensure human well-being or survival	66	65	65	76
Protect other natural resources that humans may have to use in the future	63	60	61	64
Provide scenic beauty	60	57	58	61
Protect places that provide a sense of place, community, or belonging	60	48	51	55
Protect species to be used by the fishing industry in the future	57	61	60	56
Knowing that I will have the ability to visit marine reserves in the future	54	46	48	60
Provide a place of minimal human impact or intrusion into the natural environment	50	59	57	62
Protect symbols of America's heritage or culture	43	42	42	49
Just knowing that marine reserves exist	43	41	41	49
Provide opportunities to maintain or regain physical or mental health through contact with nature	33	40	39	47
Provide recreation opportunities	27	38	35	37
Provide spiritual inspiration	20	18	18	22
Provide income for the tourism industry	17	33	29	22

[a] Cell entries are percentages (%) who said this was "extremely" important to be provided by Oregon's marine reserves (7 – 8 on scale).

To measure any possible change over time in these assigned values, comparisons across years could only be made for I-5 corridor residents (Phase 2 in 2016 vs. Phase 3 in 2021) because these questions were not asked in the Phase 1 (coastal residents, 2013) questionnaire. Results in Table 55 show that for the Phase 3 *I-5 corridor longitudinal respondents (i.e., 2021; different people over time),* importance of all values increased over time (from 2016 to 2021) and this change over time was statistically significant for 22 of the 23 variables. This same pattern of increasing importance over time was also generally found for the *I-5 corridor panel sample (i.e., same people across time)*, but was only statistically significant for four of the variables (Table 56).

Table 55. Assigned values for Oregon marine reserves for the *I-5 corridor longitudinal samples* (*different people over time*) [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)	χ^2 value	*p* value	ϕ
Protect water quality	**74**	**86**	**16.90**	**< .001**	**.15**
Protect habitat for marine species	**73**	**86**	**19.17**	**< .001**	**.16**
Preserve unique wild plants or animals	**71**	**86**	**23.13**	**< .001**	**.17**
Protect endangered species	**74**	**85**	**13.14**	**< .001**	**.13**
Protect marine species, water, or plants that have value even if humans do not benefit from them	**67**	**84**	**27.23**	**< .001**	**.19**
Protect endangered places	**67**	**83**	**22.34**	**< .001**	**.17**
Knowing that future generations will have marine reserves	**62**	**80**	**26.59**	**< .001**	**.19**
Foster a moral or ethical obligation to respect or protect nature or other living things	**58**	**79**	**33.68**	**< .001**	**.21**
Protect air quality	**62**	**77**	**16.87**	**< .001**	**.15**
Protect nature to ensure human well-being or survival	**56**	**76**	**31.07**	**< .001**	**.20**
Preserve natural areas for scientific discovery or study	**63**	**74**	**9.45**	**.002**	**.11**
Protect other natural resources that humans may have to use in the future	**51**	**64**	**11.77**	**.001**	**.13**
Provide a place of minimal human impact or intrusion into the natural environment	**42**	**62**	**28.12**	**< .001**	**.20**
Provide scenic beauty	**51**	**61**	**7.82**	**.005**	**.10**
Knowing that I will have the ability to visit marine reserves in the future	**42**	**60**	**22.22**	**< .001**	**.17**
Protect species to be used by the fishing industry in the future	**42**	**56**	**14.45**	**< .001**	**.14**
Protect places that provide a sense of place, community, or belonging	**38**	**55**	**20.29**	**< .001**	**.17**
Protect symbols of America's heritage or culture	**40**	**49**	**5.86**	**.015**	**.09**
Just knowing that marine reserves exist	**31**	**49**	**23.35**	**< .001**	**.18**
Provide opportunities to maintain or regain physical or mental health through contact with nature	**28**	**47**	**27.39**	**< .001**	**.20**
Provide recreation opportunities	**24**	**37**	**15.59**	**< .001**	**.15**
Provide spiritual inspiration	**14**	**22**	**7.97**	**.005**	**.11**
Provide income for the tourism industry	20	22	0.56	.456	.03

[a] Cell entries are percentages (%) who said this was "extremely" important to be provided by Oregon's marine reserves (7 – 8 on scale). Items in **bold** were statistically significant at $p < .05$.
These questions were only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.

Table 56. Assigned values for Oregon marine reserves for the *I-5 corridor panel sample (same people over time)* [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)	McNemar's or paired *t* test *p* value
Protect endangered species	84	87	.424
Protect habitat for marine species	83	86	.423
Protect water quality	82	86	.388
Preserve unique wild plants or animals	83	84	.967
Protect marine species, water, or plants that have value even if humans do not benefit from them	81	83	.804
Protect endangered places	78	82	.359
Preserve natural areas for scientific discovery or study	75	78	.815
Knowing that future generations will have marine reserves	71	76	.332
Foster a moral or ethical obligation to respect or protect nature or other living things	**63**	**75**	**.011**
Protect nature to ensure human well-being or survival	65	73	.248
Protect air quality	69	70	.815
Provide a place of minimal human impact or intrusion into the natural environment	**51**	**67**	**.001**
Provide scenic beauty	61	62	.948
Protect other natural resources that humans may have to use in the future	62	56	.229
Protect species to be used by the fishing industry in the future	54	56	.912
Just knowing that marine reserves exist	**40**	**56**	**.024**
Protect places that provide a sense of place, community, or belonging	46	51	.424
Knowing that I will have the ability to visit marine reserves in the future	45	51	.229
Protect symbols of America's heritage or culture	45	47	.711
Provide opportunities to maintain or regain physical or mental health through contact with nature	33	35	.597
Provide income for the tourism industry	24	29	.572
Provide recreation opportunities	**19**	**29**	**.015**
Provide spiritual inspiration	17	22	.424

[a] Cell entries are percentages (%) who said this was "extremely" important to be provided by Oregon's marine reserves (7 – 8 on scale). Items in **bold** were statistically significant at $p < .05$.
These questions were only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.

Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) 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. This question was not asked in the Phase 1 (coastal residents, 2013) questionnaires. Table 57 shows that according to Phase 3 (2021) 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" (25-35%), "protect habitat for marine species" (20-35%), "protect endangered species" (22-28%), "protect water quality" (22-31%), and "foster a moral or ethical obligation to respect or protect nature or other living things" (20-27%). The least important were "provide spiritual inspiration" (1-2%), "provide income for

the tourism industry" (2-4%), "just knowing that marine reserves exist" (1-3%), and "protect symbols of America's heritage or culture" (1-4%).

Table 57. Most important assigned values for Oregon marine reserves to provide among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
Protect marine species, water, or plants that have value even if humans do not benefit from them	35	25	28	32
Protect habitat for marine species	35	20	24	27
Protect endangered species	28	22	23	26
Protect water quality	22	27	25	31
Foster a moral or ethical obligation to respect or protect nature or other living things	21	20	20	27
Protect endangered places	18	17	18	21
Knowing that future generations will have marine reserves	16	15	15	18
Protect species to be used by the fishing industry in the future	14	17	16	8
Provide recreation opportunities	13	17	16	8
Preserve unique wild plants or animals	13	11	12	11
Protect nature to ensure human well-being or survival	12	14	13	20
Provide a place of minimal human impact or intrusion into the natural environment	12	17	16	10
Preserve natural areas for scientific discovery or study	12	12	12	11
Protect other natural resources that humans may have to use in the future	11	16	14	11
Protect air quality	8	14	13	18
Provide opportunities to maintain or regain physical or mental health through contact with nature	6	8	8	8
Knowing that I will have the ability to visit marine reserves in the future	6	5	5	3
Provide scenic beauty	4	8	7	5
Protect places that provide a sense of place, community, or belonging	4	5	5	3
Protect symbols of America's heritage or culture	4	2	3	1
Just knowing that marine reserves exist	3	2	2	1
Provide income for the tourism industry	2	4	4	2
Provide spiritual inspiration	2	2	2	1

[a] Cell entries are percentages (%). Percentages sum to more than 100% down each column because respondents could select up to three choices.

To examine any change over time in these most important assigned values for Oregon's marine reserves to provide, comparisons across years could only be made for I-5 corridor residents (Phase 2 in 2016 vs. Phase 3 in 2021) because these questions were not asked in the Phase 1 (coastal residents, 2013) questionnaire. Results in Table 58 show that for the Phase 3 *I-5 corridor longitudinal respondents (i.e., 2021; different people over time),* only a few of the most important assigned values changed substantively over time (from 2016 to 2021). "Foster a moral or ethical obligation to respect or protect nature or other living things," "protect nature to ensure human well-being or survival," "knowing that future generations will have marine reserves," and "protect air quality" were all substantively more likely to be most important in 2021 than earlier (in 2016). Conversely, "preserve natural areas for scientific discovery or study" and "provide a place of minimal human impact or intrusion into the natural environment" were substantively

less likely to be most important in 2021 than in 2016. For the *I-5 corridor panel sample (i.e., same people across time)*, there were minimal substantive changes over time with only "protect marine species, water, or plants that have value even if humans do not benefit from them" being substantively less likely to be most important in 2021 than in 2016 (Table 59).

Table 58. Most important assigned values for Oregon marine reserves to provide for the *I-5 corridor longitudinal samples* (*different people over time*) [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)
Protect marine species, water, or plants that have value even if humans do not benefit from them	29	32
Protect water quality	27	31
Protect habitat for marine species	28	27
Foster a moral or ethical obligation to respect or protect nature or other living things	**20**	**27**
Protect endangered species	27	26
Protect endangered places	18	21
Protect nature to ensure human well-being or survival	**12**	**20**
Knowing that future generations will have marine reserves	**12**	**18**
Protect air quality	**12**	**18**
Preserve natural areas for scientific discovery or study	**19**	**11**
Preserve unique wild plants or animals	14	11
Protect other natural resources that humans may have to use in the future	10	11
Provide a place of minimal human impact or intrusion into the natural environment	**16**	**10**
Protect species to be used by the fishing industry in the future	12	8
Provide recreation opportunities	11	8
Provide opportunities to maintain or regain physical or mental health through contact with nature	7	8
Provide scenic beauty	8	5
Knowing that I will have the ability to visit marine reserves in the future	4	3
Protect places that provide a sense of place, community, or belonging	4	3
Provide income for the tourism industry	5	2
Protect symbols of America's heritage or culture	2	1
Just knowing that marine reserves exist	2	1
Provide spiritual inspiration	2	1

[a] Cell entries are percentages (%). Percentages sum to more than 100% down each column because respondents could select up to three choices. Items in **bold** represent a change of at least 5% over time. These questions were only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.

Table 59. Most important assigned values for Oregon marine reserves to provide for the I-*5 corridor panel sample (same people over time)* [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)
Protect habitat for marine species	32	31
Protect marine species, water, or plants that have value even if humans do not benefit from them	**36**	**30**
Protect endangered species	29	30
Protect water quality	25	27
Preserve natural areas for scientific discovery or study	22	21
Foster a moral or ethical obligation to respect or protect nature or other living things	16	20
Protect endangered places	21	19
Provide a place of minimal human impact or intrusion into the natural environment	18	19
Knowing that future generations will have marine reserves	12	15
Protect nature to ensure human well-being or survival	13	13
Protect species to be used by the fishing industry in the future	13	10
Preserve unique wild plants or animals	11	10
Provide recreation opportunities	8	9
Protect air quality	7	8
Provide scenic beauty	7	8
Protect other natural resources that humans may have to use in the future	11	7
Knowing that I will have the ability to visit marine reserves in the future	4	6
Provide opportunities to maintain or regain physical or mental health through contact with nature	4	5
Provide income for the tourism industry	4	3
Protect places that provide a sense of place, community, or belonging	3	3
Provide spiritual inspiration	2	3
Just knowing that marine reserves exist	1	2
Protect symbols of America's heritage or culture	3	0

[a] Cell entries are percentages (%). Percentages sum to more than 100% down each column because respondents could select up to three choices. Items in **bold** represent a change of at least 5% over time. These questions were only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.

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 et al., 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 et al., 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 60. On average, respondents across all locations and years agreed with the four biocentric variables and disagreed with the four anthropocentric variables. For example, residents generally agreed most strongly with the belief statement that "the balance of nature is very delicate and easily upset" (75-86% agreed) and disagreed most strongly with the statement that "humans were meant to rule over the rest of nature" (only 3-18% 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 ≥ 0.65 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, 2019). The alpha reliability coefficients were 0.70-0.81 for the anthropocentric orientation and 0.70-0.83 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 60. 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					0.70 – 0.81
The earth has plenty of natural resources if we just learn how to develop them	-0.03 – -0.81	20 – 41	0.49 – 0.67	0.64 – 0.80	
Humans have the right to modify the natural environment to suit their needs	-0.56 – -1.08	6 – 21	0.45 – 0.61	0.66 – 0.79	
The so-called ecological crisis facing humankind has been greatly exaggerated	-0.62 – -1.43	4 – 21	0.51 – 0.69	0.64 – 0.78	
Humans were meant to rule over the rest of nature	-0.77 – -1.39	3 – 18	0.53 – 0.74	0.62 – 0.74	
Biocentric orientation					0.70 – 0.83
The balance of nature is very delicate and easily upset	0.92 – 1.19	75 – 86	0.52 – 0.61	0.61 – 0.81	
Humans are severely abusing the environment	0.66 – 1.23	65 – 85	0.45 – 0.70	0.65 – 0.77	
When humans interfere with nature, it often produces disastrous consequences	0.77 – 1.07	68 – 82	0.52 – 0.73	0.60 – 0.75	
Plants and animals have as much right as humans to exist	0.51 – 0.99	58 – 76	0.43 – 0.64	0.68 – 0.80	

[a] Numbers represent the range (lowest to highest) across locations and years.

[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. The largest proportions of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* had a strong biocentric (i.e., nature oriented) environmental orientation (41-56%) and the smallest proportions had an anthropocentric orientation (i.e., human

oriented, 4-13%; Table 61). In addition, 17-21% of these respondents had a moderate biocentric orientation and 20-25% had a mixed anthropocentric – biocentric orientation. Residents in the communities of place and the I-5 corridor were slightly more likely to have a strong biocentric orientation, whereas those along the rest of the coast were slightly more likely to have an anthropocentric orientation. There were statistically significant differences over time, as residents of all locations (i.e., communities of place, rest of the coast, coast total, I-5 corridor) became more strongly biocentric over time (2021 vs. 2013 or 2016), whereas the percentages with moderate biocentric and mixed anthropocentric – biocentric orientations decreased over time. This is finding consistent with recent research showing that people are becoming more environmentally or oriented or biocentric in their beliefs over time (e.g., Manfredo et al., 2016, 2021). Comparisons for the *panel sample (i.e., same people across time)* were not examined because the sample size at each location where individuals matched across years (2021 vs. 2013 or 2016) was too small (n = 38-115) to enable accurate multivariate cluster analysis results.

Table 61. Environmental value orientations for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Strong biocentric orientation		
2013 vs. 2021 Communities of place	**41**	**56**
2013 vs. 2021 Rest of the coast	**31**	**41**
2013 vs. 2021 Coast total	**34**	**45**
2016 vs. 2021 I-5 corridor	**38**	**53**
Moderate biocentric orientation		
2013 vs. 2021 Communities of place	**25**	**17**
2013 vs. 2021 Rest of the coast	24	21
2013 vs. 2021 Coast total	**25**	**20**
2016 vs. 2021 I-5 corridor	**26**	**21**
Mixed anthropocentric – biocentric orientation		
2013 vs. 2021 Communities of place	**25**	**20**
2013 vs. 2021 Rest of the coast	**31**	**25**
2013 vs. 2021 Coast total	**29**	**24**
2016 vs. 2021 I-5 corridor	**29**	**22**
Anthropocentric orientation		
2013 vs. 2021 Communities of place	9	7
2013 vs. 2021 Rest of the coast	14	13
2013 vs. 2021 Coast total	12	11
2016 vs. 2021 I-5 corridor	8	4

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 15.32$, $p = .002$, $V = .18$. 2013 vs. 2021 rest of the coast: $\chi^2 = 8.71$, $p = .033$, $V = .15$. 2013 vs. 2021 coast total: $\chi^2 = 21.79$, $p < .001$, $V = .15$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 27.76$, $p < .001$, $V = .19$. Items in **bold** represent a change of at least 5% over time.

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 62. On average, respondents across all locations and years disagreed with all of the use related variables and agreed with most of the protectionist statements. For example, respondents agreed most strongly with the belief statement that "marine areas have value whether humans are present or not" (86-95% agreed) and disagreed most strongly with the statements that "marine areas exist primarily to be used by humans" (only 4-15% agreed) and "the economic values that marine areas provide for humans are more important than the rights of species in these marine areas" (only 3-17% agreed). The alpha reliability coefficients were 0.76-0.88 for the use orientation and 0.71-0.76 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 62. 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					0.76 – 0.88
The primary value of marine areas is to provide benefits for humans	-0.38 – -1.00	8 – 25	0.59 – 0.73	0.70 – 0.86	
The needs of humans are more important than those of marine areas	-0.42 – -1.00	6 – 19	0.47 – 0.74	0.76 – 0.85	
Marine areas exist primarily to be used by humans	-0.71 – -1.18	4 – 15	0.69 – 0.81	0.64 – 0.81	
The economic values that marine areas provide for humans are more important than the rights of species in these marine areas	-0.48 – -1.34	3 – 17	0.54 – 0.71	0.72 – 0.85	
Protectionist orientation toward marine areas					0.71 – 0.76
Marine areas have value whether humans are present or not	1.21 – 1.46	86 – 95	0.40 – 0.60	0.68 – 0.73	
Marine areas should be protected for their own sake rather than to simply meet the needs of humans	0.72 – 1.19	66 – 86	0.55 – 0.66	0.59 – 0.66	
Marine areas should have rights similar to the rights of humans	-0.04 – 0.65	33 – 59	0.54 – 0.68	0.61 – 0.65	
I object to fishing, harvesting, or collecting species from marine areas because it violates the rights of these species	-0.08 – -0.56	19 – 31	0.35 – 0.49	0.65 – 0.82	

[a] Numbers represent the range (lowest to highest) across locations and years.

[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. The largest proportions of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* had strong protectionist (29-44%) or moderate protectionist (25-37%) value orientations toward marine areas, whereas the smallest proportion had a human use related orientation toward these areas (7-15%; Table 63). Another 18-24% had a mixed protection – use orientation toward marine areas. Residents in the communities of place and the I-5 corridor were slightly more likely to have a strong protectionist orientation, whereas those along the rest of the coast were slightly more likely to have a human use orientation. There were several statistically significant differences over time, as residents of all coastal locations (i.e., communities of place, rest of the coast, coast total) became more strongly protectionist over time (2021 vs. 2013 or 2016). At most locations, the proportions of residents who reported a moderate protectionist orientation also increased over time, whereas the percentages with mixed protectionist – use orientations decreased over time. Again, this is finding consistent with recent research showing that people are becoming more environmentally oriented or protectionist in their beliefs over time (e.g., Manfredo et al., 2016, 2021). Comparisons for the *panel sample (i.e., same people across time)* were not examined again because the sample size at each location where individuals matched across years (2021 vs. 2013 or 2016) was too small (n = 38-115) to enable accurate multivariate cluster analysis results.

Table 63. Value orientations toward marine areas for the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Strong protectionist orientation		
2013 vs. 2021 Communities of place	**25**	**44**
2013 vs. 2021 Rest of the coast	**19**	**29**
2013 vs. 2021 Coast total	**21**	**33**
2016 vs. 2021 I-5 corridor	42	38
Moderate protectionist orientation		
2013 vs. 2021 Communities of place	28	25
2013 vs. 2021 Rest of the coast	**23**	**34**
2013 vs. 2021 Coast total	**24**	**32**
2016 vs. 2021 I-5 corridor	**28**	**37**
Mixed protection – use orientation		
2013 vs. 2021 Communities of place	**37**	**24**
2013 vs. 2021 Rest of the coast	**42**	**22**
2013 vs. 2021 Coast total	**41**	**23**
2016 vs. 2021 I-5 corridor	21	18
Use orientation		
2013 vs. 2021 Communities of place	10	8
2013 vs. 2021 Rest of the coast	16	15
2013 vs. 2021 Coast total	15	13
2016 vs. 2021 I-5 corridor	10	7

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 25.94$, $p < .001$, $V = .23$. 2013 vs. 2021 rest of the coast: $\chi^2 = 12.13$, $p = .007$, $V = .17$. 2013 vs. 2021 coast total: $\chi^2 = 30.70$, $p < .001$, $V = .18$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 9.93$, $p = .019$, $V = .12$. Items in **bold** represent a change of at least 5% over time.

Demographic and Residential Characteristics

The remaining questions in the questionnaires measured respondent characteristics. Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) respondents, for example, were asked to report their political orientation. This question was not asked in the Phase 1 (coastal residents, 2013) questionnaire. Table 64 shows that among the Phase 3 (2021) respondents, 45-59% had a liberal orientation, 27-35% considered themselves to be moderate, and 13-20% had a conservative orientation. Residents in the communities of place and I-5 corridor were more likely to be liberal, whereas those on the rest of the coast were slightly more likely to be moderate or conservative. To examine any changes over time in political orientation, comparisons across years could only be made for I-5 corridor residents (Phase 2 in 2016 vs. Phase 3 in 2021) because these questions were not asked in the Phase 1 (coastal residents, 2013) questionnaire. Results in Table 65 show that those in the most recent sample (2021) were slightly more likely to be liberal (59%) and less likely to be conservative (13%) compared to the 2016 sample (51% liberal, 23% conservative).

Table 64. Political orientation among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
Very conservative	4	6	5	4
Somewhat conservative	11	14	13	9
Moderate	27	35	33	29
Somewhat liberal	31	30	31	37
Very liberal	28	15	18	22

[a] Cell entries are percentages (%).

Table 65. Political orientation for the *I-5 corridor longitudinal samples* (*different people over time*) [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)
Very conservative	5	4
Somewhat conservative	18	9
Moderate	26	29
Somewhat liberal	32	37
Very liberal	19	22

[a] Cell entries are percentages (%). 2016 vs. 2021 I-5 corridor: $\chi^2 = 14.88$, $p = .005$, $V = .14$.
This question was only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.

Table 66. Sex (e.g., male, female) of the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
Male		
2013 vs. 2021 Communities of place	53	49
2013 vs. 2021 Rest of the coast	59	52
2013 vs. 2021 Coast total	58	51
2016 vs. 2021 I-5 corridor	49	49
Female		
2013 vs. 2021 Communities of place	47	51
2013 vs. 2021 Rest of the coast	41	47
2013 vs. 2021 Coast total	42	48
2016 vs. 2021 I-5 corridor	51	51

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 0.71$, $p = .702$, $\phi = .04$. 2013 vs. 2021 rest of the coast: $\chi^2 = 5.28$, $p = .071$, $\phi = .10$. 2013 vs. 2021 coast total: $\chi^2 = 8.59$, $p = .014$, $\phi = .09$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 0.01$, $p = .974$, $\phi = .01$. Less than 1% indicated they were transgender, non-binary, etc., so are not reported in the table.

Other respondent characteristics assessed in the questionnaires included demographics such as age and education. The results below are provided for Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* in comparison to the Phase 1 (i.e., coastal residents in 2013) and Phase 2 (i.e., I-5 corridor residents in 2016) respondents. Changes over time for the *panel sample (i.e., same people across time)* were not examined because these are the same people and most of their demographics do not change substantially over time. In total, 47-51% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* were female and 49-52% were male, with minimal differences across locations and over time (Table 66).

Table 67. Age of the *longitudinal samples* (*different people over time*) [a]

	Early data collection (2013 or 2016)	Most recent data collection (2021)
20 – 29 years old		
2013 vs. 2021 Communities of place	6	2
2013 vs. 2021 Rest of the coast	3	1
2013 vs. 2021 Coast total	4	2
2016 vs. 2021 I-5 corridor	20	18
30 – 39 years old		
2013 vs. 2021 Communities of place	6	8
2013 vs. 2021 Rest of the coast	9	10
2013 vs. 2021 Coast total	9	10
2016 vs. 2021 I-5 corridor	19	23
40 – 49 years old		
2013 vs. 2021 Communities of place	10	3
2013 vs. 2021 Rest of the coast	8	5
2013 vs. 2021 Coast total	9	5
2016 vs. 2021 I-5 corridor	14	13
50 – 59 years old		
2013 vs. 2021 Communities of place	12	11
2013 vs. 2021 Rest of the coast	19	11
2013 vs. 2021 Coast total	17	11
2016 vs. 2021 I-5 corridor	18	15
60 – 69 years old		
2013 vs. 2021 Communities of place	38	32
2013 vs. 2021 Rest of the coast	32	30
2013 vs. 2021 Coast total	33	30
2016 vs. 2021 I-5 corridor	18	16
70 – 79 years old		
2013 vs. 2021 Communities of place	20	34
2013 vs. 2021 Rest of the coast	21	30
2013 vs. 2021 Coast total	20	31
2016 vs. 2021 I-5 corridor	8	12
80 – 89 years old		
2013 vs. 2021 Communities of place	7	9
2013 vs. 2021 Rest of the coast	7	11
2013 vs. 2021 Coast total	7	10
2016 vs. 2021 I-5 corridor	3	3
90 or older		
2013 vs. 2021 Communities of place	2	1
2013 vs. 2021 Rest of the coast	2	3
2013 vs. 2021 Coast total	2	2
2016 vs. 2021 I-5 corridor	1	0
Average adult age (mean years)		
2013 2021 Communities of place	60	65
2013 vs. 2021 Rest of the coast	61	65
2013 vs. 2021 Coast total	61	65
2016 vs. 2021 I-5 corridor	48	48

[a] Cell entries are percentages (%) unless specified as means. Categories: 2013 vs. 2021 communities of place: $\chi^2 = 28.27$, $p < .001$, $V = .23$. 2013 vs. 2021 rest of the coast: $\chi^2 = 13.95$, $p = .052$, $V = .18$. 2013 vs. 2021 coast total: $\chi^2 = 31.00$, $p < .001$, $V = .18$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 9.49$, $p = .219$, $V = .11$. Means: 2013 vs. 2021 communities of place: $t = 3.59$, $p < .001$, $r_{pb} = .16$. 2013 vs. 2021 rest of the coast: $t = 2.54$, $p = .011$, $r_{pb} = .12$. 2013 vs. 2021 coast total: $t = 4.04$, $p < .001$, $r_{pb} = .13$. 2016 vs. 2021 I-5 corridor: $t = 0.12$, $p = .904$, $r_{pb} = .01$.

The average ages of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* were 65 years old for the coastal samples and 48 years old for the I-5 corridor sample (Table 67). Among the coastal samples, only 10-12% were under 40 years of age and 73-76% were 60 and

older. By comparison, 41% of the I-5 corridor sample was under 40 years of age and 31% of this sample was 60 years of age and older. There were slight changes over time, but these reflect people getting older between the years of data collection (2013 / 2016 vs. 2021). Taken together, these results are similar to US census information for adult populations in these locations, as the samples were weighted by these demographic characteristics (i.e., age; male, female).

Only 0-6% of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* reported that they had someone in their household who was employed in the commercial fishing industry, and there were relatively minimal differences among locations and across the years and phases of data collection (Table 68).

Table 68. Household employment in the commercial fishing industry of the *longitudinal samples* (*different people over time*) [a]

Anyone in household employed in the commercial fishing industry:	Early data collection (2013 or 2016)	Most recent data collection (2021)
No		
2013 vs. 2021 Communities of place	94	96
2013 vs. 2021 Rest of the coast	95	94
2013 vs. 2021 Coast total	95	95
2016 vs. 2021 I-5 corridor	98	100
Yes		
2013 vs. 2021 Communities of place	6	4
2013 vs. 2021 Rest of the coast	5	6
2013 vs. 2021 Coast total	5	5
2016 vs. 2021 I-5 corridor	2	0

[a] Cell entries are percentages (%). 2013 vs. 2021 communities of place: $\chi^2 = 0.70$, $p = .403$, $\phi = .04$. 2013 vs. 2021 rest of the coast: $\chi^2 = 0.02$, $p = .898$, $\phi = .01$. 2013 vs. 2021 coast total: $\chi^2 = 0.01$, $p = .961$, $\phi = .01$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 6.40$, $p = .011$, $\phi = .08$. Items in **bold** were statistically significant at $p < .05$.

The majority (53-72%) of Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* had a four-year college degree or an advanced degree (e.g., MS, PhD, Law, Medical; Table 69). Residents in the communities of place and along the I-5 corridor were more likely to have an advanced degree, whereas those along the rest of the coast were slightly more likely to have a high school diploma, GED, two-year associates degree, or trade school as their highest level of education achieved. There were some changes over time, as those in Phase 3 (2021) were slightly more likely than those in Phases 1 (2013) and 2 (2016) to have an advanced degree, and less likely to have a high school diploma or GED as their highest level of education achieved.

Table 69. Education of the *longitudinal samples* (*different people over time*) [a]

Highest level of education achieved:	Early data collection (2013 or 2016)	Most recent data collection (2021)
Less than high school diploma		
2013 vs. 2021 Communities of place	1	1
2013 vs. 2021 Rest of the coast	1	1
2013 vs. 2021 Coast total	1	1
2016 vs. 2021 I-5 corridor	2	0
High school diploma or GED		
2013 vs. 2021 Communities of place	26	11
2013 vs. 2021 Rest of the coast	28	18
2013 vs. 2021 Coast total	28	16
2016 vs. 2021 I-5 corridor	20	12
2 year associates or trade school		
2013 vs. 2021 Communities of place	20	24
2013 vs. 2021 Rest of the coast	30	29
2013 vs. 2021 Coast total	28	27
2016 vs. 2021 I-5 corridor	16	15
4 year college degree (BS)		
2013 vs. 2021 Communities of place	26	25
2013 vs. 2021 Rest of the coast	23	27
2013 vs. 2021 Coast total	23	27
2016 vs. 2021 I-5 corridor	38	40
Advanced degree (MS, PhD, Law, Medical)		
2013 vs. 2021 Communities of place	26	39
2013 vs. 2021 Rest of the coast	18	26
2013 vs. 2021 Coast total	20	29
2016 vs. 2021 I-5 corridor	24	32

[a] Cell entries are percentages (%) unless specified as means. Categories: 2013 vs. 2021 communities of place: $\chi^2 = 26.34$, $p < .001$, $V = .22$. 2013 vs. 2021 rest of the coast: $\chi^2 = 9.15$, $p = .058$, $V = .14$. 2013 vs. 2021 coast total: $\chi^2 = 25.09$, $p < .001$, $V = .16$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 15.20$, $p = .004$, $V = .14$.

Phase 3 *longitudinal respondents (i.e., 2021; different people over time)* lived an average of 29-35 years in Oregon (Table 70) and 12-15 years at their current residence (Table 71), but the largest proportions tended to live fewer than 10 years in Oregon (19-20%) and at their current residence (48-54%). Compared to coastal residents, I-5 corridor respondents spent slightly less time in Oregon and at their current residence. There were no statistically significant changes over time in the length of time respondents lived in Oregon and at their current residence.

Table 70. Length of time lived in Oregon of the *longitudinal samples* (*different people over time*) [a]

Length of time lived in Oregon	Early data collection (2013 or 2016)	Most recent data collection (2021)
Less than 10 years		
2013 vs. 2021 Communities of place	24	19
2013 vs. 2021 Rest of the coast	19	20
2013 vs. 2021 Coast total	20	20
2016 vs. 2021 I-5 corridor	20	19
10 – 19 years		
2013 vs. 2021 Communities of place	12	15
2013 vs. 2021 Rest of the coast	15	13
2013 vs. 2021 Coast total	14	13
2016 vs. 2021 I-5 corridor	14	15
20 – 29 years		
2013 vs. 2021 Communities of place	12	16
2013 vs. 2021 Rest of the coast	13	14
2013 vs. 2021 Coast total	13	14
2016 vs. 2021 I-5 corridor	23	25
30 – 39 years		
2013 vs. 2021 Communities of place	13	16
2013 vs. 2021 Rest of the coast	10	11
2013 vs. 2021 Coast total	11	12
2016 vs. 2021 I-5 corridor	12	13
40 – 49 years		
2013 vs. 2021 Communities of place	11	8
2013 vs. 2021 Rest of the coast	8	9
2013 vs. 2021 Coast total	9	9
2016 vs. 2021 I-5 corridor	9	8
50 – 59 years		
2013 vs. 2021 Communities of place	8	7
2013 vs. 2021 Rest of the coast	15	10
2013 vs. 2021 Coast total	13	10
2016 vs. 2021 I-5 corridor	9	10
60 – 69 years		
2013 vs. 2021 Communities of place	10	10
2013 vs. 2021 Rest of the coast	13	12
2013 vs. 2021 Coast total	12	11
2016 vs. 2021 I-5 corridor	8	5
70 or more years		
2013 vs. 2021 Communities of place	9	10
2013 vs. 2021 Rest of the coast	8	10
2013 vs. 2021 Coast total	8	10
2016 vs. 2021 I-5 corridor	6	6
Average (mean years)		
2013 2021 Communities of place	33	33
2013 vs. 2021 Rest of the coast	35	35
2013 vs. 2021 Coast total	34	34
2016 vs. 2021 I-5 corridor	30	29

[a] Cell entries are percentages (%) unless specified as means. Categories: 2013 vs. 2021 communities of place: $\chi^2 = 7.32$, $p = .396$, $V = .12$. 2013 vs. 2021 rest of the coast: $\chi^2 = 3.43$, $p = .842$, $V = .09$. 2013 vs. 2021 coast total: $\chi^2 = 5.31$, $p = .622$, $V = .07$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 3.79$, $p = .804$, $V = .07$. Means: 2013 vs. 2021 communities of place: $t = 0.10$, $p = .920$, $r_{pb} = .01$. 2013 vs. 2021 rest of the coast: $t = 0.15$, $p = .885$, $r_{pb} = .01$. 2013 vs. 2021 coast total: $t = 0.20$, $p = .845$, $r_{pb} = .01$. 2016 vs. 2021 I-5 corridor: $t = 0.60$, $p = .547$, $r_{pb} = .02$.

Table 71. Length of time lived at current residence of the *longitudinal samples* (*different people over time*) [a]

Length of time lived at current residence	Early data collection (2013 or 2016)	Most recent data collection (2021)
Less than 10 years		
2013 vs. 2021 Communities of place	54	50
2013 vs. 2021 Rest of the coast	45	48
2013 vs. 2021 Coast total	47	48
2016 vs. 2021 I-5 corridor	60	54
10 – 19 years		
2013 vs. 2021 Communities of place	25	23
2013 vs. 2021 Rest of the coast	26	18
2013 vs. 2021 Coast total	26	19
2016 vs. 2021 I-5 corridor	18	19
20 – 29 years		
2013 vs. 2021 Communities of place	11	12
2013 vs. 2021 Rest of the coast	14	20
2013 vs. 2021 Coast total	14	18
2016 vs. 2021 I-5 corridor	12	17
30 – 39 years		
2013 vs. 2021 Communities of place	5	11
2013 vs. 2021 Rest of the coast	7	7
2013 vs. 2021 Coast total	6	8
2016 vs. 2021 I-5 corridor	4	5
40 – 49 years		
2013 vs. 2021 Communities of place	3	3
2013 vs. 2021 Rest of the coast	4	5
2013 vs. 2021 Coast total	4	4
2016 vs. 2021 I-5 corridor	3	3
50 – 59 years		
2013 vs. 2021 Communities of place	1	1
2013 vs. 2021 Rest of the coast	2	2
2013 vs. 2021 Coast total	2	2
2016 vs. 2021 I-5 corridor	2	1
60 – 69 years		
2013 vs. 2021 Communities of place	0	0
2013 vs. 2021 Rest of the coast	1	1
2013 vs. 2021 Coast total	1	1
2016 vs. 2021 I-5 corridor	1	1
70 or more years		
2013 vs. 2021 Communities of place	1	0
2013 vs. 2021 Rest of the coast	0	0
2013 vs. 2021 Coast total	0	0
2016 vs. 2021 I-5 corridor	0	0
Average (mean years)		
2013 2021 Communities of place	12	13
2013 vs. 2021 Rest of the coast	14	15
2013 vs. 2021 Coast total	14	14
2016 vs. 2021 I-5 corridor	11	12

[a] Cell entries are percentages (%) unless specified as means. Categories: 2013 vs. 2021 communities of place: $\chi^2 = 11.76$, $p = .109$, $V = .14$. 2013 vs. 2021 rest of the coast: $\chi^2 = 6.46$, $p = .373$, $V = .12$. 2013 vs. 2021 coast total: $\chi^2 = 9.92$, $p = .193$, $V = .10$. 2016 vs. 2021 I-5 corridor: $\chi^2 = 4.90$, $p = .672$, $V = .08$. Means: 2013 vs. 2021 communities of place: $t = 1.09$, $p = .279$, $r_{pb} = .05$. 2013 vs. 2021 rest of the coast: $t = 0.28$, $p = .277$, $r_{pb} = .01$. 2013 vs. 2021 coast total: $t = 0.67$, $p = .505$, $r_{pb} = .02$. 2016 vs. 2021 I-5 corridor: $t = 0.89$, $p = .374$, $r_{pb} = .03$.

The questionnaires for Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) also asked residents additional questions measuring more of their characteristics. These additional questions were not asked in the Phase 1 (coastal residents, 2013) questionnaire. Table 72 shows that the largest

proportions of Phase 3 (2021) respondents along the coast (i.e., communities of place, rest of the coast) lived in towns of 5,000 to 24,999 people (52-62%) or small towns with fewer than 5,000 people (21-34%). In contrast, I-5 corridor respondents were most likely to live in large cities of 250,000 or more people (31%), followed by small cities of 25,000 to 99,999 people (26%), and cities of 100,000 to 249,999 people (21%). To examine any changes over time, comparisons across years could only be made for I-5 corridor residents (Phase 2 in 2016 vs. Phase 3 in 2021) because this question was not asked in Phase 1 (coastal residents, 2013). Results in Table 73, however, show no significant differences in residential communities over time.

Table 72. Residential community among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
Large city (250,000 or more people)	0	0	0	31
City (100,000 to 249,999 people)	1	1	1	21
Small city (25,000 to 99,999 people)	6	10	9	26
Town (5,000 to 24,999 people)	52	62	59	14
Small town (less than 5,000 people)	34	21	25	4
Farm or rural area with few people	7	6	6	5

[a] Cell entries are percentages (%).

Table 73. Residential community for the *I-5 corridor longitudinal samples* (*different people over time*) [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)
Large city (250,000 or more people)	32	31
City (100,000 to 249,999 people)	23	21
Small city (25,000 to 99,999 people)	21	26
Town (5,000 to 24,999 people)	15	14
Small town (less than 5,000 people)	3	4
Farm or rural area with few people	6	5

[a] Cell entries are percentages (%). 2016 vs. 2021 I-5 corridor: $\chi^2 = 2.96$, $p = .705$, $V = .06$.
This question was only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.

Few Phase 3 (2021) respondents (4-14%) owned a second home on the Oregon coast, although those living in the communities of place (10%) and along rest of the coast (14%) were more likely than those in the I-5 corridor (4%) to own a second home on the Oregon coast (Table 74). These individuals mainly used their second home for recreation, property investment, and retirement. To examine any changes over time, comparisons across years could only be made for I-5 corridor residents (Phase 2 in 2016 vs. Phase 3 in 2021) because this question was not asked in Phase 1 (coastal residents, 2013). Results in Table 75, however, show no significant differences over time.

Table 74. Ownership of a second home on the Oregon coast among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
No	90	86	87	96
Yes [b]	10	14	13	4

[a] Cell entries are percentages (%).
b Main purpose of the second home: recreation (35-75% of the 4-14%), property investment (0-30% of the 4-14%), retirement (15-21% of the 4-14%) and other (e.g., rental, inheritance, home for parent, 6-15% of the 4-14%).

Table 75. Ownership of a second home on the Oregon coast for the *I-5 corridor longitudinal samples* (*different people over time*) [a]

	I-5 corridor early data collection (2016)	I-5 corridor most recent data collection (2021)
No	94	96
Yes [b]	6	4

[a] Cell entries are percentages (%). 2016 vs. 2021 I-5 corridor: $\chi^2 = 1.71$, $p = .191$, $\phi = .05$.
This question was only asked in the Phase 2 (I-5 corridor, 2016) and Phase 3 (2021) questionnaires, which means that only comparisons for I-5 corridor respondents can be made.
b Main purpose of the second home: recreation (35-75% of the 4-14%), property investment (0-30% of the 4-14%), retirement (15-21% of the 4-14%) and other (e.g., rental, inheritance, home for parent, 6-15% of the 4-14%).

Finally, the Phase 3 (2021) questionnaire also asked respondents "at any time in the last five years, have you purchased a recreational fishing license?" This question was not asked in the Phase 1 (coastal residents, 2013) or Phase 2 (I-5 corridor residents, 2016) questionnaires. Table 76 shows that 36-53% of these respondents had purchased a fishing license in the last five years with the highest proportion (53%) among residents of the rest of the coast (i.e., not in the communities place) and the lowest (36%) among residents along the I-5 corridor. Among those who had purchased a license, the largest percentages had gone fishing for recreation 5-14 times (25-28%) or 2-4 times (17-27%) in the last five years (M = 31-50 times, SD = 63-100 times).

Table 76. Recreational fishing license purchases in the past five years among Phase 3 (2021) respondents only [a]

	Communities of place	Rest of the coast	Coast total	I-5 corridor
No	61	47	51	64
Yes [b]	39	53	49	36

[a] Cell entries are percentages (%). This question was only asked in the Phase 3 (2021) questionnaires.
b Number of times gone fishing for recreation in the past 5 years: 0-1 times = 7-8%, 2-4 times = 17-27%, 5-14 times = 25-28%, 15-24 times = 8-17%, 25-49 times = 8-13%, 50-99 times = 3-16%, 100-199 times = 7-13%, 200 or more times = 4-8%, mean = 31-50 times (*SD* = 63-100 times).

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, marine fish and other marine animals in Oregon were perceived as significantly less healthy by all coastal populations in 2021 compared to earlier in 2013 and 2016. In addition, fewer than one-third agreed that the condition of marine areas in Oregon has improved in recent years. 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 to the areas.
- More than two-thirds of residents believed that the government should do more to help protect marine areas in Oregon and residents were significantly more likely to believe this in 2021 than in 2013 and 2016. In addition, fewer than one-third of respondents agreed that managers are already doing everything they can to protect these marine areas and even fewer thought the laws protecting these areas are too strict. It appears, therefore, that a large percentage of residents across locations and over time believe there is room for improving management and policies associated with marine conservation in Oregon.
- Although more than 60% of residents believed that they have visited at least one of the five marine reserve sites in Oregon, visitation to these areas has not significantly increased over time. In addition, although the majority of residents 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 public involvement in these reserves. Fewer than 40% 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% to 49% (i.e., failing grades) of the factual questions about these reserves answered correctly across locations and years of collecting data from these large samples that are representative of the population. In addition, only 16% to 30% of residents agreed that it was easy to access and find information about the reserves, and only 7% to 21% agreed that managers have done a good job educating the public about these areas. Coastal residents were slightly

more knowledgeable about these reserves compared to residents along the I-5 corridor, but coastal resident knowledge slightly declined over time in some cases and knowledge of I-5 corridor residents increased only slightly over time. It is clear, therefore, that resident knowledge about these reserves continues to be low and much more is still needed to inform and educate citizens about these areas. Major information campaigns continue to be needed and most residents would prefer this information to be disseminated through conventional channels such as newspapers and television, although internet websites and social media (e.g., Facebook, Twitter) have become more preferable over time. 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 locations and years. 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 not understood by many individuals. For example, fewer than 30% of residents knew that five marine reserves have already been established, only 24% to 43% knew that non-extractive recreation and tourism activities are allowed in the reserves, and fewer than 50% said they understood how these reserves were managed and any rules and regulations in these areas. These topic areas should offer a starting point for dramatically improving resident knowledge about these reserves.

- The majority of residents believed that scientific research and non-extractive recreation activities should be allowed in Oregon's marine reserves, but they did not think that recreational or commercial fishing should be allowed in these areas. These beliefs have not changed much over time. 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 the reserves and protected areas, activities that are allowed in each designation, and the rationale for different allowances.
- The groups that residents believed could benefit and already have benefitted the most from Oregon's marine reserves are scientists / researchers, people who live along the coast, and government agencies. Fewer than the majority believed that recreationists, local 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, could be harmed and have already been harmed by

the reserves. It is important, therefore, for agencies to do more 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 reserves in Oregon. Most residents also expressed positive emotions in response to these reserves (e.g., interested, joyful, excited). In addition, 65-94% of residents would vote in support of these reserves. These favorable attitudes and support have also increased significantly over time to the point where more than three-quarters of residents would now vote in support of these reserves and be moderately or extremely certain of their intentions. Some of the greatest support was from residents living closest to these reserves (i.e., communities of place). There was also strong agreement that these marine reserves would provide potential advantages (e.g., improve understanding, allow populations to recover, protect species diversity), with this agreement also increasing over time. There was 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. In addition, agreement with several of these potential disadvantages has decreased over time. 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 advantages of these reserves, but also the realistic challenges, disadvantages, and costs likely to be encountered with these areas.

- The majority of residents agreed that they trusted the managing agency (ODFW) to manage marine reserves in Oregon, with this trust slightly increasing over time. 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 model, heuristic systematic model) 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 a 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 most important values that residents 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. The importance of all these values increased over time. The least important values were associated with human uses such as tourism and recreation activities. These findings are 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."

- The largest proportions of residents had biocentric (i.e., nature-oriented) value orientations toward the environment in general and protectionist orientations toward marine areas in particular. Residents in all locations also became more strongly biocentric and protectionist over time. In addition, most residents 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. Knowing value orientations of residents can be useful for estimating possible reactions to potentially controversial actions. In addition, value orientations are relatively stable and resistant to substantial change (Manfredo et al., 2004), so attempts to inform individuals with strong biocentric or protectionist value orientations to consider adopting attitudes and supporting actions that may be harmful to marine areas are unlikely to be successful.

- Finally, this project used longitudinal and panel data both at a baseline point in time (2013) and then at later points in time (2016, 2021) to understand resident perceptions of marine reserves in Oregon at a relatively early stage in the implementation of these areas and then make comparisons several years after implementation. Results showed that most residents would vote in favor of these reserves, had positive attitudes toward these areas, and trusted ODFW to manage these reserves. Results also showed that several of these cognitions can change over time, as attitudes became more positive and trust increased, but knowledge remained low. It is critically important, therefore, for managers to continue: (a) cultivating and maintaining this support and trust, (b) increasing outreach and public information to improve resident knowledge about these reserves, and (c) monitoring these social conditions over time (e.g., every 5-10 years) to ensure they do not deteriorate.

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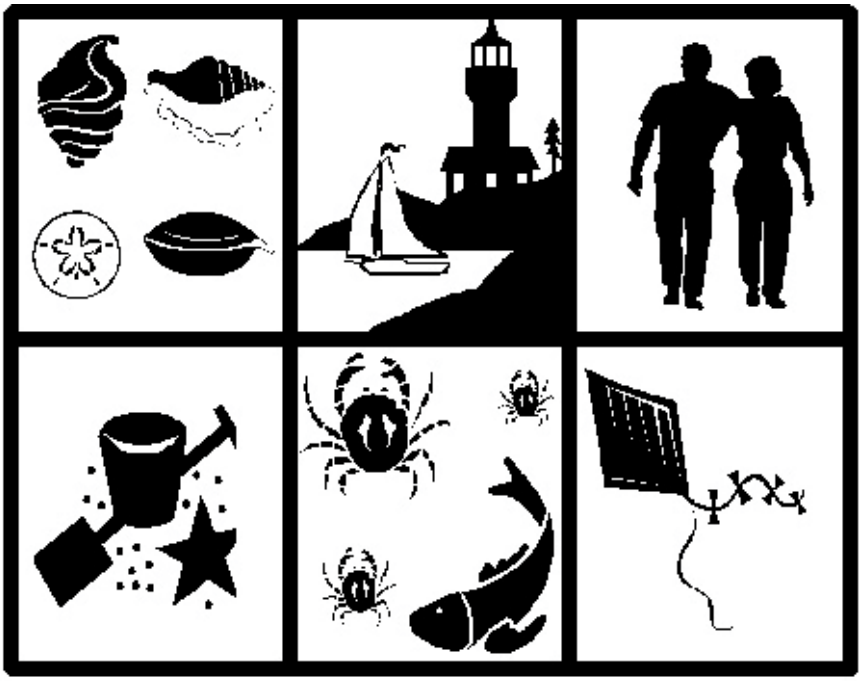
APPENDIX A
MAIL QUESTIONNAIRE: PHASE 1
(COASTAL SAMPLES IN 2013)

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*)**

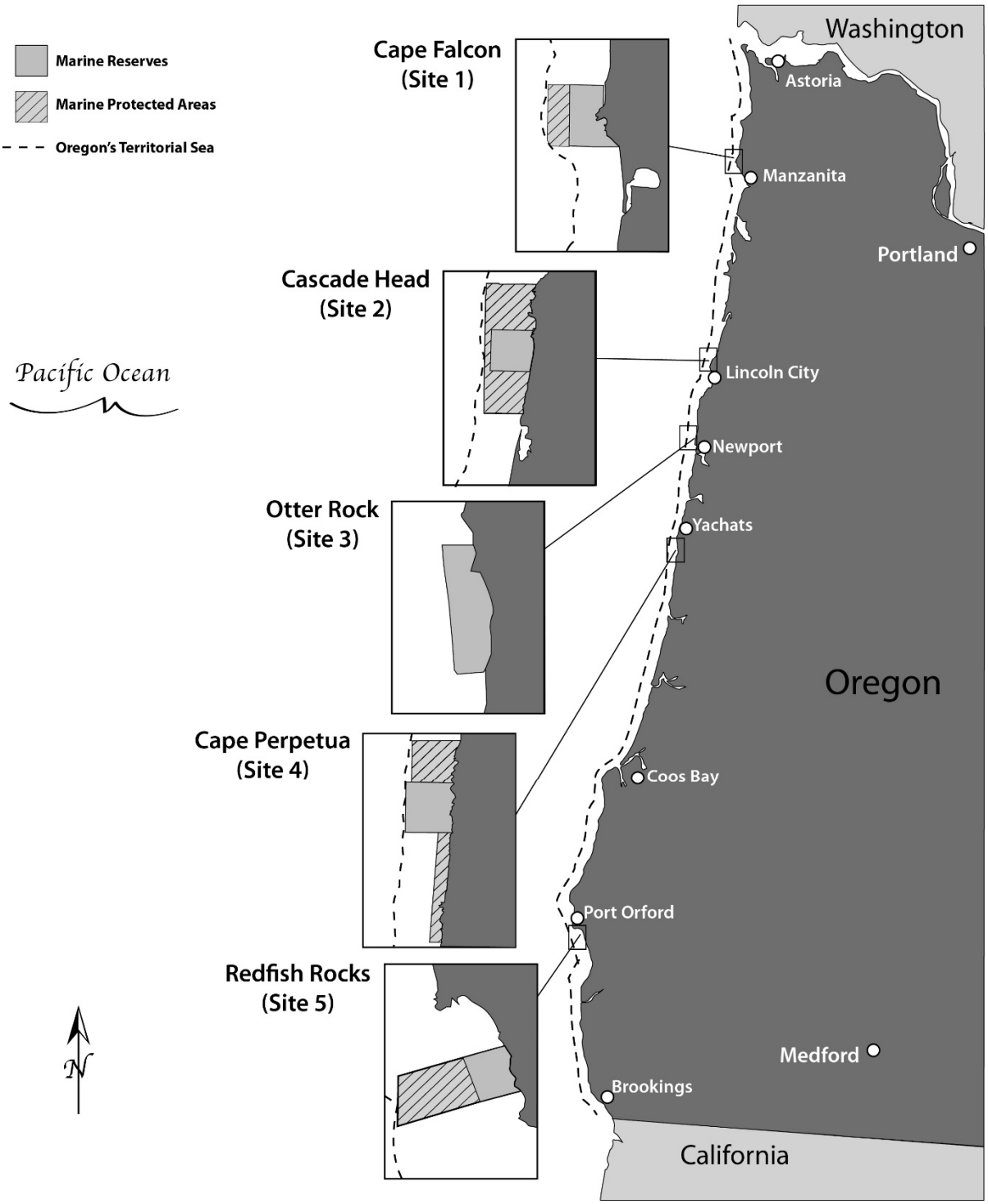
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Commercial fishing should be allowed in marine reserves in Oregon.	1	2	3	4	5
Recreational fishing should be allowed in marine reserves in Oregon.	1	2	3	4	5
Non-extractive recreation / tourism activities (e.g., surfing, swimming, diving) should be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

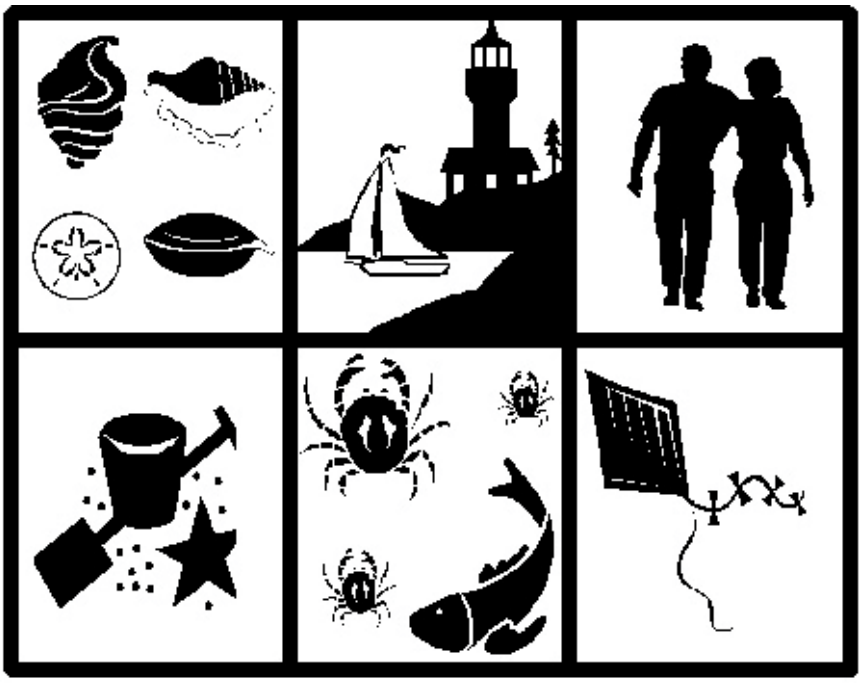
48. What is the ***highest*** level of education that you have achieved? **(check *ONE*)**
☐ Less than high school diploma
☐ High school diploma or GED
☐ 2-year associates degree or trade school
☐ 4-year college degree (e.g., bachelors degree)
☐ Advanced degree beyond 4-year degree (e.g., masters, Ph.D., 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 SAMPLE IN 2016)

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***)**

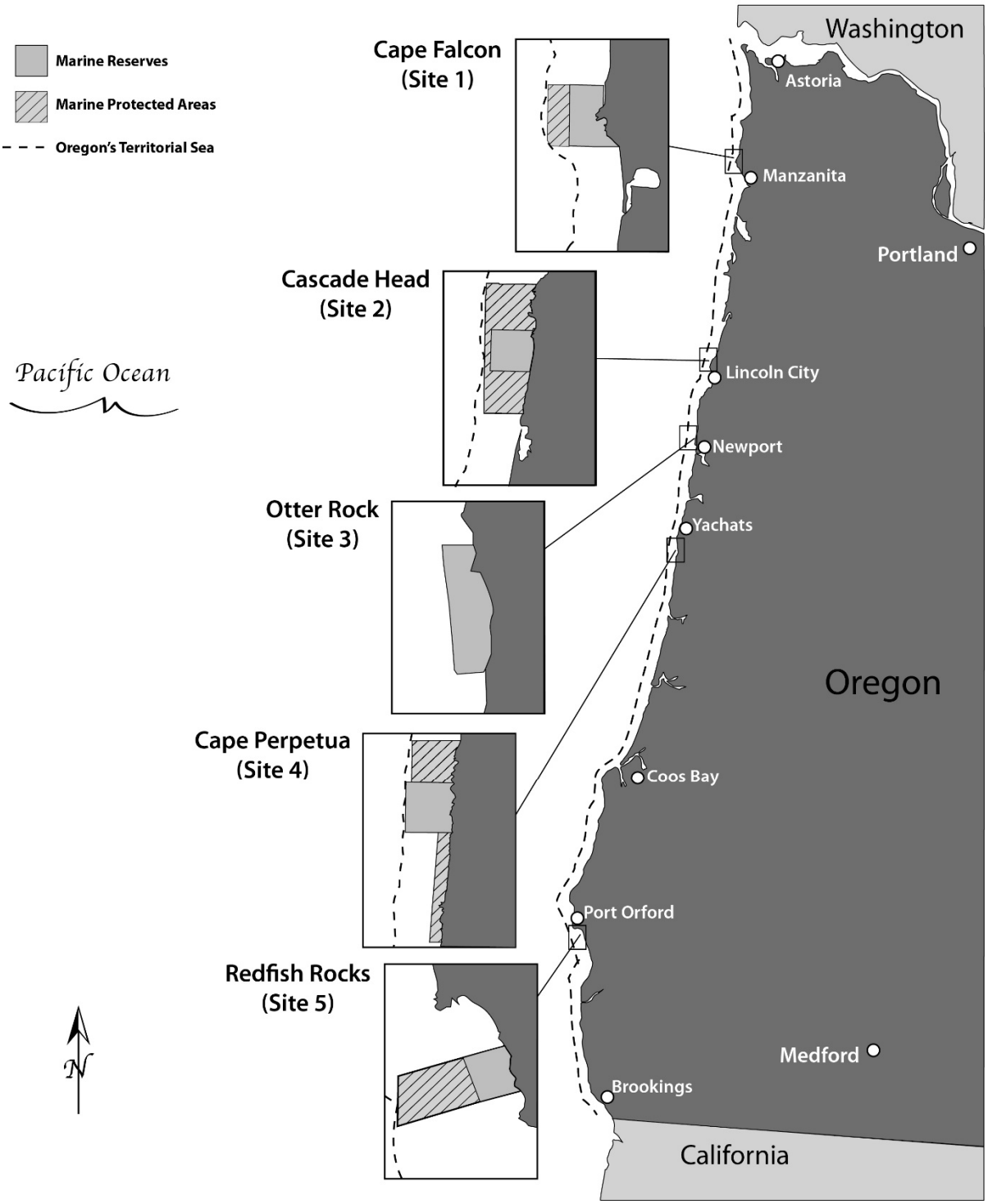
	Not Important			Slightly Important		Moderately Important			Extremely Important	I do not know
A. Provide recreation opportunities.	0	1	2	3	4	5	6	7	8	☐
B. Provide spiritual inspiration.	0	1	2	3	4	5	6	7	8	☐
C. Provide opportunities to maintain or regain physical or mental health through contact with nature.	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							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)

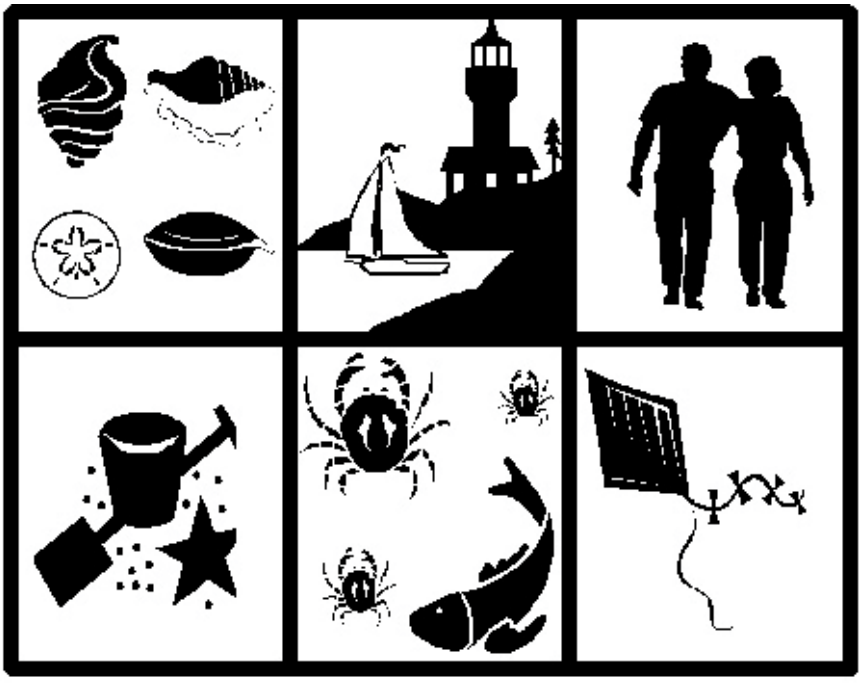
56. Where do you live? **(write responses)** City / town _____ County _____ Zipcode _____

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

APPENDIX C
MAIL QUESTIONNAIRE: PHASE 3
(LONGITUDINAL AND PANEL SAMPLES IN 2021)

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:

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. Several years ago, we sent out a similar survey with the same front cover graphic and similar questions. Do you remember completing and returning that survey several years ago? **(check *ONE*)**
   - ☐ No → if no, please answer the questions below
   - ☐ Unsure → if unsure, please answer the questions below
   - ☐ Yes → if yes, please also answer the questions below, as we are interested in whether responses have changed over time

2. Have you ever visited marine areas in Oregon? **(check *ONE*)**
   - ☐ Yes
   - ☐ No → if no, please skip to question 5 below

3. 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***. Visiting marine reserves or marine protected areas
   - ☐ ***M***. Other (write response) _____

4. From Question 3 above, what ***TOP TWO activities*** have you participated in most often at marine areas in Oregon? **(write letters)**
   Letters for ***TOP TWO*** activities _____ _____

5. 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

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.

6. Indicate on each of the following scales how you feel about the idea of establishing marine reserves in Oregon. **(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

7. To what extent do each of the following represent how you feel about the idea of establishing marine reserves in Oregon? **(circle one number for *EACH*)**

	Not at All		Slightly		Moderately		Extremely	
Interested	1	2	3	4	5	6	7	8
Joyful	1	2	3	4	5	6	7	8
Fearful	1	2	3	4	5	6	7	8
Angry	1	2	3	4	5	6	7	8
Surprised	1	2	3	4	5	6	7	8
Disgusted	1	2	3	4	5	6	7	8
Sad	1	2	3	4	5	6	7	8
Excited	1	2	3	4	5	6	7	8
Relaxed	1	2	3	4	5	6	7	8
Calm	1	2	3	4	5	6	7	8
Energetic	1	2	3	4	5	6	7	8

8. 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

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

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

10. 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

11. 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

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

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

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

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

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

15. 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

16. 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

17. From the list in Question 16 (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 _____

18. 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

19. 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

20. 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

21. 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

22. Now, to what extent do you believe that each of the following groups ***have already been*** impacted by marine reserves in Oregon? **(circle one number for *EACH*)**

	Strongly Harmed by Reserves	Slightly Harmed by Reserves	Not Impacted by Reserves	Slightly Benefitted from Reserves	Strongly Benefitted 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

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
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

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

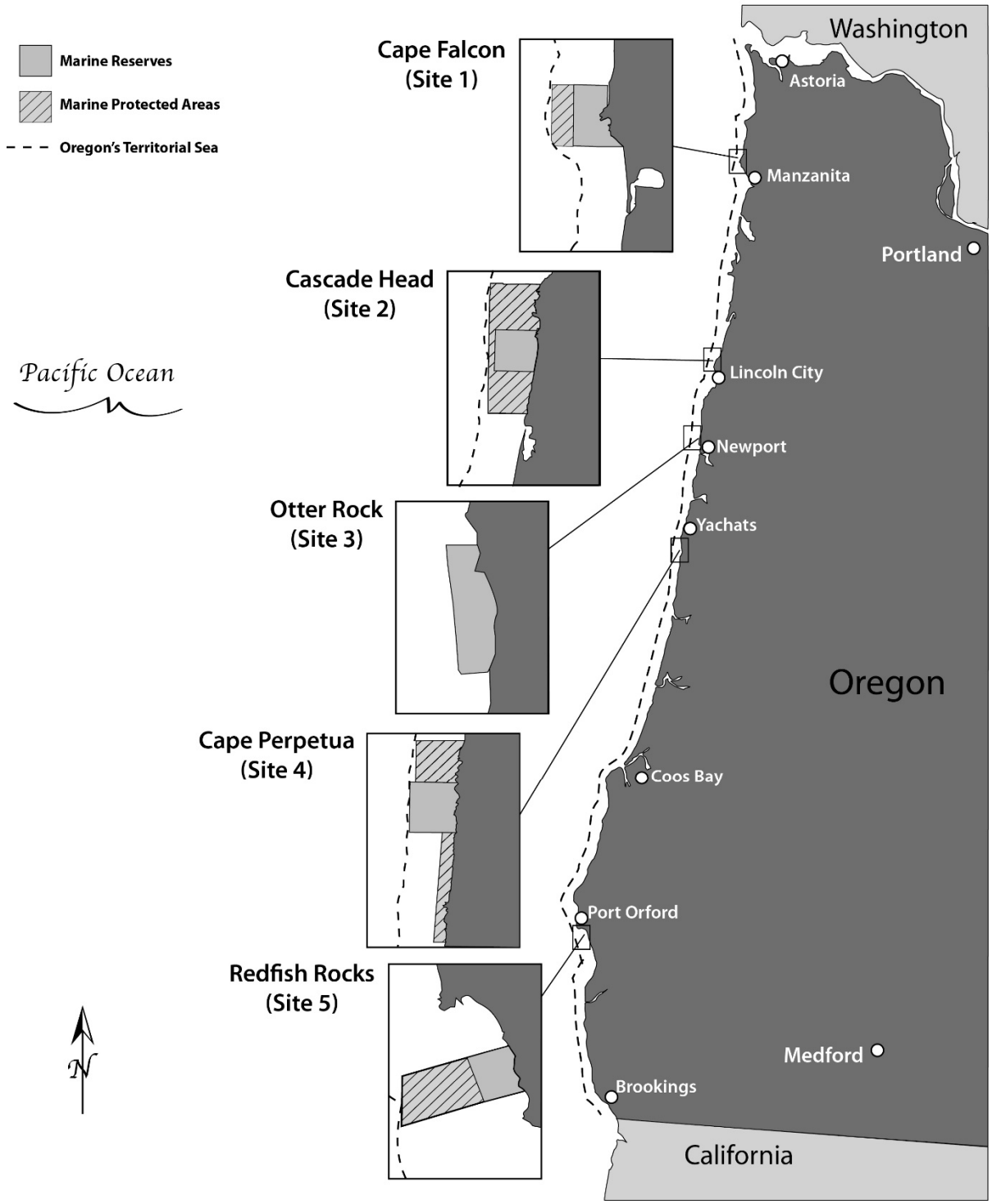
	Not Important		Slightly Important		Moderately Important			Extremely Important		I do not know
A. Provide recreation opportunities.	0	1	2	3	4	5	6	7	8	☐
B. Provide spiritual inspiration.	0	1	2	3	4	5	6	7	8	☐
C. Provide opportunities to maintain or regain physical or mental health through contact with nature.	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	☐

25. From the list in Question 24 (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) _____ _____ _____

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

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


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

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

27. 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, please skip to question 29 below

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

28. 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

29. 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***

30. 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

31. To what extent do you disagree or agree with each of the following statements about the Oregon Department of Fish and Wildlife? **(circle one number for *EACH*)**

I believe the Oregon Department of Fish and Wildlife …	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
… is a highly credible agency.	1	2	3	4	5
… has legitimate experts with high knowledge.	1	2	3	4	5
… is dishonest.	1	2	3	4	5
… is highly capable.	1	2	3	4	5
… shares similar values as I do.	1	2	3	4	5
… does *not* think the same way as I do.	1	2	3	4	5
… operates in a transparent way.	1	2	3	4	5
… does *not* operate fairly.	1	2	3	4	5
… is trustworthy.	1	2	3	4	5
… does a good job communicating with the public.	1	2	3	4	5

32. 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

33. 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

34. 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

35. 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
Colleges or universities that permit speakers with intolerant views should be publicly condemned.	1	2	3	4	5
Fox News, right-wing talk radio, or other conservative media outlets should be prohibited from broadcasting their hateful views.	1	2	3	4	5
Getting rid of inequality is more important than protecting the so-called "right" to free speech.	1	2	3	4	5
I cannot imagine myself becoming friends with a political conservative.	1	2	3	4	5
I hate being around non-progressive people.	1	2	3	4	5
Opposition to affirmative action is, by definition, racist.	1	2	3	4	5

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
It is great that many young people today are prepared to defy authority.	1	2	3	4	5
What our country needs most is discipline, with everyone following our leaders in unity.	1	2	3	4	5
God's laws about abortion, pornography, or marriage must be strictly followed before it is too late.	1	2	3	4	5
There is nothing wrong with premarital sexual intercourse.	1	2	3	4	5
Our society needs tougher government with stricter laws.	1	2	3	4	5
The facts on crime and the recent public disorders show we have to crack down harder on troublemakers if we are going preserve law and order.	1	2	3	4	5

37. What is your gender (e.g., male, female, transgender, non-binary)? **(write response)** _____

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

39. At any time in the last 5 years, have you purchased a recreational fishing license? **(check *ONE*)**
- ☐ No → if no, skip to question 40 below
- ☐ Yes → if yes, about how many times have you gone fishing for recreation in the past 5 years? _____ time(s)

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

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

42. 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

43. 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)** _____

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

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

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

46. 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)

47. Where do you live? **(write responses)** City / town _____ County _____ Zip code _____

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