2010, 2011, 2014, AND 2015 BUSINESS SURVEYS: REDFISH ROCKS, CAPE PERPETUA, OTTER ROCK, CASCADE HEAD, AND CAPE FALCON MARINE RESERVES

BY
HALEY EPPERLY
TOMMY SWEARINGEN
HILARY POLIS

OREGON DEPARTMENT OF FISH AND WILDLIFE
JANUARY 22, 2017

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EXECUTIVE SUMMARY

INTRODUCTION

When the state of Oregon began a process to establish a limited system of marine reserves within state territorial waters in 2008, the Oregon Department of Fish and Wildlife (ODFW) was designated the lead agency responsible for implementing and managing the system. ODFW oversees the five marine reserve sites at Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks. The goals of the Oregon Marine Reserve system are:

Conservation	Conserve marine habitats and biodiversity.
Research	Serve as scientific reference sites to investigate marine reserve protections and the Oregon territorial seas, to inform nearshore ocean management.
Communities	Avoid significant adverse impacts to ocean users and coastal communities.

To achieve these goals, ODFW established a program in 2009 for marine reserves implementation and monitoring. In this context, the Marine Reserves Human Dimensions Monitoring Program conducts studies to determine the direct and indirect social, cultural, and economic impacts which result from reserve site implementation. The information collected through this process should be relevant to other marine and coastal natural resource policy issues in Oregon. This paper reviews a study conducted to identify baseline information about businesses located in towns near marine reserves, and business managers' existing knowledge of and perceptions about marine reserves. How the reserve system may impact coastal businesses can have significant implications for the economies of Oregon coastal communities.

RESEARCH DESIGN

ODFW initiated this study to determine expectations related to marine reserve implementation among business communities in marine reserve communities of place. The primary objective of this research was to collect and analyze data about business characteristics, and the knowledge and attitudes of business managers, owners and key employees concerning coastal tourism and expectations of marine reserves impacts on local businesses. This study thus obtained baseline data at the early stages of marine reserve implementation from businesses located in towns most likely to be impacted by marine reserve designation. Subsequent replication of this research can then provide the data for assessment of how businesses may have been impacted by the marine reserves over time.

The studies conducted in 2010 and 2011 used a structured interview with the possibility for open ended responses. The 2014 and 2015 studies used a survey instrument with closed-ended questions. However, for consistency across these studies, the later questions are directly comparable to the earlier survey questions. During these surveys, business owners, managers, and key employees were asked about the general nature of their business and customer base, awareness of marine reserves, and expectations for potential marine reserve impacts on visitation to the area and on their business demand.

Business surveys were conducted during the summer months in towns located nearest to the marine reserves (communities of place). In 2010 and 2011, surveys were conducted in Port

Orford, Newport, Otter Rock, Lincoln City, Yachats, and Depoe Bay. In each town, the total number and size of businesses by sector was determined from available secondary sources. From this business matrix, a stratified sample of businesses was selected for interview contacts. The purpose was to achieve a representative sample of respondents by business types within each community. In 2014 and 2015, surveys were conducted in Yachats, Depoe Bay, Garibaldi, and Florence. Due to the relatively small number of businesses located in these communities, it was practical to conduct the studies in those communities as interviews with respondents representing a near census of all relevant businesses within the city boundaries.[1] However, the later studies only surveyed individuals representing businesses that were characterized as having a substantial proportion of their customer base derived from tourism.

Business surveys were conducted in person by ODFW seasonal employees at the business sites. The owner, manager, or a knowledgeable employee who could answer questions on behalf of the business was asked if they would be willing to participate in the survey. The interviewer introduced the survey as an ODFW study of expectations for the impact of marine reserve implementation on their businesses. Willing participants were then either interviewed by the ODFW employee (2010-11) or asked to complete a self-administered one-page survey instrument (2014-15).

RESULTS

Data were collected at 320 businesses during the summer months of 2010, 2011, 2014, and 2015. The majority (78.1%) of coastal businesses represented in the sample were locally owned. A large proportion (43.3%) of these businesses were established following the year 2000. Only 11.3% of the businesses where representatives were contacted were established prior to the year 1960. When asked about their customer base, the largest proportion of respondents (24.8%) indicated that between 0% and 10% of their customers were local. The second highest proportion of respondents (17.7%) stated that between 91% and 100% of their customers were locals. Thus the distribution of businesses represented a broad range of dependency on coastal visitation vs. local consumption.

Respondents were provided with a list of potential visitor attractions, and were asked which of those generally attract visitors to their community. Many respondents felt that the ocean (79.6%), fishing (59.9%), scenic attractions (48.2%), and outdoor activities other than fishing (46.3%) were popular visitor attractions. When asked to identify the primary reason for coastal visitation, the majority (62.0%) of respondents indicated that the ocean was the primary reason people are drawn to the coast.

Nearly half (47.8%) of all respondents were aware of Oregon's marine reserves. Awareness of the Marine Reserve Community Teams was lower, with 37.3% of respondents indicating familiarity with the community teams (2010-11 survey respondents only). Respondents were asked how they thought the designation of marine reserves might impact visitation to coastal towns near the reserves and businesses within those towns. Approximately one-third of respondents indicated that designation of marine reserves would have no impact on visitation, while about one-quarter thought visitation would increase, and another quarter thought visitation would decrease. Similarly, the largest proportion of respondents (42.9%) believed there would be no change in their business demand due to marine

[1] For Yachats, the survey scope was extended to all businesses within the city boundaries and south to the Cape Perpetua Marine Reserve.

reserve designation. Nearly one-third (32.9%) of respondents believed designation would decrease their business, while 12.8% thought reserves would increase their business.

Depoe Bay and Yachats were the only communities which were sampled during both phases of the research. Data from these towns thus allow comparisons between the earlier responses and interviews conducted later. The respondents' awareness of marine reserves did not significantly change between 2011 and 2014. However, their expectations of the impact of marine reserve designation on visitation did change significantly from 2011 to 2014 (Chi-square = 0.000; Cramer's V = 0.529). The expected impact on visitation became more neutral, and both less positive and less negative in 2014. The respondents' expectations concerning the impact of marine reserve designation on businesses also changed significantly from 2011 to 2014 (Chi-square = 0.000; Cramer's V = 0.606). A majority (56.3%) of 2014 respondents indicated that marine reserve designation would have no effect on their business, whereas only 21.9% of the 2011 respondents had the same expectations. Furthermore, the proportion of respondents who felt reserves would decrease their business dropped from 65.6% in 2011 to just 10.9% in 2014.

CONCLUSIONS

Most respondents in Depoe Bay, Yachats, and Florence indicated that the ocean was the main attraction that brought visitors to their communities. The second most common response in Florence was outdoor activities other than fishing, possibly referring to the sand dunes, a popular tourist destination in that area. In Garibaldi and Depoe Bay, many respondents stated that fishing was the main visitor attraction in their region.[2]

Awareness of marine reserves varied moderately among the communities. Most respondents in Port Orford, Depoe Bay, Otter Rock, and Yachats were familiar with the marine reserves. Alternately, in many of the larger towns such as Newport and Lincoln City, most respondents were unfamiliar with the marine reserves.

The majority of respondents in Otter Rock and half of the Lincoln City respondents believed reserves would decrease visitation. In Garibaldi, Florence, and Yachats, most respondents were either unsure of the effects or believed there would be no change in visitation. Respondents' perceptions of how marine reserves would impact visitation was statistically different between the earlier and later studies (Chi-Square = 0.000; Cramer's V = 0.581). In the earlier interviews, most respondents stated that reserve designation would either increase or decrease visitation. In the later studies, more respondents indicated designation would have either no impact on visitation or they were unsure of the expected impact.

Most respondents in Lincoln City, Otter Rock, and Newport (2010-2011 data) thought reserve designation would have a negative impact on their businesses. In Garibaldi, Yachats, and Florence, the majority of respondents indicated that reserve designation would have no impact on their businesses. Comparing the aggregated data from 2010-2011 with aggregated 2014-2015 data, there was a significant change in expectations of reserve impacts on businesses (Chi-Square = 0.000; Cramer's V = 0.676). In the earlier studies, most respondents indicated reserve designation would decrease

[2] This survey question asking respondents to indicate the item most responsible for attracting visitors to the coast is only included in the 2014 and 2015 survey instrument.

business demand, while in the later studies most respondents thought designation would have no impact on demand.

While these surveys are considered baseline data, moderate trends were already apparent. In general, respondents' perceptions regarding marine reserves were becoming less negative and more neutral over time. Data collected during 2010 and 2011 were prior to the implementation of any marine reserves, and therefore respondents were understandably wary of the impacts of marine reserve designation. By summer of 2014, four of the five marine reserves had already been implemented. (Cape Falcon, which was implemented on January 1, 2016, was the last marine reserve site to be implemented.) Therefore, respondents surveyed in 2014 and 2015 had likely experienced coastal life post reserve designation. These respondents may have been more neutral toward reserves because they had not experienced substantial adverse impacts from designation.

INTRODUCTION

In 2008, the state of Oregon began a process to establish a limited system of marine reserves within state waters. Marine reserves are areas in Oregon coastal waters that have been designated for conservation and scientific research. All removal of marine life is prohibited, as is ocean development. Some of the sites also include Marine Protected Areas (MPAs) adjacent to the reserves. In the MPAs, ocean development is still prohibited, but some fishing activities are allowed. State mandates and guidelines for the Oregon marine reserves are provided in Executive Order 08-07 (2008), House Bill 3013 (2009), Senate Bill 1510 (2012), administrative rules adopted by state agencies (OAR 635-012, OAR 141-142, and OAR 736-029), and in the *Oregon Marine Reserve Policy Recommendations* adopted by the Oregon Ocean Policy Advisory Council (OPAC) in 2008. The Oregon Department of Fish and Wildlife (ODFW) was designated the lead agency responsible for implementing and managing the Oregon Marine Reserve System. The OPAC policy recommendations provided the foundation for monitoring of the marine reserves.

During an extensive public engagement process, local communities worked with state officials to site the reserves in areas that would provide ecological benefits, and also avoid significant negative impacts to ocean users and coastal communities, in accordance with Executive Order 08-07. The reserves were to be phased in over several years. With the addition of Cape Falcon Marine Reserve on January 1, 2016, Oregon completed implementation of five marine reserve sites off the Oregon coast, all within 3 nautical miles from shore. The marine reserve sites are named after local natural landmarks, and are located at Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks.

OREGON MARINE RESERVE GOALS

Based on the OPAC policy recommendations (OPAC 2008), the goals of the Oregon Marine Reserve System are:

Conservation	Conserve marine habitats and biodiversity.
Research	Serve as scientific reference sites to investigate marine reserve protections and the Oregon territorial seas, to inform nearshore ocean management.
Communities	Avoid significant adverse impacts to ocean users and coastal communities.

PROGRAM EVALUATION IN 2023

The Oregon marine reserve legislation included a mandate for an evaluation of the Oregon Marine Reserves Program in 2023. The evaluation will cover all aspects of marine reserve implementation including site management, scientific monitoring, outreach, community engagement, compliance, and enforcement. The Legislature will then consider if and how marine reserves will continue to be used as a management tool in the future.

Each of the five Oregon marine reserves is a unique case study with different configurations, site characteristics, and demographics. The 2023 evaluation will provide an opportunity to learn from these five case studies. Comparative examination of research across the five sites should help determine what has or has not worked well, and what has been learned with this research.

There is general agreement among the scientific community that this timeframe is too brief for detection of substantive ecological changes due to marine reserve protections. In the Oregon temperate marine ecosystem, scientists project a minimum of 10-15 years after extractive activities have ceased before scientific detection of ecological changes is practical. However, this duration does provide sufficient time for constructive ecological and human dimensions research that will provide information for marine reserve site evaluation and inform nearshore resource management and policy.

To achieve these goals, ODFW established a program in 2009 for marine reserves implementation and monitoring. In this context, the Human Dimensions Monitoring Program was developed by ODFW staff with collaboration and assistance from external scientists and marine reserve community members. The Oregon Marine Reserves Human Dimensions Monitoring and Research Plan (Murphy, et. al., 2012) documents the monitoring program objectives and research purposes. Research results are presented in interim project and summary biennial reports.

To contribute to the evaluation of the marine reserve system, the studies conducted by the ODFW Marine Reserves Program Human Dimensions Project are designed to address the following:

- Determine if marine reserves increase our knowledge of the Oregon nearshore environment, resources, and uses. Ascertain if this information is useful to support nearshore resource management.
- Determine if the marine reserves and associated marine protected areas, and the system as a whole, avoid significant adverse social and economic impacts to ocean users and coastal communities.

Human dimensions research pertaining to the Oregon Marine Reserve System is designed to determine the direct and indirect social, cultural, and economic impacts which result from reserve site implementation. Study subjects include related ocean users, communities of interest, and communities of place. The information collected through this process should be relevant to other marine and coastal natural resource policy issues in Oregon. Thus, the intention is to design a monitoring program that provides area specific data, but also addresses a sufficiently broad scope of research to inform state-wide coastal resource management and policy.

RESEARCH DESIGN

RESEARCH OBJECTIVES

As one aspect of the related human dimensions research, ODFW initiated this study to determine expectations related to marine reserve implementation among business communities in marine reserve communities of place. The primary objective of this research was to collect and analyze data about business characteristics, and the knowledge and attitudes of business managers, owners and key employees concerning coastal tourism and expectations of marine reserves impacts on local businesses and visitation. This study thus obtained baseline data at the early stages of marine reserve implementation from businesses located in towns most likely to be impacted by marine reserve designation. Subsequent replication of this research can then provide the data for assessment of how businesses may have been impacted by the marine reserves over time.

INTERVIEW INSTRUMENT DESIGN

The studies conducted in 2010 and 2011 used a structured interview with open ended responses. To more efficiently collect quantified data, the questionnaire used in the 2014 and 2015 studies was a survey instrument with closed ended questions. However, for consistency across these studies, the later survey questions were written to be directly comparable to the earlier interview questions. Such a questionnaire design allows the respondent to participate in a largely self-administered manner.

During the interviews, business owners, managers, and key employees were asked about the general nature of their business and customer base, awareness of marine reserves, and potential marine reserve impacts on visitation to the area and on their business demand. The purpose of the studies was to gather information on:

- The types, ownership, ages and other characteristics of businesses in the communities
- Perceived motivations for area visitation
- Respondents' awareness of marine reserve site planning and designation
- Respondents' opinions of possible reserve effects on area visitation and business demand

There were minor differences in the instrument used in the 2010-2011 studies and the instrument used in the 2014-2015 studies. The studies conducted in 2010 and 2011 included additional questions on the businesses' proportion of local customers and on knowledge and engagement with the marine reserve community groups. The studies conducted in 2014 and 2015 contained a question asking respondents to specify the primary reason visitors are attracted to that area of the coast. In addition, some of the 2014-2015 questions allowed the respondents to acknowledge that they were unsure of the appropriate response to those questions (e.g., the option to select "don't know" in response to the expected impacts of marine reserve designation).

SAMPLE DESIGN

Business surveys were conducted during the summer months in towns located nearest to the marine reserves (communities of place). In 2010 and 2011, surveys were conducted in Port

Orford, Newport, Otter Rock, Lincoln City, Yachats, and Depoe Bay. In each town, the total number and size of businesses by sector was determined from available secondary sources. From this business matrix, a stratified sample of businesses was selected for interview contacts. The purpose was to achieve a representative sample of respondents by business types within each community.

In 2014 and 2015, surveys were conducted in Yachats, Depoe Bay, Garibaldi, and Florence. Due to the relatively small number of businesses located in these communities, it was practical to conduct the studies in those communities as interviews with respondents representing a near census of all relevant businesses within the city boundaries.[3] However, these later studies only interviewed individuals representing businesses that were characterized as having a substantial proportion of their revenues derived from tourism.

Due primarily to the communities' relative sizes, the largest number of business representatives were contacted in Newport (n = 67) and Florence (n = 80), while the smallest number of business representatives were contacted in Otter Rock (n = 7) and Port Orford (n = 18; Table 1).

Table 1. Number of Businesses Sampled within Each Town

Community	Frequency	Percent
Newport	67	20.9%
Port Orford	18	5.6%
Depoe Bay	45	14.1%
Otter Rock	7	2.2%
Yachats	51	15.9%
Lincoln City	29	9.1%
Garibaldi[4]	23	7.2%
Florence	80	25.0%
Total	320	100.0%

N = 320; Missing = 0

The subjects in the earlier studies were a sample of respondents representing all business sectors of the communities. However, the subjects contacted in the later studies represented businesses that were characterized as having a substantial number of visitors in their customer base. Businesses catering more to locals, such as hair salons, medical offices, and computer repair shops, were excluded. Banks and real estate agencies were included because they have an important role in supporting local tourism. The largest proportion of respondents were representatives of businesses in the retail sector (38.4%), followed by food services (18.9%; Table 2).

[3] For Yachats, the geographic scope of contacts included all businesses within the city boundaries and south of the town to the Cape Perpetua Marine Reserve.

[4] One business sampled in Manzanita is included in the Garibaldi sample due to proximity.

Table 2. Number of Businesses Sampled within Each Economic Sector

Sector	Frequency	Percent
Retail	122	38.4%
Restaurant	60	18.9%
Lodging	43	13.5%
Construction	6	1.9%
Education	4	1.3%
F.I.R.E.	1	0.3%
Other Services	49	15.4%
Health	6	1.9%
Government	23	7.2%
Manufacturing	4	1.3%
Total	318	100.0%

N = 318; Missing = 2
Note: F.I.R.E. is an acronym for Fire, Insurance, and Real Estate
Note: Businesses within the economic sectors of construction, education, F.I.R.E., health, government, and manufacturing were not included in the 2014 and 2015 studies.

When the business matrices were created to stratify the samples during the 2010 and 2011 studies, the businesses were selected by business sector and by size. Nearly half (45.6%) of the businesses represented in the sample of respondents were small businesses (Table 3), and only 21.7% of the respondents represented large businesses.

Table 3. Size of Business Sampled 2010-2011

Type	Frequency	Percent
Small	82	45.6%
Medium	59	32.8%
Large	39	21.7%
Total	180	100.0%

N = 180; Missing = 0
Note: Excludes all contacts from the 2014 and 2015 studies.

DATA COLLECTION PROTOCOL

Data collection was conducted in person by ODFW seasonal employees at the business sites. The owner, manager, or a knowledgeable employee who could answer questions on behalf of the business was asked if they would be willing to participate in the survey. The interviewer introduced the survey as an ODFW study of expectations for the impact of marine reserve implementation on their businesses. Willing participants were then either interviewed by the ODFW employee (2010-11) or asked to complete a self-administered one-page questionnaire (2014-15).

The ODFW employee was available to answer any questions the respondent might have while completing the instrument. Respondents who were not aware of the marine reserve closest to their community were shown a map of the reserve boundaries and regulations before they were asked how they expected the reserve implementation would affect visitation and their business demand. Responses were subsequently coded numerically for data analysis at the ODFW office in Newport.

RESEARCH RESULTS

Data were collected from respondents contacted at a total of 320 businesses during the summer months of 2010, 2011, 2014, and 2015; results of those interview responses follow. As previously described, the survey instrument contained questions pertaining to business characteristics, perceived visitor attractions in the region, awareness and perceptions of marine reserves, and expectations of marine reserve impacts to visitation and business demand. These questions were included on both versions of the survey instrument (see Appendices A and B).

SECTION 1 – COMPOSITE RESULTS FROM ALL STUDIES

The first section of this report includes results obtained from analyses of the aggregated data from all surveys conducted in 2010, 2011, 2014, and 2015. Respondents indicated that the majority (78.1%) of these coastal businesses were locally owned (Table 4).

Table 4. Local or Non-Local Business Ownership

Type	Frequency	Percent
Local	250	78.1%
Non-local	67	20.9%
Unsure[1]	3	0.9%
Total	320	100.0%

N = 320; Missing = 0

[1]The option "Unsure" was only included in the 2014 and 2015 studies.

The largest proportion (43.3%) of these businesses surveyed were established following the year 2000 (Table 5). Respondents indicated that 11.3% of these businesses were established prior to the year 1960.

Table 5. Year of Business Establishment

Range (date)	Frequency	Percent
1880-1900	2	0.7%
1901-1920	3	1.0%
1921-1940	7	2.4%
1941-1960	21	7.2%
1961-1980	31	10.7%
1981-2000	101	34.7%
2001-2015	126	43.3%
Total	291	100.0%

N = 291; Missing = 29

Respondents reported that the average number of permanent full time employees among these businesses was 12 employees (Table 6). However, there was a wide variance in the number of full time employees ranging from one to 350 employees.

Table 6. Employment: All Businesses

Employment Type	Mean	Median	Mode	Std. Dev.	Range
Annual, Full Time	12.09	4	2	33.828	1 - 350
Annual, Part Time	3.24	0	0	14.567	0 - 175
Seasonal, Full Time	2.43	1	0	4.487	0 - 55
Seasonal, Part Time	1.48	0	0	5.201	0 - 50

N = 308, 160, 292, 159; Missing = 0, 148, 16, 149
Part time and seasonal questions were not included in all studies.
One response citing 700 employees is excluded from these calculations.

The largest proportion of respondents (24.8%) indicated that between 0% and 10% of their customers were local residents (Table 7). The second highest proportion of respondents (17.7%) stated that between 91% and 100% of their customers were locals. Between those two extremes, the proportion of local residents in the respective business customer base was fairly evenly spread across all response categories. Almost half (49%) of respondents reported that their businesses had a customer base with more visitors than locals, and 51% of respondents stated their customer base had more locals than visitors.

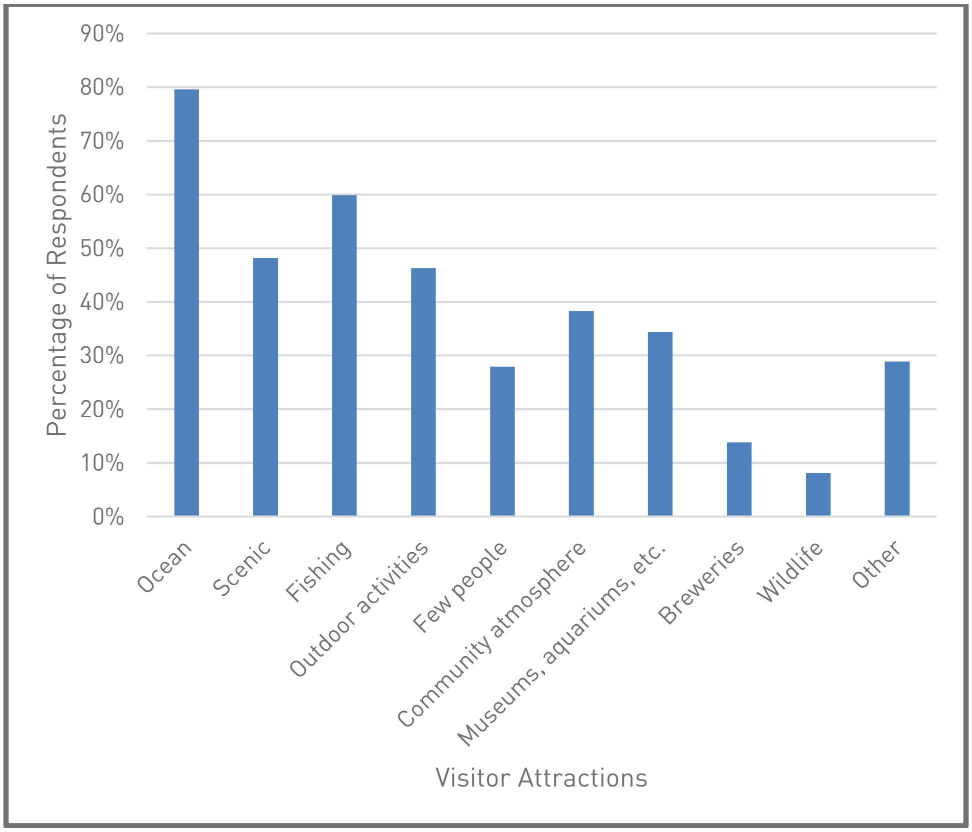
Table 7. Percent of Business' Local Customers

Percent of Customers Whom are Local	Frequency	Percent
0-10%	35	24.8%
11-20%	7	5.0%
21-30%	11	7.8%
31-40%	3	2.1%
41-50%	13	9.2%
51-60%	6	4.3%
61-70%	11	7.8%
71-80%	16	11.3%
81-90&	14	9.9%
91-100%	25	17.7%
Total	141	100.0%

N = 141; Missing = 12
Note: Question was only included in the 2010 and 2011 studies.

Respondents were provided with a list of potential visitor attractions and were asked which of those attractions draw visitors to the coast. The majority of respondents felt that the ocean (79.6%) and fishing (59.9%) were popular attractions which brought visitors to the coast (Figure 1). Scenic attractions (48.2%) and outdoor activities other than fishing (46.3%) were also frequently cited as reasons people visit the coast.

Figure 1. Visitor Attractions on the Coast



N = 299, 299, 299, 298, 298, 298, 299, 298, 135, 298; Missing = 21, 21, 21, 22, 22, 22, 21, 22, 185, 22
Note: Wildlife was only included in the 2010 and 2011 studies

Respondents were then asked to identify the primary visitor attraction on the coast (2014-2015 studies only). The majority (66.1%) of respondents indicated that the ocean was the main reason people are drawn to the coast (Table 8). The second highest ranked attraction was fishing, with 11.4% of respondents selecting that option.

Table 8. Main Visitor Attraction on the Coast

Attraction	Frequency	Percent
Ocean	99	66.1%
Scenic	7	4.7%
Fishing	17	11.4%
Outdoor activities	13	8.7%
All Other Attractions	14	9.2%
Total	150	100.0%

N = 150; Missing = 170
Note: Only included in the 2014 and 2015 studies.

Nearly half (47.8%) of all respondents were aware of Oregon's marine reserves (Table 9), and nearly half were unfamiliar with the marine reserves (49.1%). A very few respondents (3.1%) chose the "unsure" response.

Table 9. Awareness of Marine Reserves

Aware?	Frequency	Percent
Yes	153	47.8%
No	157	49.1%
Not Sure[1]	10	3.1%
Total	320	100.0%

N = 320; Missing = 0
[1]The "Not Sure" response option was only included in the 2014 and 2015 studies.

Awareness of the Marine Reserve Community Teams was lower than awareness of the reserves, with 37.3% of respondents indicating familiarity with the community teams (Table 10).

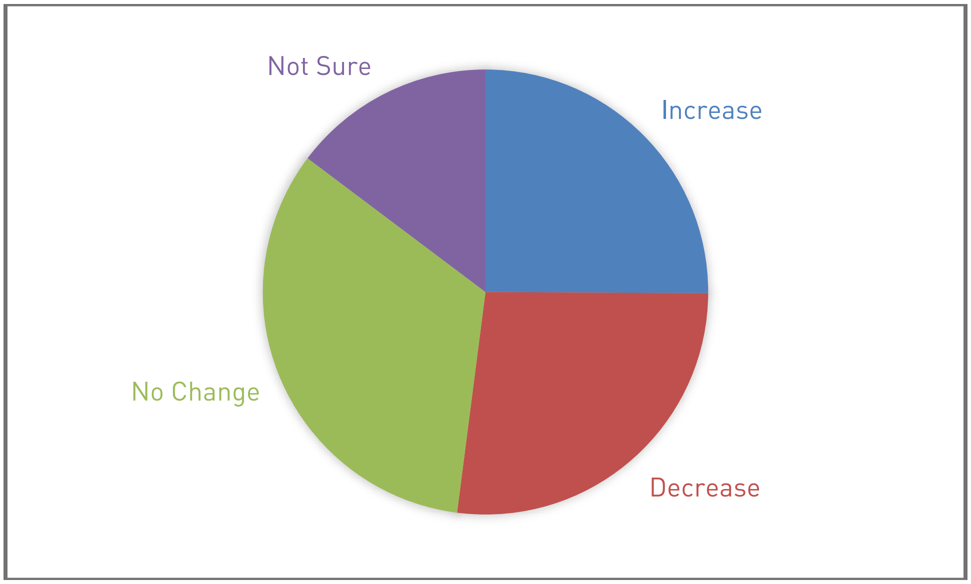
Table 10. Awareness of Marine Reserve Community Teams

Aware?	Frequency	Percent
Yes	57	37.3%
No	96	62.7%
Total	153	100.0%

N = 153; Missing = 0
Note: This question was only included in the 2010 and 2011 studies.

Respondents were asked how they thought the designation of marine reserves might impact visitation to towns near the reserves. Approximately one-third of respondents (33.2%) thought the designation of marine reserves would have no impact on visitation, while about one-quarter (25.1%) thought visitation would increase (Figure 2). Slightly more than a quarter of the respondents (27.0%) thought visitation would decrease with marine reserve implementation.

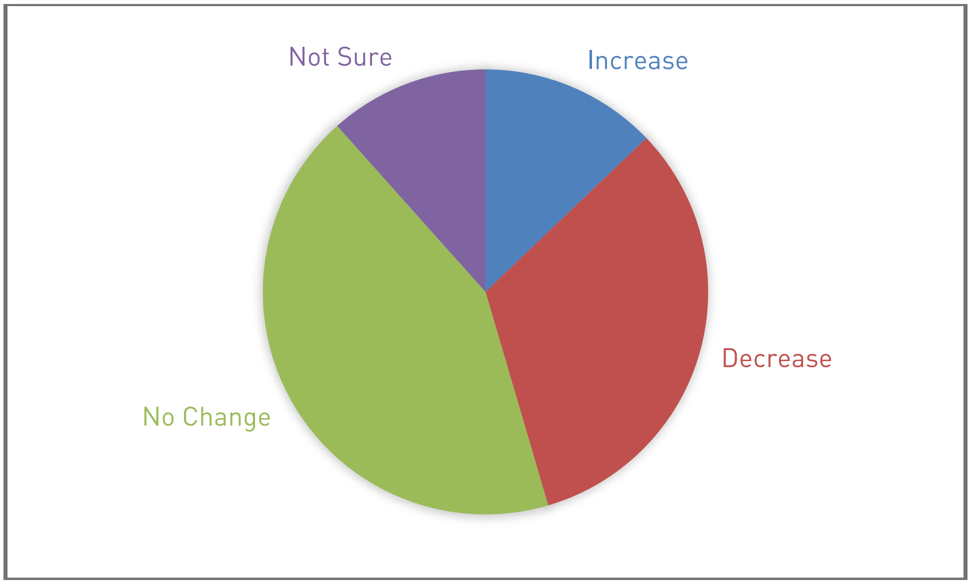
Figure 2. Anticipated Impact of Marine Reserves on Visitation



N = 319; Missing = 1
Note: The option "Not Sure" was only included in the 2014 and 2015 studies.

Respondents were also asked whether they thought marine reserve designation would impact their business demand. The largest proportion of respondents (42.9%) believed there would be no change in business demand because of reserve designation (Figure 3). Nearly one-third (32.9%) of respondents believed designation would decrease demand, while 12.8% thought reserves would increase their business.

Figure 3. Anticipated Impact of Marine Reserves on Business Demand



N = 319, Missing = 1

Note: The option "Not Sure" was only included in the 2014 and 2015 studies.

SECTION 2 – COMPARISON OF DEPOE BAY AND YACHATS FROM 2011 TO 2014

Depoe Bay and Yachats were the only two communities where surveys were conducted in multiple years. Thus, data from the earlier interviews can be compared to questionnaire data collected in later years in those communities. Due to confidentiality maintained during data collection to protect respondent identities, it is not possible to know if individuals from the same businesses were contacted in both studies. In 2011, representatives of 16 businesses in Depoe Bay and 16 businesses in Yachats were interviewed. In 2014, individuals representing 29 businesses in Depoe Bay and 35 businesses in Yachats completed the questionnaire. While the sample sizes for each community are small, both Depoe Bay and Yachats are relatively small towns, with population sizes of 1,400 and 703, respectively (U.S. Census Bureau, 2014 data).

Data were aggregated by year for statistical analysis. Cross tabulations using chi-square tests were run to test for statistically significant differences in responses by year. This analysis also yields a measure of association (Cramer's V) to examine the strength of the relationship by measuring the magnitude of the observed effect. Effect sizes of .50 or greater are considered substantial differences or relationships in the data.[5]

Respondents' awareness of marine reserves did not significantly change between 2011 and 2014 (Table 11). There was very little variance in awareness of the marine reserves, with substantial majorities of respondents (62.5% and 60.9%) in both studies stating they were aware of the reserves.

Table 11. Awareness of Marine Reserves by Year

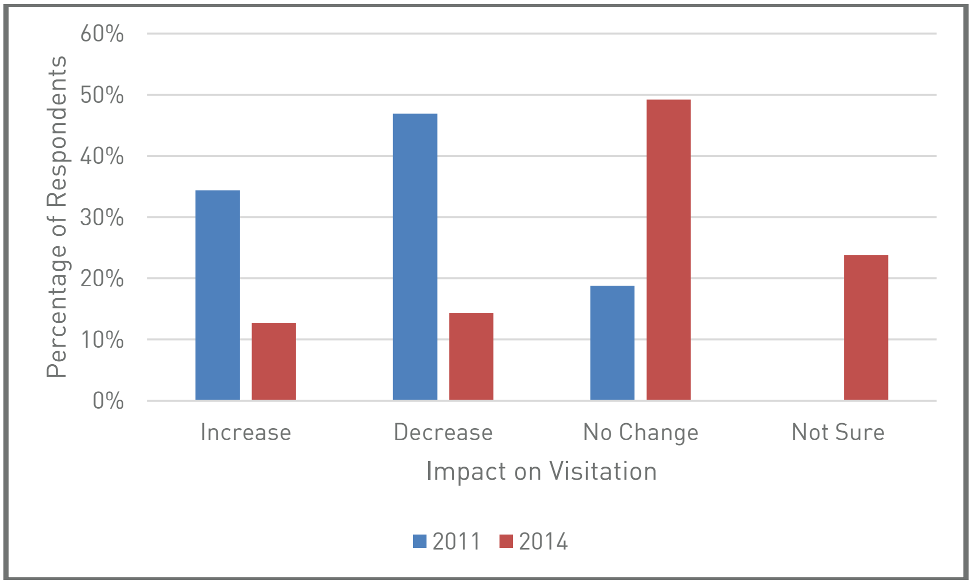
Aware?	2011	2014
Yes	62.50%	60.9%
No	37.50%	29.7%
Not Sure[1]	0.00%	9.4%
Total	100.00%	100.0%

N = 32 in 2011, 64 in 2014; Missing = 0 in 2011, 0 in 2014
[1]The response option "Not Sure" was only included in the 2014 studies.

[5] In 2014, the additional response option "Not Sure" was added to the survey instrument for the questions regarding awareness of marine reserves, perceived impact of reserves on visitation, and perceived impact of reserves on business demand. Statistical tests were recomputed with the exclusion of the "Not Sure" response category, and the statistical significance of these relationships remained the same. Awareness of marine reserves was not significantly different between 2011 and 2014 studies, while the change over time of the expected impact of marine reserves on both visitation and business demand remained significant.

The respondents' expectations related to changes in visitation that would result from marine reserve designation did change significantly from 2011 to 2014 (Chi-square = 0.000; Cramer's V = 0.529). Expectations of visitation impacts became more neutral, both less positive, and less negative in 2014 (Figure 4). In 2011, 18.8% of respondents believed marine reserve designation would not change visitation, while 49.2% of the 2014 respondents expected visitation would not change. In 2011, 46.9% of the respondents indicated they expected visitation would decrease with reserve designation, while only 14.3% of the 2014 respondents thought reserve designation would decrease visitation.

Figure 4. Perceived Impact of Marine Reserves on Visitation by Year

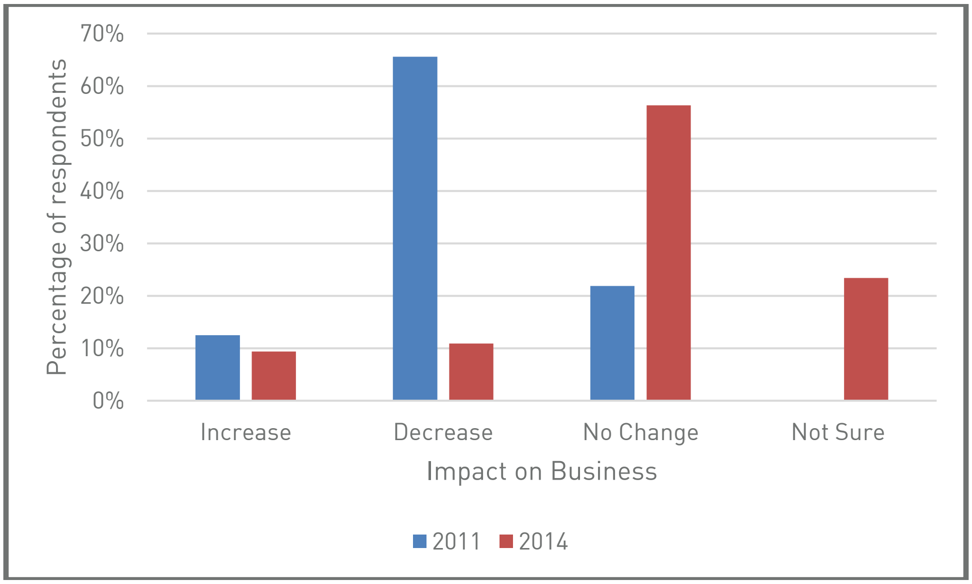


N = 32 in 2011, 63 in 2014; Missing = 0 in 2011, 1 in 2014

Note: The option "Not Sure" was only included in the 2014 studies.

The responses concerning expectations for change in business demand due to marine reserve designation also changed significantly from 2011 to 2014 (Chi-square = 0.000; Cramer's V = 0.606). More respondents indicated that reserve designation would have no effect on their business in 2014 (56.3%) than in 2011 (21.9%; Figure 5). The proportion of respondents who felt reserves would decrease their business dropped from 65.6% in 2011 to just 10.9% in 2014.

Figure 5. Perceived Impact of Marine Reserves on Business by Year



N = 32 in 2011, 64 in 2014; Missing = 0 in 2011, 0 in 2014
Note: The option "Not Sure" was only included in the 2014 studies.

SECTION 3 – RESULTS BY COMMUNITY

This section of the report contains results specific to each community. An earlier report (Swearingen, et al., 2014) covered the 2010 and 2011 studies in the communities of Port Orford, Depoe Bay, Otter Rock, and Newport. The 2010 results from Lincoln City, reported here, were not included in the earlier report. This report will therefore include results from the 2010 interviews in Lincoln City, the 2014 surveys in Yachats, Depoe Bay, and Garibaldi, and the 2015 survey in Florence.

LINCOLN CITY

In 2010, representatives from 29 businesses were contacted in Lincoln City; results from those interviews follow. Among those businesses, the average number of annual, full time employees at each business was 43.92 (Table 12). The median number of employees was 14, and the most common response (the mode) was only two full time employees in the business.

Table 12. Lincoln City: Employment

Employment Type	Average	Median	Mode	Range
Annual, Full Time	43.92	13.5	2	1 - 350

N = 26; Missing = 2
Note: One response reporting 700 employees is excluded from these calculations.
Note: Part time and seasonal employment questions were only included in the 2014 and 2015 studies.

Slightly more than half of the Lincoln City respondents (55.2%) reported their businesses were locally owned (Table 13).

Table 13. Lincoln City: Local or Non-Local Business Ownership

Type	Frequency	Percent
Local	16	55.2%
Non-local	13	44.8%
Unsure[1]	0	0.0%
Total	29	100.0%

N = 29; Missing = 0
[1]The option "Unsure" was only included in the 2014 and 2015 studies.

The respondents indicated that 1989 was the average year these Lincoln City businesses were established. Only 10.6% of these businesses were established prior to 1960, while the oldest was established in 1910 (Table 14). The majority of these businesses (75%) were established after the year 1981.

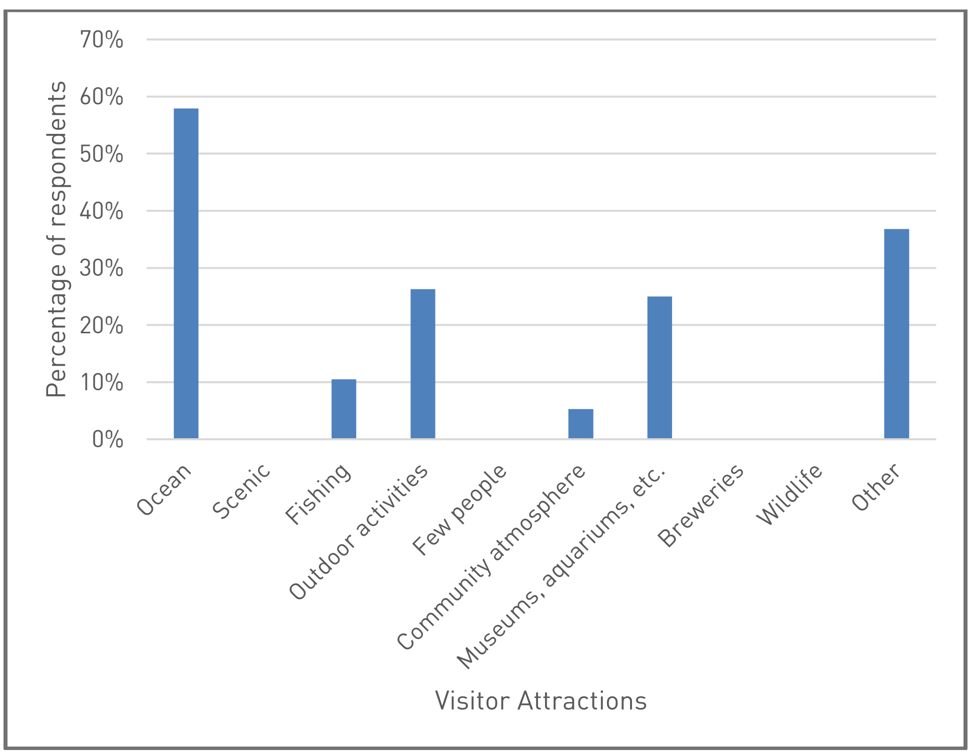
Table 14. Lincoln City: Year Business was Established

Range (date)	Frequency	Percent
1880-1900	0	0.0%
1901-1920	1	3.5%
1921-1940	0	0.0%
1941-1960	2	7.1%
1961-1980	4	14.3%
1981-2000	10	35.7%
2001-2010	11	39.3%
Total	28	100.0%

N = 28; Missing = 1

Respondents cited the ocean (57.9%), fishing (10.5%), outdoor activities other than fishing (26.3%), community atmosphere (5.3%), museums, aquariums, etc. (25%), and "other" activities (36.8%) as reasons why visitors are attracted to Lincoln City (Figure 6).

Figure 6. Visitor Attractions to Lincoln City



N = 19; Missing = 10

Less than half (48.3%) of the respondents were aware of the Oregon marine reserves (Table 15), and a slight majority of the respondents were not aware of the marine reserves.

Table 15. Lincoln City: Awareness of Marine Reserves

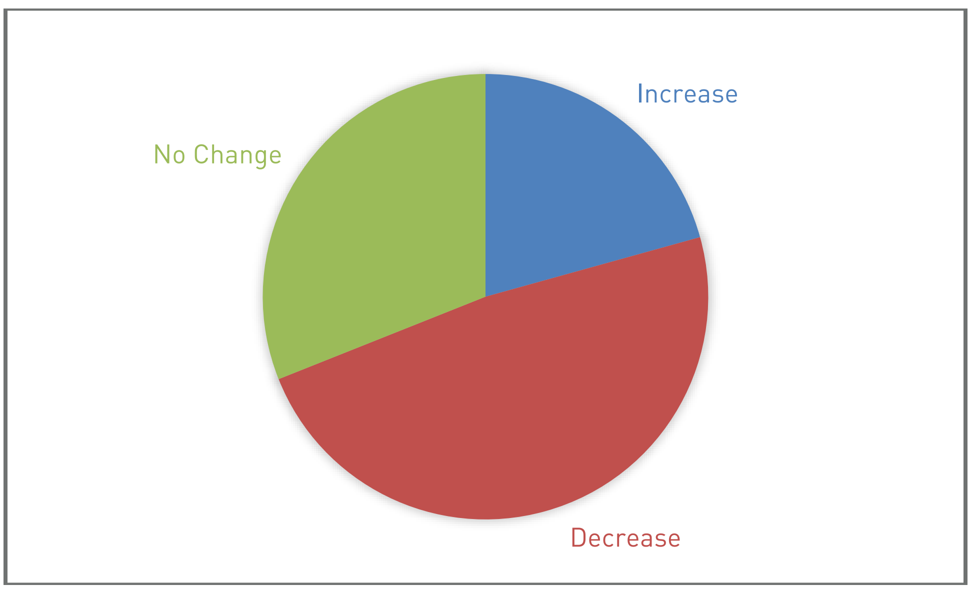
Aware?	Frequency	Percent
Yes	14	48.3%
No	15	51.7%
Not Sure[1]	0	0.0%
Total	29	100.0%

N = 29; Missing = 0

[1]The option "Not Sure" was only included in the 2014 and 2015 studies.

The most common response concerning the effect of marine reserves designation on visitation was the expectation that reserve designation would decrease visitation (48.3%; Figure 7). Approximately one-third of respondents (31.0%) thought there would be no change in visitation, and 20.7% thought designation would increase visitor numbers.

Figure 7. Lincoln City: Expected Impact of Marine Reserves on Visitation

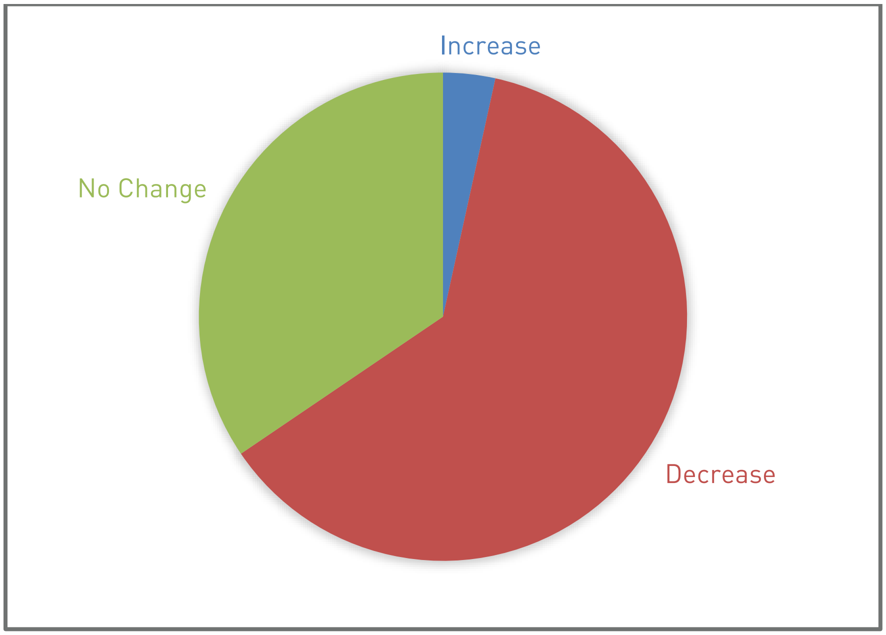


N = 29; Missing = 0

Note: The option "Not Sure" was only included in the 2014 and 2015 studies.

When Lincoln City respondents were asked how they expected marine reserve designation might impact their business demand, the majority of respondents (62.1%) indicated the reserves would negatively impact their business (Figure 8). Only 3.4% of respondents felt that reserve designation would increase their business demand.

Figure 8. Lincoln City: Expected Impact of Marine Reserves on Business Demand



N = 29; Missing = 0

Note: The option "Not Sure" was only included in the 2014 and 2015 studies.

YACHATS

In 2014, representatives from 35 businesses in Yachats were asked to complete the questionnaire; results from those responses follow. These respondents indicated that their businesses had an average of 5.65 annual, full time employees, and an average of 2.38 annual, part time employees (Table 16). Respondents also reported their businesses hired an average of 1.18 seasonal, full time employees, and 1.24 seasonal, part time employees.

Table 16. Yachats: Employment

Employment Type	Average	Median
Annual, Full Time	5.65	2
Annual, Part Time	2.38	0
Seasonal, Full Time	1.18	0
Seasonal, Part Time	1.24	0

N = 34; Missing = 1

Among those Yachats businesses where a representative completed the questionnaire, the majority of businesses (88.6%) were locally owned (Table 17).

Table 17. Yachats: Local or Non-Local Business Ownership

Type	Frequency	Percent
Local	31	88.6%
Non-local	4	11.4%
Unsure	0	0.0%
Total	35	100.0%

N = 35; Missing = 0

The respondents indicated that 1998 was the average year these Yachats businesses were established. The oldest of these businesses was established in 1949, and approximately half (51.9%) were established after 2001 (Table 18).

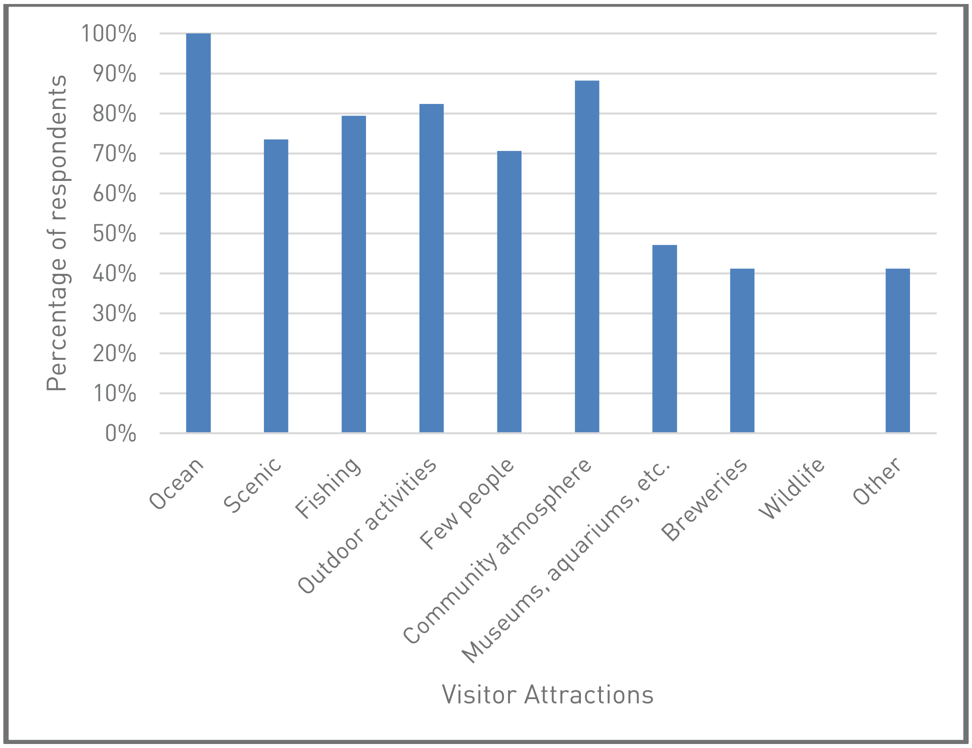
Table 18. Yachats: Year of Business Establishment

Range (date)	Frequency	Percent
1880-1900	0	0.0%
1901-1920	0	0.0%
1921-1940	0	0.0%
1941-1960	1	3.7%
1961-1980	3	11.1%
1981-2000	9	33.3%
2001-2014	14	51.9%
Total	27	100.0%

N = 27; Missing = 8

Respondents in Yachats unanimously agreed that the ocean was a significant visitor attraction in their town (Figure 9). The majority of respondents also indicated that scenic attractions (73.5%), fishing (79.4%), outdoor activities other than fishing (82.4%), the low population density (70.6%), and the community atmosphere (88.2%) were important visitor attractions in their community.

Figure 9. Visitor Attractions to Yachats



N = 34; Missing = 1
Note: Wildlife was only included in the 2010 and 2011 studies.

Most respondents (91.2%) agreed that the ocean was the main visitor attraction in Yachats (Table 19). Low population density, community atmosphere, and "other" were each cited by one respondent as the main visitor attraction in Yachats.

Table 19. Yachats: Main Visitor Attraction in Yachats

Attraction	Frequency	Percent
Ocean	31	91.2%
Scenic	0	0.0%
Fishing	0	0.0%
Outdoor activities	0	0.0%
Few people	1	2.9%
Community atmosphere	1	2.9%
Other	1	2.9%
Total	34	100.0%

N = 34; Missing = 1

In Yachats, 62.9% of respondents were aware of the marine reserves, while approximately one-quarter (25.7%) were unfamiliar with the reserves (Table 20).

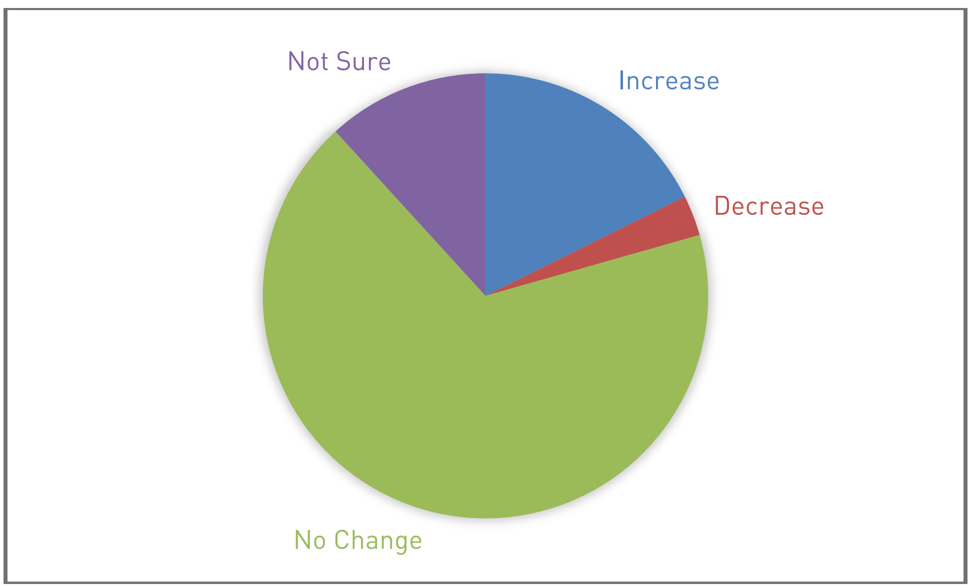
Table 20. Yachats: Awareness of Marine Reserves

Aware?	Frequency	Percent
Yes	22	62.9%
No	9	25.7%
Not Sure	4	11.4%
Total	35	100.0%

N = 35; Missing = 0

When asked whether the designation of marine reserves would impact visitation to their community, the majority of respondents (67.6%) indicated the reserves would have no impact on visitation (Figure 10). Only one respondent believed reserve designation would decrease visitation, while 17.6% of respondents thought it would increase visitor numbers.

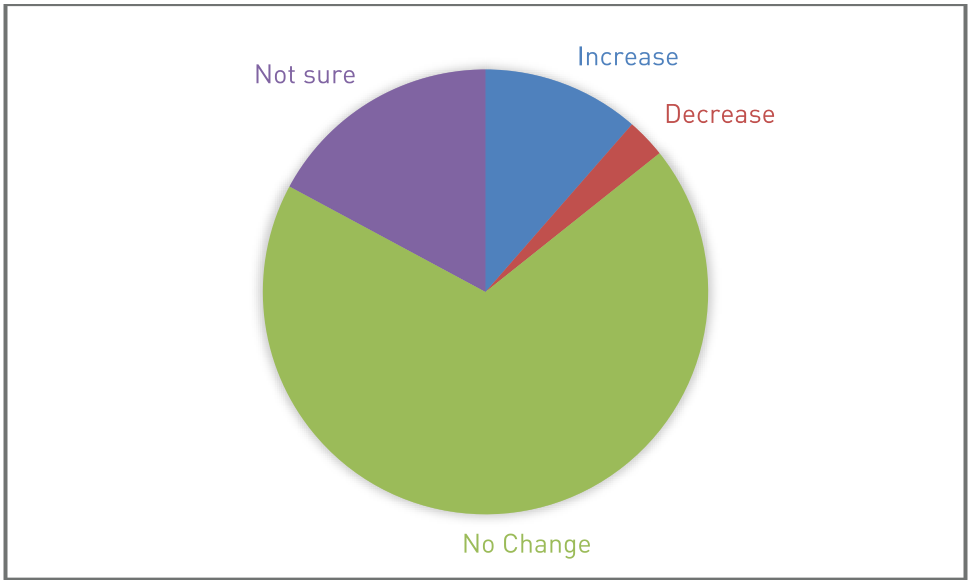
Figure 10. Yachats: Expected Impact of Marine Reserves on Visitation



N = 34; Missing = 1

Most Yachats respondents (68.6%) also indicated that marine reserve designation would have no impact on their business demand (Figure 11). Only one person thought that designation would decrease business, while 11.4% believed business demand would increase.

Figure 11. Yachats: Expected Impact of Marine Reserves on Business Demand



N = 35; Missing = 0

DEPOE BAY

In 2014, representatives from 35 businesses in Depoe Bay were asked to complete the questionnaire; results from those responses follow. The respondents reported that these Depoe Bay businesses employed an average of 3.29 annual, full time employees, and 1.57 annual, part time employees (Table 21). The respondents indicated these Depoe Bay businesses employed an average of 0.61 full time seasonal employees and 1.79 part time seasonal employees.

Table 21. Depoe Bay: Employment

Employment Type	Average	Median
Annual, Full Time	3.29	2
Annual, Part Time	1.57	0
Seasonal, Full Time	0.61	0
Seasonal, Part Time	1.79	0

N = 28; Missing = 1

The respondents stated that the majority (82.8%) of these Depoe Bay businesses were locally owned (Table 22).

Table 22. Depoe Bay: Local or Non-Local Business Ownership

Type	Frequency	Percent
Local	24	82.8%
Non-local	3	10.3%
Unsure	2	6.9%
Total	29	100.0%

N = 29; Missing = 0

The respondents indicated that 1991 was the average year these Depoe Bay businesses were established. The oldest of these businesses was established in 1934. Half of the respondents' businesses were established after the year 2001, while 37.5% of these businesses were established between the years 1961 and 2000. (Table 23).

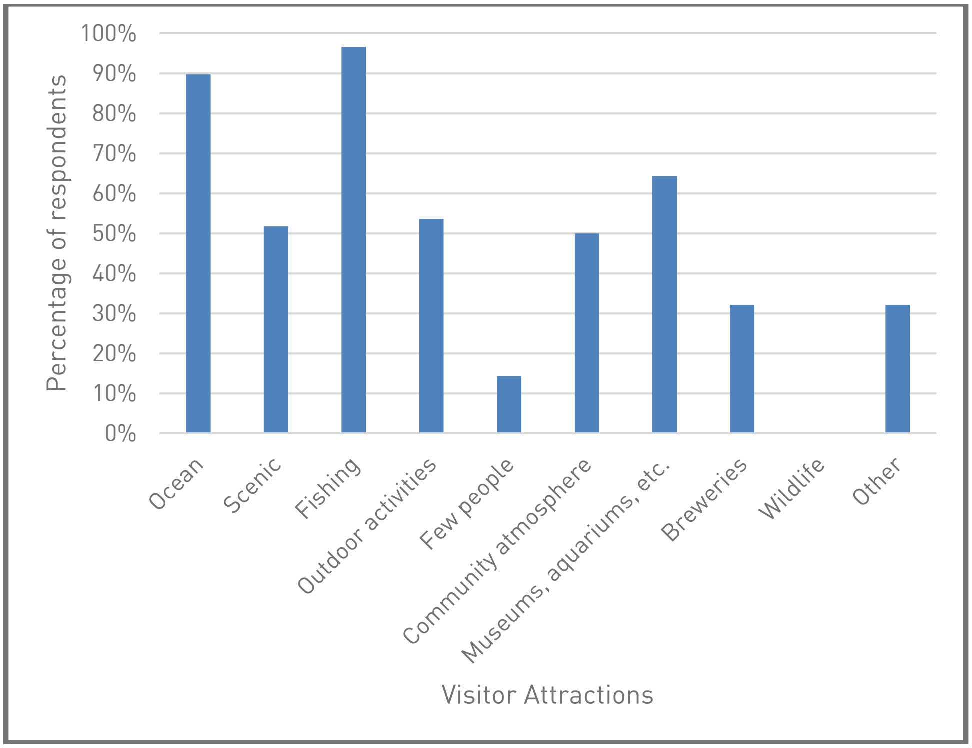
Table 23. Depoe Bay: Year of Business Establishment

Range (date)	Frequency	Percent
1880-1900	0	0.0%
1901-1920	0	0.0%
1921-1940	3	12.5%
1941-1960	0	0.0%
1961-1980	4	16.7%
1981-2000	5	20.8%
2001-2014	12	50.0%
Total	24	100.0%

N = 24; Missing = 5

Most respondents in Depoe Bay agreed that the ocean (89.7%), scenic attractions (51.7%), fishing (96.6%), outdoor activities other than fishing (53.6%), the community atmosphere (50.0%), and museums, aquariums, etc. (64.3%) were attractions that brought visitors to their community (Figure 12).

Figure 12. Visitor Attractions to Depoe Bay



N = 29, 29, 29, 28, 28, 28, 28, 28, 0, 28, 29; Missing = 0, 0, 0, 1, 1, 1, 1, 1, 0, 1, 0
Note: Wildlife was only included in the 2010 and 2011 studies.

The majority of respondents (65.2%) believed the ocean was the main visitor attraction in Depoe Bay, while over one-quarter (26.1%) thought fishing was the main attraction (Table 24). This emphasis on fishing was higher in Depoe Bay than responses in most other communities.

Table 24. Main Visitor Attraction to Depoe Bay

Attraction	Frequency	Percent
Ocean	15	65.2%
Scenic	0	0.0%
Fishing	6	26.1%
Other	2	8.7%
Total	23	100.0%

N = 23; Missing = 6

In Depoe Bay, 58.6% of respondents were aware of the marine reserves, while 34.5% were unfamiliar with the reserves (Table 25).

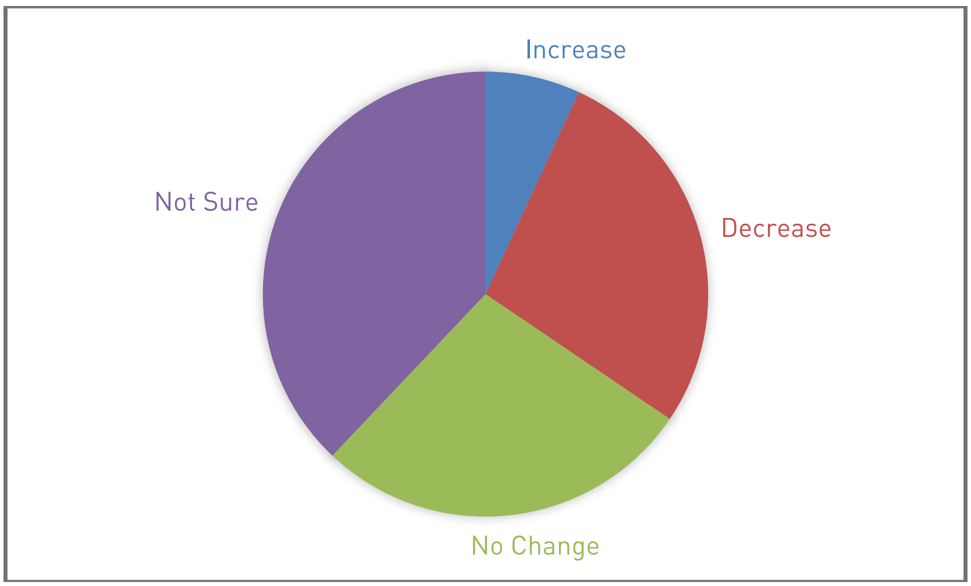
Table 25. Depoe Bay: Awareness of Marine Reserves

Aware?	Frequency	Percent
Yes	17	58.6%
No	10	34.5%
Not Sure	2	6.9%
Total	29	100.0%

N = 29; Missing = 0

When asked how they expected marine reserve designation might impact visitation to Depoe Bay, 37.9% of the respondents were unsure of those effects, while 27.6% thought there would be no change to visitation (Figure 13). An additional 27.6% of respondents expected visitation would decrease.

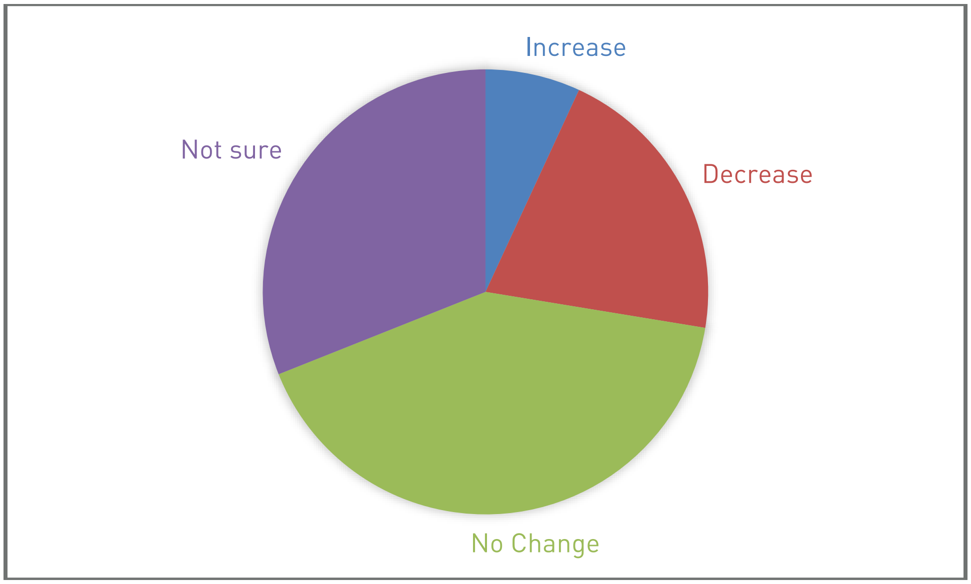
Figure 13. Depoe Bay: Expected Impact of Marine Reserves on Visitation



N = 29; Missing = 0

The largest proportion of Depoe Bay respondents (41.4%) expected marine reserve designation to have no impact on their business demand (Figure 14). Just under one-third (31%) were unsure how reserve designation would impact their business, and 20.7% of the respondents expected reserve designation to decrease business demand. Only 6.9% of these Depoe Bay respondents thought they would see increases in business demand due to reserve designation.

Figure 14. Depoe Bay: Expected Impact of Marine Reserves on Business Demand



N = 29; Missing = 0

GARIBALDI

In 2014, representatives from 29 businesses in Garibaldi[6] were asked to complete the questionnaire; results from those responses follow. The average number of annual, full time employees at these Garibaldi businesses was 7.74, while the average number of annual, part time employees was 2.26 (Table 26). These businesses hired on average 1.43 full time, seasonal employees, and 2.3 part time, seasonal employees. However, the most common response (mode) was zero part time and seasonal employees.

Table 26. Garibaldi: Employment

Employment Type	Average	Median	Mode
Annual, Full Time	7.74	5	1
Annual, Part Time	2.26	0	0
Seasonal, Full Time	1.43	0	0
Seasonal, Part Time	2.3	0	0

N = 23; Missing = 0

[6] Only one business person was contacted in the community of Manzanita. Due to the close proximity of Garibaldi and Manzanita, this individual's responses are included in the Garibaldi data.

The respondents reported that the majority (87%) of these Garibaldi businesses were locally owned (Table 27).

Table 27. Garibaldi: Local or Non-Local Business Ownership

Type	Frequency	Percent
Local	20	87.0%
Non-local	3	13.0%
Unsure	0	0.0%
Total	23	100.0%

N = 23; Missing = 0

The respondents indicated that 1995 was the average year these Garibaldi businesses were established. The oldest of these businesses was established in 1920. Sixty percent of these Garibaldi businesses were established after the year 2001 (Table 28).

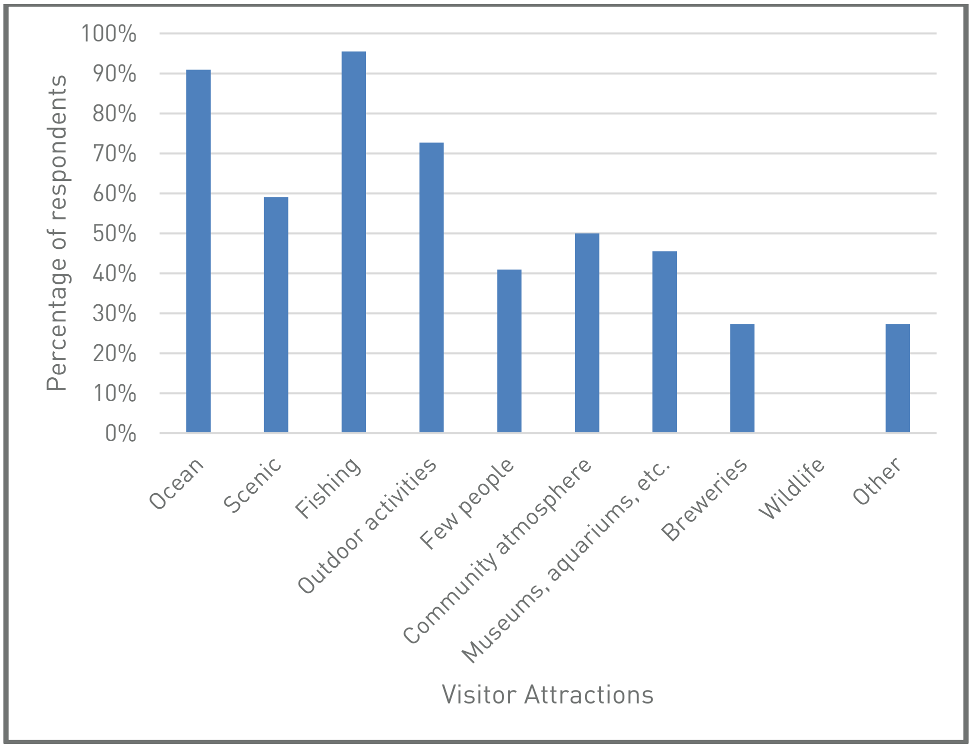
Table 28. Garibaldi: Year of Business Establishment

Range (date)	Frequency	Percent
1880-1900	0	0.0%
1901-1920	1	5.0%
1921-1940	0	0.0%
1941-1960	2	10.0%
1961-1980	1	5.0%
1981-2000	4	20.0%
2001-2014	12	60.0%
Total	20	100.0%

N = 20; Missing = 3

The majority of Garibaldi respondents considered the ocean (90.9%), scenic attractions (59.1%), fishing (95.5%), outdoor activities other than fishing (72.7%), and the community atmosphere (50.0%) all aspects of their town that attracted visitors (Figure 15). The highest proportion of respondents (95.5%) indicated that fishing was an attraction for Garibaldi visitors.

Figure 15. Visitor Attractions to Garibaldi



N = 22; Missing = 1
Note: Wildlife was only included in the 2010 and 2011 studies.

When asked to identify the main reason visitors were attracted to Garibaldi, respondents indicated that the ocean (52.4%) and fishing (28.6%) were the primary motivations for visitation (Table 29).

Table 29. Main Visitor Attraction to Garibaldi

Attraction	Frequency	Percent
Ocean	11	52.4%
Scenic	0	0.0%
Fishing	6	28.6%
Outdoor activities	1	4.8%
Other	3	14.3%
Total	21	100.0%

N = 21; Missing = 2

Most of the Garibaldi respondents (56.5%) were unaware of the marine reserves (Table 30). One respondent was unsure they were familiar with the reserves, and 39.1% of the respondents were aware of the reserves. The reader should note that the Cape Falcon Marine Reserve had not yet been implemented when these interviews were conducted.

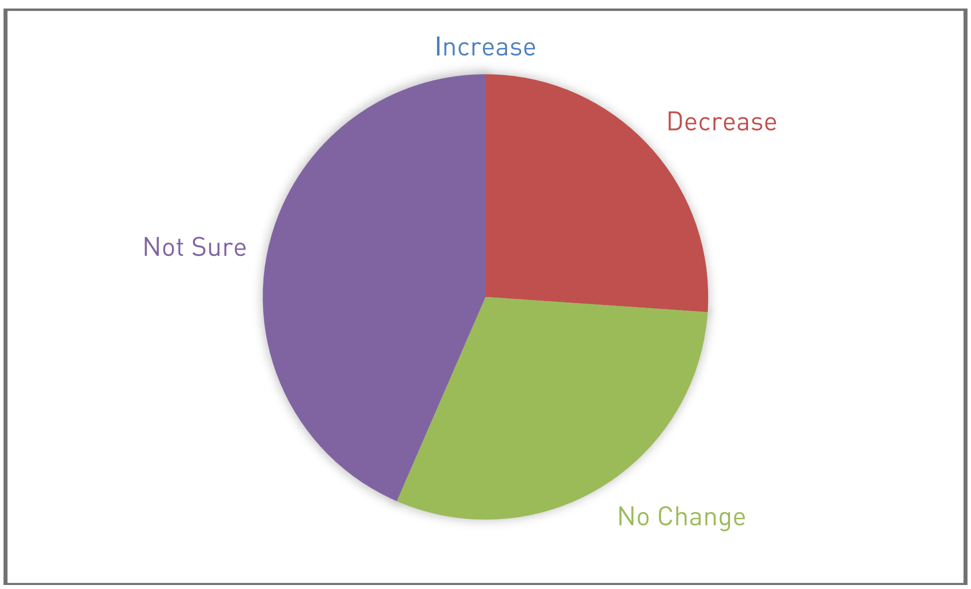
Table 30. Garibaldi: Awareness of Marine Reserves

Aware?	Frequency	Percent
Yes	9	39.1%
No	13	56.5%
Not Sure	1	4.3%
Total	23	100.0%

N = 23; Missing = 0

When asked how they expected reserve designation would impact Garibaldi visitation, the highest proportion of respondents (43.5%) indicated they were unsure what the impacts would be (Figure 16). None of the respondents thought that reserve designation would increase visitation, while more than one-quarter (26.1%) indicated they expected reserve designation would decrease visitation.

Figure 16. Garibaldi: Expected Impact of Marine Reserves on Visitation

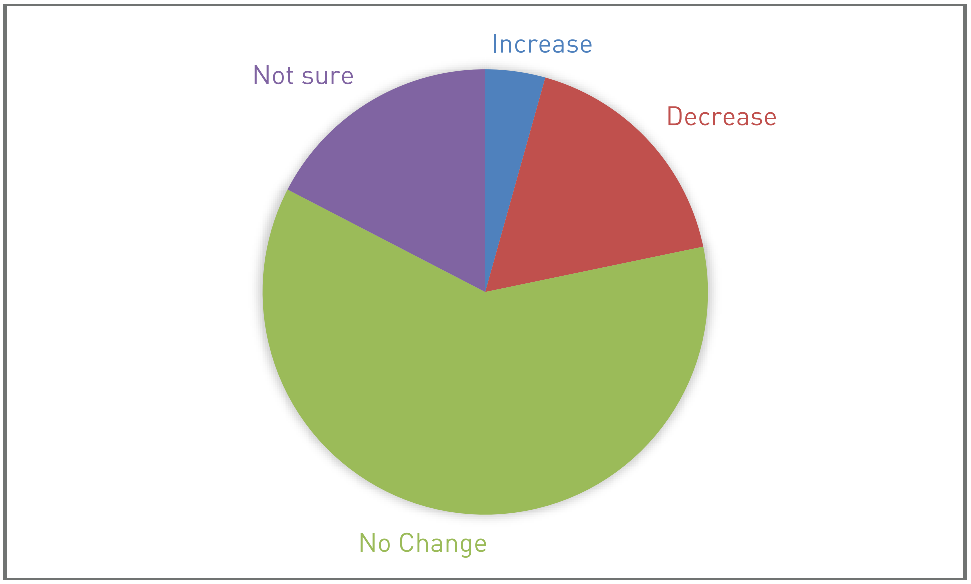


N = 23; Missing = 0

When asked how they expected marine reserve designation would impact business demand in Garibaldi, the majority of respondents (60.9%) indicated they thought there would be no impact (Figure

17). Only one respondent thought that business demand would increase, while 17.4% of respondents expected business demand to decrease.

Figure 17. Garibaldi: Expected Impact of Marine Reserves on Business Demand



N = 23; Missing = 0

FLORENCE

In 2015, representatives from 80 businesses in Florence were asked to complete the questionnaire; results from those responses follow. Among these businesses, the average number of annual, full time employees was 9.11 (Table 31). The largest number of full time, annual employees among these businesses was 100. Since a few businesses had a substantially higher number of employees the median number of 2 annual, full time employees is a more accurate representation of these Florence businesses. On average, these businesses hired on 1.25 seasonal, full time employees, and 1.22 seasonal, part time employees. However, the most common response (mode) and the middle value (median) for both seasonal and part time employees was zero employees.

Table 31. Florence: Employment

Employment Type	Average	Median	Mode
Annual, Full Time	9.11	2	1
Annual, Part Time	4.55	0	0
Seasonal, Full Time	1.25	0	0
Seasonal, Part Time	1.22	0	0

N = 75, 75, 75, 74; Missing = 5, 5, 5, 6

The respondents indicated that over three-quarters (77.5%) of these Florence businesses were locally owned (Table 32).

Table 32. Florence: Local or Non-Local Business Ownership

Type	Frequency	Percent
Local	62	77.5%
Non-local	17	21.3%
Unsure	1	1.3%
Total	80	100.0%

N = 80; Missing = 0

The respondents indicated that 1994 was the average year these Florence businesses were established (Table 33). The oldest of these businesses was founded in 1908. Just over half of these businesses were established following the year 2001.

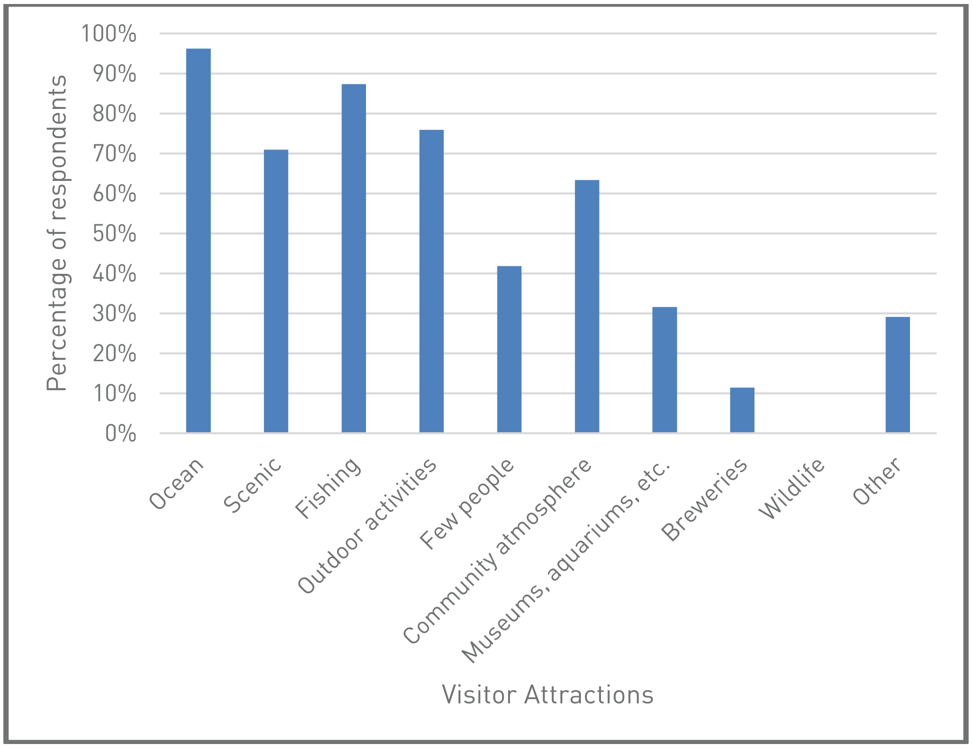
Table 33. Florence: Year of Business Establishment

Range (date)	Frequency	Percent
1880-1900	0	0.0%
1901-1920	1	1.5%
1921-1940	1	1.5%
1941-1960	7	10.3%
1961-1980	4	5.9%
1981-2000	20	29.4%
2001-2014	35	51.5%
Total	68	100.0%

N = 68; Missing = 12

The majority of Florence respondents cited the ocean (96.2%), scenic attractions (70.9%), fishing (87.3%), outdoor activities other than fishing (75.9%), and the community atmosphere (63.3%) as reasons that visitors come to their town (Figure 18).

Figure 18. Visitor Attractions to Florence



N = 79; Missing = 1
Note: Wildlife was only included in the 2010 and 2011 studies.

Most respondents (58.4%) indicated that the ocean was the main attraction that drew visitors to Florence (Table 34). The next most frequent response, outdoor activities other than fishing, was ranked as the main Florence visitor attraction by 16.7% of the respondents.

Table 34. Main Visitor Attraction to Florence

Attraction	Frequency	Percent
Ocean	42	58.4%
Scenic	7	9.7%
Fishing	5	7.0%
Outdoor activities	12	16.7%
Few people	1	1.4%
Community atmosphere	1	1.4%
Museums, aquariums, etc.	2	2.8%
Other	2	2.8%
Total	72	100.0%

N = 72; Missing = 8

Three-quarters of respondents (75%) were not aware of the marine reserves, while 21.3% were familiar with the reserves (Table 35).

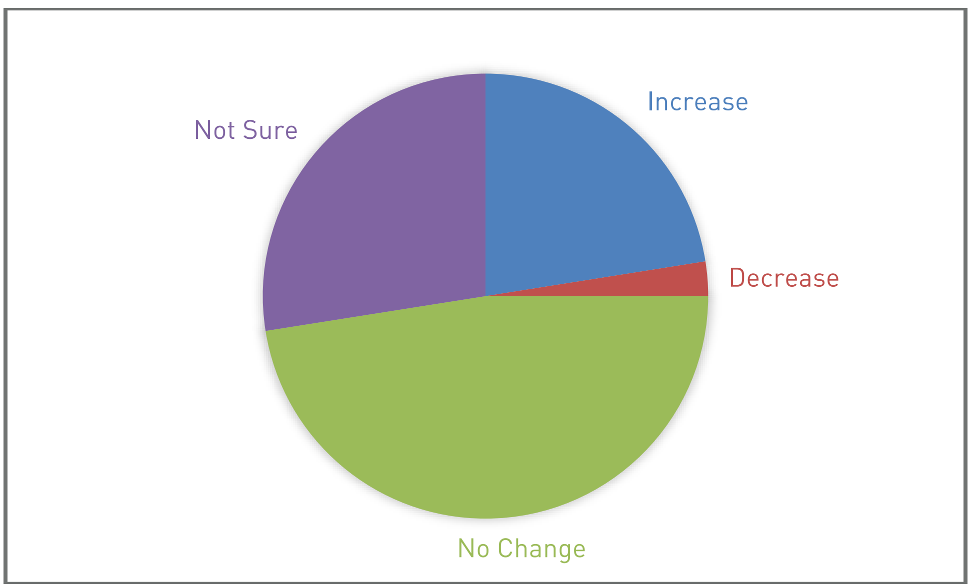
Table 35. Florence: Awareness of Marine Reserves

Aware?	Frequency	Percent
Yes	17	21.3%
No	60	75.0%
Not Sure	3	3.8%
Total	80	100.0%

N = 80; Missing = 0

Nearly half of respondents (47.5%) expected that reserve designation would have no impact on visitation to their community (Figure 19). While 2.5% thought reserve designation would decrease visitation, 22.5% of the respondents believed designation would increase visitation.

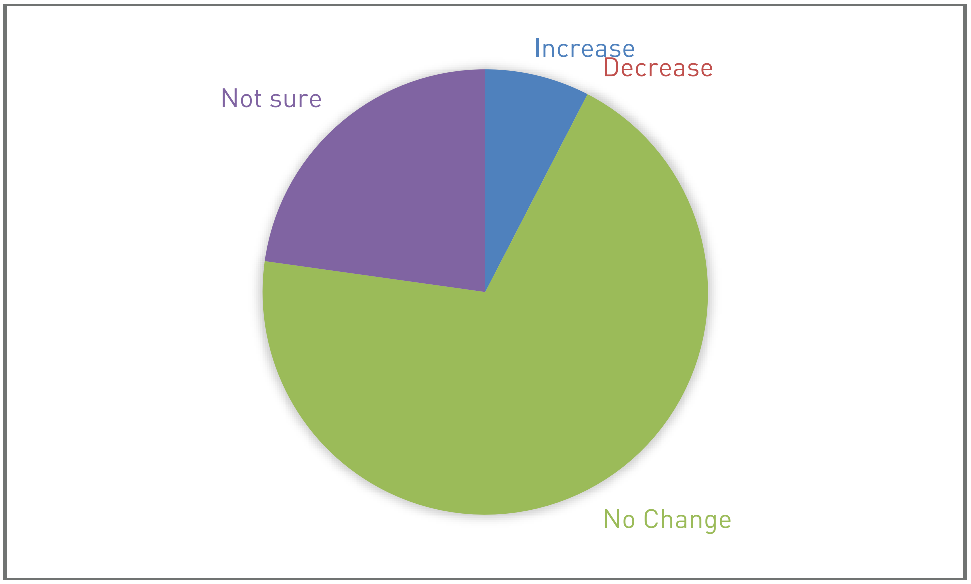
Figure 19. Florence: Expected Impact of Marine Reserves on Visitation



N = 80; Missing = 0

The majority of respondents (69.6%) also expected there would be no impact to their business demand due to marine reserve designation (Figure 20). No respondents thought reserve designation would decrease business, while 7.6% of respondents thought designation would increase business demand.

Figure 20. Florence: Expected Impact of Marine Reserves on Business Demand



N = 79; Missing = 1

CONCLUSIONS

A total of 320 business interviews and questionnaires were completed in the towns of Lincoln City, Yachats, Depoe Bay, Port Orford, Newport, Otter Rock, Garibaldi, and Florence between 2010 and 2015. The majority of the respondents indicated their businesses were locally owned and had been established following the year 1981.

While most respondents in Depoe Bay, Yachats, and Florence indicated that the ocean was the main attraction that brought visitors to their communities, this response was selected by only half of the respondents in Garibaldi. In Garibaldi and Depoe Bay, many respondents stated that fishing was the main visitor attraction in their region; this number was quite low in Yachats and Florence. Both Garibaldi and Depoe Bay are home to substantial charter fishing businesses and a destination for many other recreational fishers. Neither Yachats nor Florence have significant involvement in charters or other recreational fishing. The second most common attraction cited among Florence respondents was outdoor activities other than fishing. Florence respondents were probably referring to the sand dunes, a popular tourist attraction in the area.

Awareness of marine reserves varied moderately among the communities. Most respondents in Port Orford, Depoe Bay, Otter Rock and Yachats were familiar with the marine reserves. In many of the larger towns, such as Newport and Lincoln City, the majority of respondents were unfamiliar with the marine reserves. A comparison of survey responses in Depoe Bay and Yachats from 2011 and 2014 revealed that there was not a statistically significant change in marine reserve awareness over time.

The impact respondents expected marine reserve implementation would have on visitation to their communities varied greatly. In Otter Rock, most respondents believed reserves would decrease visitation. This view was also shared in Lincoln City, with approximately half of respondents indicating reserves would decrease visitation. Newport had the highest proportion of respondents who expected that reserve designation would increase visitation. However, a larger proportion of Newport respondents still expected that reserves would decrease visitation than increase visitor numbers. In the communities of Garibaldi, Florence, and Yachats, most respondents were either unsure of the effects, or believed there would be no change in visitation. Respondents' perceptions of how marine reserves would impact visitation were statistically different between the earlier and later studies (Chi-Square = 0.000; Cramer's V = 0.581). In earlier interviews, most respondents stated that reserve designation would either increase or decrease visitation. In the later studies, more respondents indicated designation would have either no impact on visitation or they were unsure of the expected impact of reserve designation on visitation. These results are similar to what was found when comparing the 2011 and 2014 Depoe Bay and Yachats surveys.

Most respondents in Lincoln City, Otter Rock, and Newport thought reserve designation would have a negative impact on their business demand. This was also the most common answer in Depoe Bay. In Garibaldi, Yachats, and Florence, the majority of respondents indicated that reserve designation would have no impact on their businesses. The community with the highest proportion of respondents that expected reserve designation would increase business demand was Port Orford. The Lincoln City, Otter Rock, and Newport studies were conducted in 2010 and 2011; all reported more negative expectations of the impact of reserve designation on business demand. The Garibaldi, Yachats, and Florence studies, all of which found more neutral views, were conducted in 2014 and 2015. When aggregated data from 2010 and 2011 are compared to aggregated data collected in 2014 and 2015, there was a significant change in perceptions of reserve impacts on businesses (Chi-Square = 0.000;

Cramer's V = 0.676). In the earlier studies, most respondents indicated reserve designation would decrease business demand, while in the later studies, the majority of respondents thought designation would have no impact on business demand. This change toward neutral respondent expectations was also observed in comparisons of 2011 and 2014 Yachats and Depoe Bay data.

While all these surveys are considered baseline data, moderate trends were already apparent. In general, the respondents' perceptions regarding marine reserves were becoming less negative and more neutral over time. Data collected during 2010 and 2011 were prior to the implementation of any of the marine reserves, and therefore respondents were understandably wary of the impacts of marine reserve designation. By summer of 2014, four of the five marine reserves had already been implemented. (Cape Falcon, which was implemented on January 1, 2016, was the last marine reserve site to be implemented.) Therefore, respondents surveyed in 2014 and 2015 had likely experienced coastal life post reserve designation. These respondents may have been more neutral toward reserves because they had not experienced substantial adverse impacts from designation. To continue to track the impact of marine reserve implementation on business demand, related surveys will be replicated in in the future, and those responses will be compared to these baseline data.

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APPENDIX A
2010 AND 2011 INTERVIEW QUESTIONNAIRE

Business Interview Questions

1. Are you locally owned? If not can you elaborate?

2. How many employees do you have on a regular basis? Does this increase seasonally and if so how?

3. What percent of your customers are local?

4. How long have you been in business?

5. What types of things attract people to this area of the coast?

6. Do you know about the marine reserves designated for the central coast area?

7. Do you think a marine reserve would have an impact on the number of visitors to this area? How?

8. Do you think a marine reserve would affect your business? How?

9. Did you know about the community groups focusing on these reserve areas? How would you like to see a group like this represent your position on the marine reserves?

10. Would you like more information about the marine reserves?

11. Would you like to comment on anything further?

APPENDIX B
2014 AND 2015 SURVEY INSTRUMENT

OREGON Fish & Wildlife

2014/2015 ODFW MARINE RESERVES BUSINESS SURVEY

1. **Please describe the ownership of this business (circle the correct letter)**
   a. Local (Go to question 3)
   b. Non-local
   c. Not sure/don't know

2. **If this business is non-local, what is the type?**
   a. Corporate
   b. Oregon ownership
   c. Other__________

3. **What year was this business established?**______________________

4. **How many individuals work at this business?**
   a. Year-round full time________________
   b. Year-round part time_______________
   c. Seasonal full time_________________
   d. Seasonal part time________________

5. **What attracts visitors to this area? (circle all that apply)**
   a. Ocean/Beaches
   b. Other scenic attractions
   c. Fishing
   d. Non-fishing outdoor activities
   e. Low-density of people
   f. Community atmosphere
   g. Museums, aquariums, and other tourist attractions
   h. Local breweries/beer
   i. Other (please specify)____________________________

6. **Which item on the previous list is most responsible for attracting visitors to the coast?** (Write the corresponding letter from the previous list) _________

7. **Were you aware that the state will be implementing a marine reserve in this area in 2016?**
   a. Yes
   b. No
   c. Not sure

A Marine Reserve (MR) is any area where you cannot remove or disturb any marine resource. Marine reserves were designated in this area to conserve habitats and biodiversity for future generations and to use the area for research of the near-shore environment. Marine reserves are still open to all non-extractive recreational activities, such as walking on the beach or tide-pooling.

8. **Do you think the marine reserves will impact the number of visitors to this area?**

a. The number of visitors will increase
b. The number of visitors will decrease
c. There will be no change
d. Not sure

9. **Do you think a marine reserve would affect your business?**

a. Business will increase
b. Business will decrease
c. There will be no change
d. Not sure

10. **Thank you for participating in our survey, your cooperation will help ODFW. Would you like to comment on anything further?**

____
____
____
____
____

ODFW USE ONLY

1. ID No.___________________	**4. Location**___________________________
2. Date____________________	**5. Business Sector**_____________________
3. Time ___________________	**6. Size**________________________________

APPENDIX C
ADDITIONAL COMMENTS FROM RESPONDENTS

As part of the survey, respondents were asked if there were any subsequent comments they would like to make. This appendix includes all additional comments made during the studies.

1. Advertise (poster) on fishing regulations around town and where they can purchase a license
2. Concerned about the difference and treatment of commercial fishermen and charter and sports fishermen
3. Concerned with how it affects locals
4. Does not reflect the views of the owner, person who filled out survey was upset about not being able to take agates at Otter
5. Generally a good job. Some term of open season appears not be thought out to work along with businesses. Etc.
6. History will prove this was a mistake
7. Keep the fishing open, and going strong it feeds our education, our kids, and our future
8. Keep up the good work!
9. Long term I believe marine reserves will increase quality of marine habitat which will indirectly contribute to wildlife viewing and enhance our business
10. Marine reserves need to be governed more by the local fishermen who know the coastal waters rather than by government dictating terms
11. Need to publicize, we live here and didn't hear about it
12. Thanks
13. Thanks for what you're doing
14. Too many restrictions
15. Yes, very dramatically make it harder, was the hardest saddest thing the MR team have ever done
16. You should consult fishermen about where they think they should be put. We know more from experience
17. Reserves are important; we need to keep things untouched, need to protect our own resources
18. Great idea!
19. Always good to have balance, ODFW does a good job
20. Good thing, Awesome!
21. Good thing, doesn't like the current permit situation
22. Thanks for asking my opinion.
23. Let's wait and see
24. We have to ensure that food is adequate in the future
25. We want to preserve the resource - want to create another generation of sportsman. Management would have to be taught and have done well.
26. When we went into the reserves, I was anti, now I'm open eyed with curiosity. Doubt it will help. There are too many agendas flying, but we haven't seen any proof that this approach works. The rebuilding of the stocks is pretty phenomenal. Fishermen give a damn. The decision

shoved us through a keyhole. Natural resource based business drives the economy on the OR coast.

27. There is a tug of war between community members and environmentalists What are benefits? Where does the $ come from for the research? Will there be a sunset date on the reserves? How will data be shared? Already have reserves on the coast-don't know about any current research. They just want to shut down the ocean..
28. Great rockpile of nearshore boats. Boat owners, business partners are all interested and want to be a part of the decision making.
29. More information needs to become available to public and surrounding area. Only heard from 1 side. Need honest information not bureaucratic. The fishing fleet needs to be better represented
30. Customers would like more info because they are generally conservation-minded.
31. Sounds like a nice idea for the environment
32. Don't shut down the industry
33. Most people who are looking for second homes fish further out
34. More accurate research needs to be done to monitor fish populations
35. The marine reserves are a great idea. They will help the area in general
36. Marine reserves are a great idea and I'm in support
37. In the long run, its good
38. You're doing a good job.
39. Good luck!
40. I would like more information