

POINT 97



An Economic and Spatial Baseline of Coastal Recreation in Washington

Report developed by
Point 97 and the Surfrider
Foundation for the
Washington Department
of Natural Resources

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Executive Summary

Coastal recreation opportunities provide significant economic and social benefits to both visitors and resident coastal communities such as the financial impact of direct expenditures (e.g., hotel stays, dining, shopping) and non-market benefits such as enhanced human well-being. To inform marine spatial planning efforts and understand how management decisions might impact future coastal recreation use patterns, it is necessary to establish a baseline of how many people use the coast, what they do, and the economic contributions of these different types of uses—especially in a geospatial context.

To establish a baseline characterization and to inform marine spatial planning efforts within the state of Washington, Point 97 and the Surfrider Foundation engaged coastal recreation users to design and carry out the Washington State Coastal Recreation Study from 2014 to 2015. The Study employed a two-part methodology emphasizing stakeholder outreach to collect high quality spatial and socioeconomic data on understudied coastal and ocean recreational activities on the Washington coast. Both a probability-based internet survey methodology (internet panel survey), supplemented by a separate, non-probability-based purposive sample survey methodology (opt-in survey), were employed to target Washington and surrounding area residents and interested stakeholders.

The internet panel survey tool was deployed from June 2014 to February 2015 and collected 6,129 survey responses and 10,252 spatial recreation activity data points and the opt-in survey tool was deployed from May to November 2014 and gathered 397 survey responses and 7,286 spatial recreation activity data points.

The study's findings estimate that 41 percent of all respondents reported visiting the Washington coast over the past 12 months. Most respondents (34 percent) stayed one night on their last trip to the coast, and 26.4% stayed for two. 13.4% of respondents went to the coast for a day without staying overnight. Coastal recreation trips to Pacific and Grays Harbor country were the most popular among respondents constituting approximately 37 percent and 35.6 percent of total coastal recreation trips respectively. 20.2 percent of total coastal recreation trips occurred in Clallam county and 7.2 percent in Jefferson county.

The top five activities respondents participated in on their last trip were beach going (60.5 percent), sightseeing or scenic enjoyment (57.1 percent), wildlife viewing (35.1 percent), photography (34.3 percent), and hiking or biking (28 percent). Spatial data sets and maps displaying the extent and intensity of use are provided for coastal recreation overall and the top ten most popular coastal recreation activities for both the internet panel and opt-in surveys.

This study also estimated the total number of coastal recreation trips and direct trip expenditures per year among the study population. Washington State residents took an average of 0.80 coastal recreation trips per year per person, which results in 4.1 million trips per year among the study population. These trips were defined as an intentional trip to the coast outside of an individual's daily routine. With respondents spending an average of \$117.14 per trip, we estimated that the study population's total annual coastal visitation trip expenditures were approximately \$481 million.

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POINT 97

Point 97 is a high-tech spin-off of Ecotrust, delivering impact technology solutions and engagement strategies for coastal and marine planning in regions around the world. Working to improve marine and coastal management practices, Point 97 helps partners and clients strengthen coastal communities and ocean ecosystems, bridge different ocean user perspectives and implement management decisions in an inclusive and transparent way. Learn more at pointnineseven.com

SURFRIDER FOUNDATION

Since its inception in 1984, the Surfrider Foundation has evolved into one of the largest non-profit grassroots organizations dedicated to the protection and enjoyment of the world's ocean, waves and beaches through a powerful activist network. Today it has 84 chapters, plus 30 high school and college clubs, and more than 250,000 supporters, volunteers and activists around the country. Surfrider works in four core areas: beach access, clean water, coastal preservation (coastal development) and protection. Armed with a model to defend the coast, they have achieved more than 300 coastal victories (and counting) since 2006. Learn more at <http://www.surfrider.org>.

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1. Introduction

The Washington Pacific coast is popular in the Pacific Northwest for its abundant coastal recreation opportunities. These recreation opportunities provide significant economic and social benefits to both visitors and resident coastal communities such as the financial impact of direct expenditures (e.g., hotel stays, dining, shopping) and non-market benefits such as enhanced human well-being. To inform marine spatial planning efforts and understand how management decisions might impact future coastal recreation use patterns, it is necessary to establish a baseline of how many people use the coast, what they do, and the economic contributions of these different types of uses—especially in a geospatial context.

This study is designed to establish a baseline characterization of coastal recreation participation rates and trip expenditures and provide a spatial baseline of coastal and ocean recreation use patterns on the outer Pacific coast of Washington from Port Angeles to the Washington/Oregon border from 10 miles onshore to 12 miles offshore (Figure 1). There is currently a significant gap in the data available describing these uses, their location and frequency, and the direct and indirect impacts on the local economy of Washington’s coastal communities.

To fill this gap in data and to inform marine spatial planning efforts within the state of Washington, Point 97 and the Surfrider Foundation engaged coastal recreation users such as surfers, kayakers, divers, beach goers, and wildlife viewers to carry out the Washington State Coastal Recreation Study (Study) in 2014 to 2015. Surfrider served as lead on community outreach and engagement and overall project oversight whereas Point 97 served as the technical lead providing the survey methodology, survey instrument, and data analysis.

Specifically, this report provides a number of primary findings to establish a baseline characterization of coastal recreation in the region:

1. Estimated proportion of Washington State resident population that visits the coast for recreation each year;
2. Estimated population participation rates for specific coastal recreation activities;
3. Spatial patterns of intensity of use and economic value (in terms of trip expenditures) for overall and specific coastal recreation activities; and
4. Economic contribution (in terms of trip expenditures) of coastal recreation to the state of Washington.

We would like to note that the goal of this study is to characterize a specific cross section of the value of coastal recreation. This study inquired only about respondents *intentional trips* to recreate on the coast outside of their daily routine. We constrain our study in this way because coastal residents may often recreate on the coast but may not incur any trip expenditures. Thus the value of this type of use is best captured in the value of coastal real estate where residents are able to easily access and recreate on the coast. The value of this type of daily routine/residential use is best characterized in a separate type of study such as a hedonic pricing study. Additionally, this study only characterized the value of coastal recreation as it relates to direct trip expenditures. Additional value can be determined through indirect travel costs such as the opportunity cost of the recreator’s time. To estimate the full value of coastal recreational activity thus requires further study.

This project will support Washington’s marine spatial planning (MSP) process and help the state meet its obligations under statute 43.372 RCW to address existing human uses in the marine management plan. Specifically, the information will support several draft MSP goals and objectives identified during the state’s scoping process including: Draft Theme Goal 1: Protect and preserve resource access and sustainable resource use for coastal communities to ensure economic vibrancy; and Draft Theme Goal 5: Encourage economic development that recognizes the aspirations of local communities and protects coastal resources.



Figure 1. Washington coast study region

2. Coastal Recreation Study Methods

To develop a consistent methodology and thus comparable datasets across west coast states, this study is modeled after similar ocean and coastal recreation studies in Oregon¹ and California^{2,3}. Following these proven methods, the project team, with input from regional stakeholders, developed an approach that employs a two-part methodology emphasizing stakeholder outreach to collect high quality spatial and socioeconomic data on understudied coastal and ocean recreational activities on the Washington coast.

Both a probability-based internet survey methodology (internet panel survey), supplemented by a separate, non-probability-based purposive sample survey methodology (opt-in survey), were employed to target Washington and surrounding area residents and interested stakeholders. These two survey methodologies were used in combination as together they:

- Engage local stakeholders in the overall data collection project and thus promotes inclusion in and awareness of regional ocean planning efforts
- Provide statistically robust and representative data needed to extrapolate general coastal recreation spatial and economic expenditure patterns across the Washington Coastal region
- Ensure representation of a broad range of user groups by purposively targeting coastal recreation activities that are practiced by a relatively smaller portion of the population, such as those activities requiring specialized equipment or training.

Furthermore, while the internet panel methodology collects a wide range of statistically robust coastal recreation data, this methodology is unable to collect data with adequate statistical power on coastal recreation activities practiced by a smaller portion of the population, such as surfing, SCUBA diving, stand-up paddle boarding, or other activities that have highly localized economic value. To address this limitation, we utilize the additional non-probability based “opt-in” survey methodology to broaden the range of activities covered in this study. These two data sets are never combined, however, they are presented side-by-side to provide additional spatial data on coastal recreation use for specific activities.

2.1 Stakeholder and Outreach Engagement

The project team implemented a variety of outreach strategies designed to promote stakeholder engagement in all phases of the Study. Outreach efforts targeted non-consumptive coastal and ocean users and leveraged the collaboration of a broad set of recreational businesses, groups, and associations, as well as environmental organizations in the region. The Team’s outreach also incorporated information about the Washington marine spatial planning process and opportunities for public engagement.

¹ LaFranchi, Chris and Collin Daugherty (2011). Non-consumptive Ocean Recreation in Oregon: Human Uses, Economic Impacts & Spatial Data. Submitted under a joint effort of the Surfrider Foundation, NaturalEquity, and Ecotrust. Funded by the Packard Foundation.

² Chen, C., et al. (2013). Spatial patterns of coastal recreation in the North Central Coast of California. Report to California Sea Grant, the Ocean Science Trust Monitoring Enterprise, California Ocean Protection Council in support of baseline MPA monitoring efforts.

³ Chen, C., et al. (2015). Spatial and economic baseline of coastal recreation in the South Coast of California. Report to California Sea Grant, the Ocean Science Trust Monitoring Enterprise, California Ocean Protection Council in support of baseline MPA monitoring efforts

In the spring of 2014 Surfrider established a stakeholder group of recreational interests to help review survey design, data collected, and draft study products. These contacts provided valuable feedback, complementing input from the Study Review Team. For example, the Team identified two activities, horseback riding and razor clam digging, which are popular on the Washington coast but were not included in the draft survey.

In addition, Surfrider staff and managed contractors conducted targeted outreach to 140 recreational groups, businesses, and associations throughout the region on the Study. These groups and businesses were selected to capture the breadth of activities and geographic extent of coastal and ocean recreation in the Washington Coastal region. Communication was conducted with key representatives or “gatekeepers” (e.g., business owners, club presidents, etc.) primarily through phone calls, emails, in person meetings and focused on: describing the specific purpose and intent of the project; addressing questions or concerns regarding the handling, use, and analysis of data collected; and encouraging them to share information with their members and customers. At least 48 recreational businesses and groups across the state of Washington promoted participation in the Study through newsletters, emails, social media, and distribution of outreach materials. Others may have participated without informing Surfrider of their efforts.

Surfrider staff, contractors, and volunteers also conducted the following activities to promote understanding and participation in the Study:

- Provided information on the Study via Surfrider national, regional and chapter websites, email lists, and social media
- Created and distributed outreach materials (including over 6,000 postcards) through Surfrider chapter meetings, outreach events, and other recreational businesses and groups
- Distributed multiple media releases to major print and online media in Washington during the data collection phase.

After the data collection phase was completed, the Team conducted additional outreach to recreational gatekeepers and other recreational users were contacted via phone, email, and in-person visits. Feedback from participants was positive, indicating that the data appeared accurate.

The Team will host a final webinar in June of 2015 for gatekeepers and recreational stakeholders and the Team will present the final data products and provide instruction for accessing and viewing the data on the Washington Marine Planning Mapping Application (<http://www.msp.wa.gov>). This webinar will serve as an additional opportunity to highlight public engagement opportunities in the Washington Marine Spatial Planning process. Surfrider will also conduct additional outreach to gatekeepers on the final Study products through the various communication pathways described above.

2.2 Survey Mapping Tool

To collect both the panel and opt-in survey responses, Point 97’s Viewpoint survey and mapping platform was customized to this project and accessible through mobile phones, tablets, and desktop/laptop computers. For the opt-in survey the Surfrider Foundation led targeted outreach to a range of coastal recreation users, businesses, groups, and associations throughout the state of Washington. Survey respondents were directed to a webpage to register for the survey (Figure 2). Respondents then received an email with a unique link to the online survey, which they could use at any

time to return to the survey if they did not complete the survey in one sitting. For the internet panel survey, respondents gathered by Knowledge Networks were sent directly to the internet panel survey without needing to register.

In addition to survey questions, for the Opt-In survey respondents were asked to map locations where they conducted specific coastal recreational activities in the **last 12 months** and for the panel survey respondents were asked to map their recreation activities for their **last trip** that was primarily for coastal recreation purposes (Figure 3).

The mapping tool was designed to be user-friendly and easily navigable and could be accessed through desktop/laptop computers, tablets, and mobile smartphones to enable respondent to conveniently, quickly, and easily submit survey data. To map recreation locations, respondents used the survey's mapping tool, which presented satellite data from Bing Maps as well as National Oceanic and Atmospheric Administration (NOAA) nautical charts. To navigate the map, respondents could search for a specific location or navigate the map themselves (zoom in/out and pan), similar to the Google Maps interface. Respondents then dropped activity markers to indicate the location they participated in recreational activities (Figure 4) and then associated specific recreational activities with that location (Figure 5).

Point 97 embedded several features into the mapping tool to ensure ease of use and the collection of high quality and high-resolution data, including:

- Search functions that enabled survey respondents to search for a specific location. Respondents were then zoomed into that location at the desired spatial scale for accurate placement of activity markers.
- A geo-fence was set up and visible in the mapping tool to delineate the study region and ensure that survey respondents only mapped in areas relevant to the study region. Furthermore, if respondents attempted to map outside the study region they were presented with an error message and a map of the study region to remind them of the study region boundaries.
- A zoom level of 15 (or a 1-inch to 0.25-mile map scale) was enforced to ensure accurate placement of activity markers.
- Unmapped activities reminder. To ensure survey respondents mapped all their recreational activities, if survey respondents indicated they were finished mapping they would be reminded of the recreational activities they had not yet mapped (Figure 6).
- Activity marker management. The mapping tool included a module to help survey respondents review, edit, delete, and track where they have mapped activity locations and the associated activities (Figure 7).

To monitor the progress and incoming opt-in survey data in real-time, Point 97 also developed an administrative dashboard to summarize key survey analytics. Information in the dashboard included the number of respondents who registered, started, and completed the survey by state and across the region. Furthermore, the dashboard indicated how many people mapped certain activities and displayed an associated heat map of mapped activities. This data informed outreach efforts throughout the data collection process so that certain geographies or user groups could be targeted to increase their participation in the online survey.

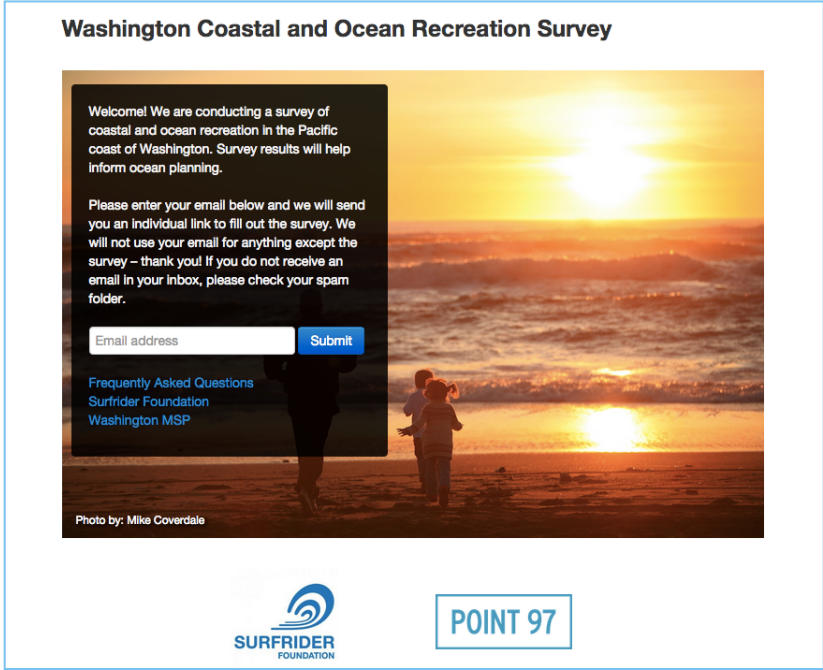


Figure 2. Survey registration web page

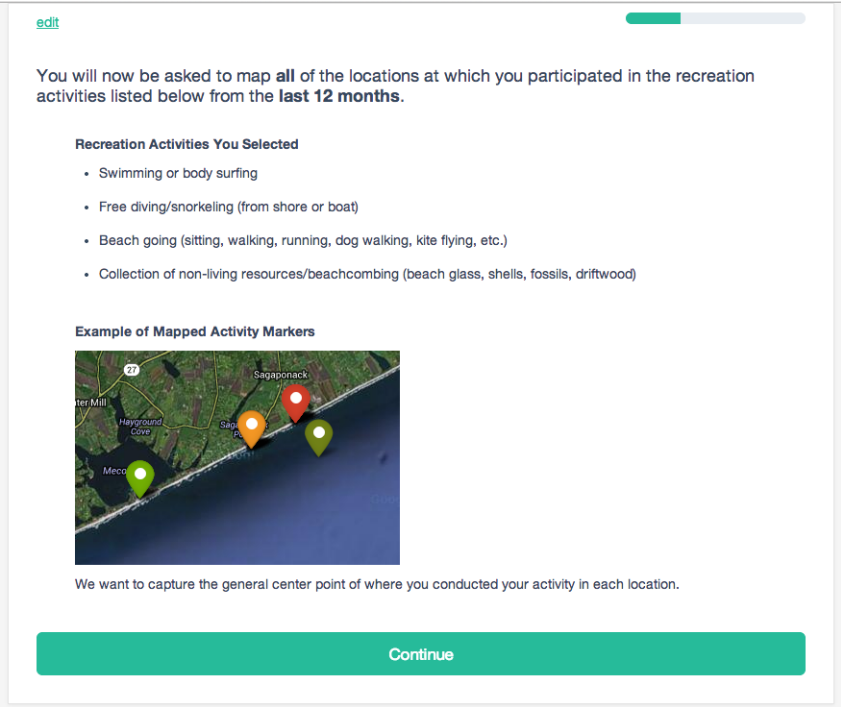


Figure 3. Survey screenshot: Mapping orientation

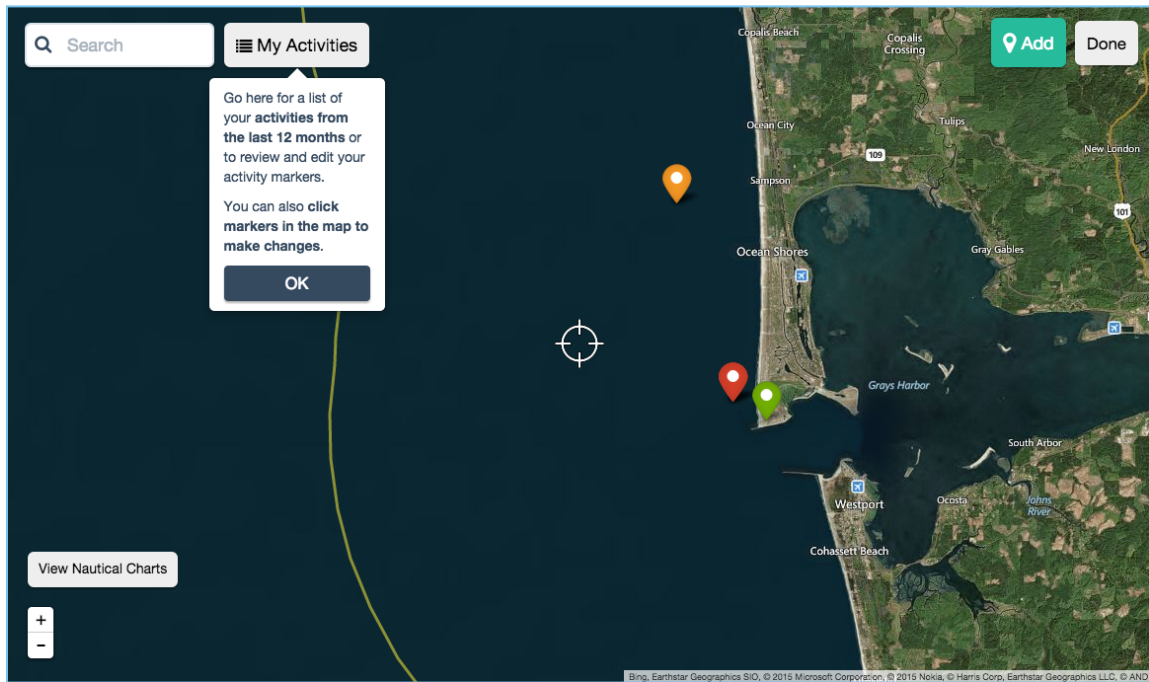


Figure 4. Survey screenshot: Placing activity markers

What activities did you engage in at this location?
Select all that apply.

Activities You Selected

- Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)
- Beach going (sitting, walking, running, dog walking, kite flying, etc.)
- Free diving/snorkeling (from shore or boat)
- Swimming or body surfing

Remove Location
Save

Figure 5. Survey screenshot: Selecting recreational activities to conducted at a location

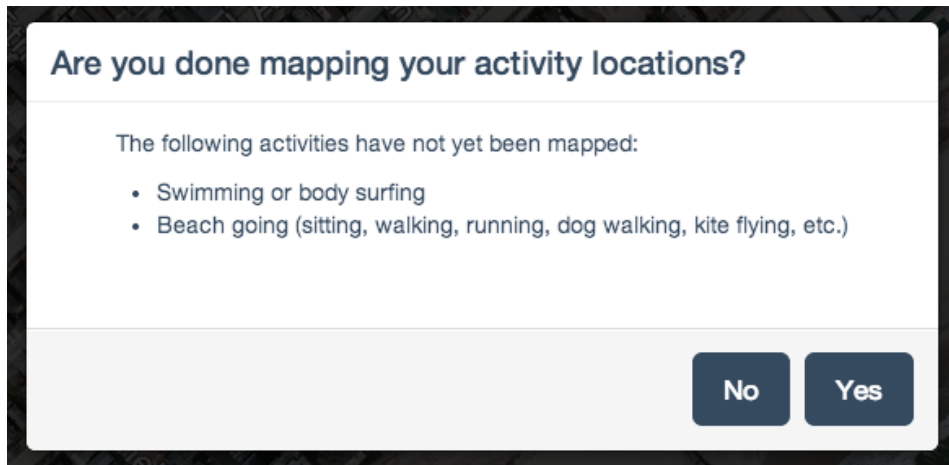


Figure 6. Survey screenshot: Survey respondents are reminded of the activities they conducted in the last 12 months but have not yet mapped

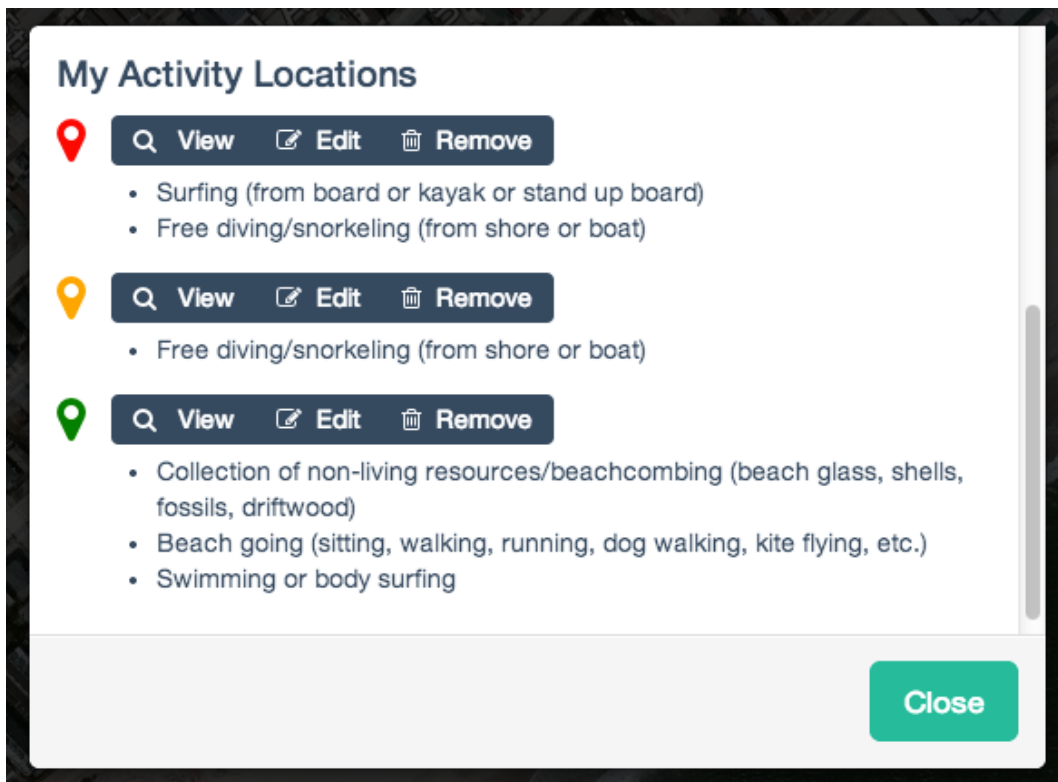


Figure 7. Survey screenshot: Tracking activity markers

2.3 Probability-based Online Panel Survey Methods

This survey methodology utilized a standing internet panel hosted by Knowledge Networks (KN) designed to be demographically representative based on 2010 U.S. Census statistics. Knowledge Networks is a leader in deploying custom online surveys for various academic, governmental, and commercial applications. Point 97 employed KN's services because the company specializes in probability sampling and providing statistically representative survey data through a peer-reviewed data collection methodology that reaches across the U.S. population, including many difficult-to-survey populations such as cell phone-only households, non-internet connected households, African Americans, Latinos, and young adults. It should be emphasized that respondents could not self-select for this survey and all respondents in this portion of our study were sampled through Knowledge Network's methods.

An internet panel approach provides several distinct advantages, including: 1) the online panel approach is probability-based, allowing extrapolation to a larger population; 2) we can collect spatial data, which cannot be done with a random digit dial (RDD) phone survey; 3) the cost of a completed online survey is substantially less than a completed in-person survey; and 4) with the lower costs, this approach can be replicated more often and is comparable with existing coastal recreation spatial data sets developed by Point 97 and SurfRider in other west coast states. However, it should be noted that potential biases still remain such as recall and non-response biases. In particular a recall bias may be a potential source of error as respondents are asked to recount the activity location and expenditures made on their last coastal recreation trip. This last trip may have occurred as far back as 12 months ago and thus error in a respondent's ability to exactly recall the attributes of their trip may occur. Furthermore, the survey is optional and thus there may potentially be a non-response bias in that the answers of non-responders may have been significantly different than those who responded to the survey.

Using KN's services, Point 97 designed this coastal recreation study to collect spatially explicit data on coastal recreation use patterns, characteristics, and associated trip expenditures. This would have been difficult to achieve using traditional mail or intercept survey methods. The advantage of deploying Point 97's survey tool in combination with KN's services was that all data collected constituted a weighted representative sample (based on U.S. Census data of household characteristics and county of residence) of the larger study population of Washington State.

The Washington coastal recreation survey was launched in June 2014 after extensive testing to ensure the mapping component of the survey tool would capture quality spatial data at the appropriate scale and in a user-friendly manner. In an effort to capture seasonal variations in coastal use, data on the respondent's most recent coastal trip was collected, and the survey was deployed in two survey "waves" over an eight-month period.

Data collection was completed in February 2015, and the data were then subsequently analyzed and synthesized. In the survey, respondents were asked to recount details of their coastal visitation trips over the previous 12 months and of their last trip, including information about the number of trips taken, participation in recreational activities, the location of activities, and expenditures made. The survey questions regarding coastal visitation and recreation use can be found in Appendix A: Panel Survey Questions.

Our study population (sample frame) was defined as the total resident population of Washington State over the age of 18 years. Table 1 shows the total population of the study area, 6,724,540, as well as the study area population over 18 years of age, 5,143,186.

Table 1. Study area 2010 population data

	Population
Study population (>18 yrs)	5,143,186
Study area total population	6,724,540

Source: Current study and US Census Bureau (2010)

Survey data were collected over two deployment waves distributed over 8 months to capture the seasonal variation in coastal use patterns. Table 2 displays the dates over which each wave was conducted and the respective number of respondents. Overall, the survey was completed by 6,129 respondents. Table 3 displays the median survey length, nine minutes, and the total number of respondents that completed the mapping portion of the survey (2,672, which is approximately 44 percent of total respondents).

Table 2. Survey wave information

Survey wave	Wave dates	Respondents	%
Wave 1	June 13-30, 2014	3,017	49%
Wave 2	November 19, 2014 -- February 14, 2015	3,112	51%
TOTAL		6,129	100%

Source: Current study

Table 3. Survey length and completion

Total number of respondents	6,129
Median survey length (min)	9
# of respondents that completed the mapping portion	2,672

Source: Current study

The US Census Bureau demographic survey questions were incorporated verbatim into the survey. The findings were then compared to US Census demographic findings as an indication of how representative our survey sample is of the sample frame, see Table 4.

Table 4. Demographics of survey and study populations

Demographics	Survey respondents	Study area population
Male	39.2%	49.8%
Female	60.8%	50.2%
White, Non-Hispanic	80.5%	72.5%
Black, Non-Hispanic	2.0%	3.4%
Other, Non-Hispanic	8.4%	9.1%
Hispanic	5.2%	11.2%
2+ Races, Non-Hispanic	3.9%	3.7%

Source: Current study and 2010 US Census data

Our survey aimed to be representative of the study area population, and while our data are somewhat well matched with 2010 Census findings, they over-represent the white and female populations of the study area, and under-represent the Hispanic population.

2.4 Non-probability Based Internet Opt-in Survey Methods

The opt-in survey, or purposive-convenience sample, is a methodology proven complementary to the panel survey approach. It was used to engage stakeholders and interested members of the public and collect extensive data on marine recreational activities that are societally important, but practiced by a smaller percentage of the population (e.g. surfing, kayaking, diving). This survey method, in which anyone willing may participate, is optimal for increasing sample sizes to obtain sufficient data from specific user group niches that are difficult to adequately and confidently capture through a general population survey.

Despite these advantages, data collected through an internet opt-in mode have some important limitations. Unlike the standing internet panel survey methodology described above, the opt-in methodology is a non-probability based survey method. Because any user from a targeted user group may elect to take the survey, the sample is not random and may or may not be demographically representative of the study population. Therefore the results from the survey cannot be extrapolated to the population as a whole. For these reasons, the opt-in survey was designed with the understanding that summaries of demographics or economic expenditures apply only to the sampled population and may not accurately reflect true values considering all of the region's recreational users. Instead, the primary goal of the opt-in survey method was to collect comprehensive spatial data on the location of specific coastal and ocean recreation activities

The opt-in survey does provide useful data about coastal and ocean recreational use patterns by allowing individuals, including avid users, to participate in mapping the locations of their coastal and ocean recreational activities. This opt-in survey approach is particularly relevant for highly economically valuable and spatially localized activities such as windsurfing, SCUBA diving, kayaking, and wildlife viewing. These types of activities are practiced by a relatively small percentage of the overall coastal and ocean recreational population yet contribute significantly to local economies.

Often the populations of these highly economically valuable and spatially intensive user groups are not well defined (e.g., a complete listing of users and contact information are not available) and so statistically targeted survey options are not feasible to create probability-based samples. Additionally, given the smaller percentage of the population that participates in these activities, the sample size needed to adequately and confidently sample across the variability in these user groups through a general population survey would be cost prohibitive and beyond the ability of internet survey providers. Given this, a possible approach is to gather data through user focus groups—however, the population size of these user groups are large enough that this type of approach may not represent the diverse spatial use patterns associated with these types of activities.

Considering these constraints and limitations, the opt-in survey was chosen to leverage a participatory crowd-sourced approach to gathering spatial data on coastal and ocean recreation spatial use patterns. This approach has become increasingly popular as a method to engage citizens and stakeholders to contribute their information to directly inform local and regional management and planning processes.

Opt-in survey data was collected from 397 respondents over a six-month period that occurred from May 13, 2014 through November 10, 2014. Table 5 displays the median survey length (13 minutes), and the number of respondents that completed both the text and mapping portions of the survey (397 for both). In the survey, respondents were asked to recount details of their coastal and ocean recreation trips over the previous 12 months, and separately, of their last trip, including information about participation in recreational activities, the location of activities, and expenditures made. The survey questions can be found in Appendix B: Opt-In Online Survey Questions.

Once the online survey was closed, Point 97 compiled and summarized the results for analysis to determine recreational activity participation rates, locations, and expenditures. Analysis and summaries were performed across all respondents to provide regional results, as displayed in the main body of this report.

Table 5. Survey length and completion

Total number of respondents	397
Median survey length (min)	13
# of respondents that completed the mapping portion	397

Source: Current study

US Census Bureau demographic survey questions were incorporated into the survey. The majority of respondents were male (57.3 percent) and white (90.2 percent) (Table 6).

Table 6. Demographics of survey and study populations

Demographics	Survey respondents
Male	57.3%
Female	42.7%
White, Non-Hispanic	90.2%
Black, Non-Hispanic	0.5%
Other, Non-Hispanic	3.0%
Hispanic	2.0%
2+ Races, Non-Hispanic	1.8%

Source: Current study

2.5 Data Analysis Methods

INTERNET PANEL SURVEY DATA ANALYSIS METHODS

To analyze the survey data, Knowledge Networks provided post-stratification survey-weights to more closely align our survey sample representation with the study population’s demographics. Once the survey was complete, Knowledge Networks applied data weights informed by demographic and county of residence data to adjust each respondent’s contribution to overall survey results. A data weight is effectively a multiplier that adjusts a given respondent’s contribution to compensate for a variety of both planned and unexpected disproportionate effects. The aim of post-stratification survey-weighting

is to adjust the weight given to individual sample data based on demographic characteristics so as to better reflect the population they are intended to represent.⁴

Once all respondents completed the survey, Knowledge Networks provided the post-stratification survey weights, and Point 97 used the statistical software R to apply the weights and analyze the data, determining the weighted means as well as confidence intervals⁵ as presented in the results below.

To analyze data gathered regarding trip expenditures respondents made on their last trip, the following steps were taken to ensure the best data possible were used to convey results:

- Respondents who did not indicate they had purchased an item were given a zero value expenditures for that item.
- If respondents indicated that they purchased an item but refused to provide a cost or answer for how many people the expenditure was made for, the entire cost-per-person estimate was assumed to be invalid and was removed from the sample.

OPT IN SURVEY DATA ANALYSIS METHODS

To analyze the survey data from the opt-in survey Point 97 utilized the statistical software R to summarize the data and provide confidence interval values. There were no survey weights incorporated in the analysis of the opt-in data. Furthermore the same protocol as the internet panel data were followed to summarize the trip expenditure data.

SPATIAL DATA ANALYSIS METHODS

In addition to survey questions, respondents were asked to map the location of where they conducted specific coastal recreation activities. Survey respondents provided information by placing a point or marker on a map and then indicated which activity or activities they conducted at each specific location during the last 12 months (opt in survey) or their last trip (panel survey). The Map Appendix of this report contains maps depicting the spatial patterns of use (distribution and intensity of use) across the region for coastal recreation overall and for the top ten coastal recreation activities for both survey methods.

Panel Survey Spatial Data Analysis Methods

To analyze the panel survey spatial data, an extrapolated number of person trips was calculated for each respondent-identified activity location. To do so, we used the following calculation steps below to calculate each respondent's proportional representation of total estimated number of person-trips for a given activity.

- Step 1: Calculate activity population = Washington State resident population X Percent of survey respondents who participated in the specific activity in the last 12 months
- Step 2: Calculate respondent data weight = Sample weight (provided by KN) X Number of coastal recreation trips taken in the last 12 months to the study region X Number of people on their last coastal recreation trip to the study region

⁴ More details about Knowledge Network's post-stratification survey-weighting methods can be found on the KN website: <http://www.knowledgenetworks.com/accuracy/summer2007/disogra.html>

⁵ Confidence intervals (CI) are statistical measures of variability which indicate the range of values in which the true value is likely to be given a specified probably, in this report confidence intervals are reported at 95 percent probability.

- Step 3: Calculate respondent’s proportional representation of activity population person-trips = Respondent’s data weight / Sum of all respondent’s weight who participated in a particular activity

For the Opt-In survey no survey data weights were developed and thus all spatial data from respondents were equally weighted and summarized together.

Spatial Data Visualization Methods

For both the internet panel and opt-in survey methods two analytical approaches were used to visualize the spatial data. The first method created activity groupings and summarized these spatial data to a hexagon planning unit grid provided by the Washington Department of Fish and Wildlife. Below in Table 7 is how individual activities were grouped together.

Table 7. Coastal recreation activity groupings

Activity Groupings	Activities
All Activities	Includes all mapped activities (includes 'other' activities)
Shore-based Activities	Beach going (sitting, walking, running, dog walking, kite flying, etc.)
	Beach driving
	Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)
	Horseback riding
	Camping
	Biking or hiking
	Tide pooling
	Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)
	Coastal tribal events
	Hang gliding/parasailing
Surface Water Sports	Skim boarding
	Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)
	Boating/sailing
	Kite boarding
	Surfing (from board or kayak)
	Windsurfing
	Personal water craft to surface water activities
Swimming or body surfing	
Wildlife & Sightseeing	Scenic enjoyment/sightseeing
	Photography
	Sitting in your car watching the scene
Diving	Watching birds, whales, seals and/or other marine life (from shore or boat)
	SCUBA diving (from shore, from boat)
	Free diving/snorkeling (from shore, from boat)

The second method utilized a kernel density analysis to analyze the spatial data from individual activities. The kernel analysis is a nonparametric statistical method for estimating probability densities

from a set of point data. Conceptually, a smooth raster surface is fitted over each point. The surface value is highest at the location of the point and diminishes with increasing distance (i.e., search radius), eventually reaching zero. Based on previous experience conducting a similar analysis in Oregon and after conducting several tests, the kernel density analysis on all activities was given a search radius of one mile.

In both these visualization methods the end results are “heat maps” depicting intensity of use for grouped or specific coastal recreation activities.

3. Coastal Recreation Survey Results

This section presents the results of both the panel and opt-in coastal recreational survey data analyses and effectively establishes both economic and spatial baselines for the Washington coast in terms of:

- Recreational trips and activities;
- Recreational trip expenditures; and
- A spatial baseline of coastal recreational use patterns.

2.6 Panel Survey Results

TRIPS AND ACTIVITIES

Table 8 displays the percentage of survey respondents who visited the Washington coast in the last twelve months, the average number of trips made annually over all respondents, and the primary reason for respondents’ last trip.

Overall, 41 percent of all respondents reported visiting the Washington coast over the past 12 months. Across all respondents, including those who had not visited the Washington coast at all in the last twelve months, the average number of trips per year was 1.3. The majority of trips to the coast over the past 12 months were overwhelmingly for recreation (59.9 percent), followed by leisure or tourism (23.9 percent). Table 8 also illustrates the proportion of primary reasons for respondents’ last trip.

Table 8. Washington coastal visitation summary statistics

		95% Confidence Interval		
		Average	Low	High
Last 12 months	Respondents who visited the Washington Pacific Coast	41.0%	39.8%	42.3%
	Number of trips over all respondents	1.3	1.1	1.5
	Percentage of trips for recreation	59.8%	57.8%	61.9%
	Percentage of trips for leisure/tourism	23.9%	22.0%	25.8%
	Percentage of trips for visiting family/friends	8.8%	7.5%	10.1%
	Percentage of trips for work	5.8%	3.7%	7.9%
	Percentage of trips for other reasons	1.7%	1.1%	2.3%

Source: Current study

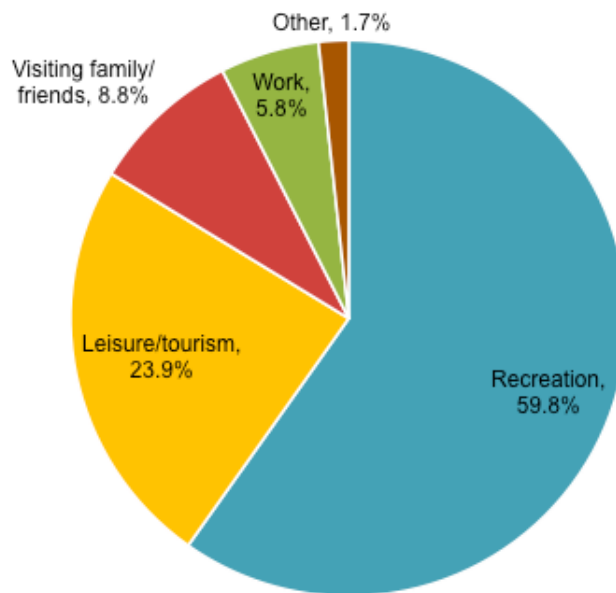


Figure 8. Proportion of trips to the Washington coast over the past 12 months by trip type

Table 9 displays the average number of nights spent per trip for respondents' last trip. Most respondents (34 percent) stayed one night on their last trip to the coast, and 26.4% stayed for two. 13.4% of respondents went to the coast for a day without staying overnight. The average length of respondents' last trip to the coast, for respondents that made trips, was 2.8 days and 2.1 nights (Table 10).

Table 9. Distribution of length last trip to the Washington Coast

	Average % of total sample	95% Confidence Interval	
		Low	High
Day trip, no nights	13.4%	12.1%	14.7%
One night	34.0%	32.2%	35.8%
Two nights	26.4%	24.7%	28.1%
Three nights	12.2%	10.9%	13.4%
Four nights	5.2%	4.3%	6.0%
Five nights or more	8.8%	7.7%	9.9%

Source: Current study

Table 10. Average length of last trip to the Washington Coast

	Average Number	95% Confidence Interval	
		Low	High
Days	2.8	2.7	2.9
Nights	2.1	2.0	2.2

Source: Current study

Table 11 displays the distribution of coastal trips reported by survey respondents over the last 12 months, including confidence intervals. Trips to Pacific and Grays Harbor counties account for nearly three quarters of outdoor recreation trips to the coast, at 37 and 35.6 percent respectively. The fewest trips, made by 7.2 percent of survey respondents, were made to Jefferson County.

Table 11. Distribution of coastal trips for outdoor recreation reported in the last 12 months

County	Average % of total sample	95% Confidence Interval	
		Low	High
Clallam	20.2%	17.8%	22.6%
Jefferson	7.2%	6.1%	8.3%
Grays Harbor	35.6%	28.1%	43.1%
Pacific	37.0%	30.6%	43.3%

Source: Current study

Table 12 displays the activity participation rates of survey respondents over the last 12 months, along with confidence intervals. The top five most popular activities among survey respondents were beach going (67.7 percent of respondents reported participating), sightseeing or scenic enjoyment (62.3 percent), viewing wildlife (39.9 percent), photography (36.3 percent), and hiking or biking (33.1 percent). Only 3 percent of respondents indicated that they also participated in “other” activities. Some appeared to have misunderstood the instructions and indicated that they went clamming, mushroom picking, or hiking, all activities included in the given options. Some other common responses included kite flying and going to special events, like a triathlon and car shows. Less common responses include white water rafting and rock hounding.

Table 12. Activity participation in each activity in the last 12 months

Activity	Average % of total sample	95% Confidence Interval	
		Low	High
Beach going (sitting, walking, jogging/running, dog walking, kite flying, etc.)	67.7%	66.0%	69.5%
Sightseeing/Scenic enjoyment	62.3%	60.5%	64.2%
Watching birds, whales, seals and/or other marine life from shore	39.9%	38.0%	41.7%
Photography	36.3%	34.5%	38.2%
Hiking or Biking	33.1%	31.4%	34.9%
Collection of non-living resources (driftwood, beach glass, etc)	28.4%	26.7%	30.1%
Camping	27.7%	26.0%	29.4%
Sitting in your car watching the scene	26.2%	24.5%	27.8%
Beach driving	23.8%	22.2%	25.5%
Tide pooling	20.0%	18.5%	21.5%
Swimming or body surfing	12.2%	11.0%	13.4%
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	12.0%	10.7%	13.2%
Fishing from shore/pier (e.g. hook and line, crabbing, spearfishing, etc.)	8.8%	7.8%	9.9%
Boating/sailing	6.7%	5.7%	7.6%
Kayaking or other paddling activity (canoe, stand up paddle board)	5.4%	4.6%	6.3%
Horseback riding	5.1%	4.3%	5.9%
Fishing from private boat (e.g. hook and line, crabbing, spearfishing, etc.)	4.3%	3.6%	5.1%
Watching birds, whales, seals and/or other marine life from private boat	4.2%	3.4%	4.9%
Fishing from charter boat/guide service (e.g. hook and line, crabbing, spearfishing, etc.)	3.9%	3.1%	4.6%
Watching birds, whales, seals and/or other marine life from charter boat/guide service	3.5%	2.8%	4.2%
Personal watercraft (jet skis, wave runner)	2.0%	1.5%	2.5%
Surfing (from board or kayak)	1.8%	1.3%	2.3%
Snorkeling/free diving from shore	1.3%	0.9%	1.8%
Skim boarding	1.3%	0.8%	1.7%
SCUBA diving from shore	1.2%	0.8%	1.6%
Windsurfing/Kite boarding	1.0%	0.6%	1.4%
SCUBA diving from private boat	0.7%	0.4%	1.0%
Snorkeling/free diving from charter boat/guide service	0.7%	0.4%	1.0%
89Snorkeling/free diving from private boat	0.6%	0.3%	0.9%
SCUBA diving from charter boat/guide service	0.6%	0.3%	0.8%
Hang gliding / parasailing	0.5%	0.2%	0.8%
Other	3.0%	2.3%	3.6%

Source: Current study

When asked specifically about coastal activities conducted on their most recent trip, the most popular activities were the same as those participated in over the year, but participant activity rates were slightly lower (Table 13). The top five activities respondents participated in on their last trip were beach going (60.5 percent), sightseeing or scenic enjoyment (57.1 percent), watching wildlife (35.1 percent), photography (34.3 percent), and hiking or biking (28 percent). 3.3 percent of respondents indicated that

they participated in other activities. Again, Some may have misread the given options and indicated that they went clamming, shopping, and going to restaurants, but some other common responses included kite flying, fireworks, and golf, as well as going to events like car shows, an Easter egg hunt, and a ham radio contest.

Table 13. Participation in each activity for the last trip

Activity	Average % of total sample	95% Confidence Interval	
		Low	High
Beach going (sitting, walking, jogging/running, dog walking, kite flying, etc.)	60.5%	58.7%	62.4%
Sightseeing/Scenic enjoyment	57.1%	55.3%	59.0%
Watching birds, whales, seals and/or other marine life from shore	35.1%	33.3%	36.9%
Photography	34.3%	32.5%	36.1%
Hiking or Biking	28.0%	26.3%	29.7%
Sitting in your car watching the scene	24.8%	23.2%	26.5%
Collection of non-living resources (driftwood, beach glass, etc)	23.5%	21.9%	25.1%
Beach driving	21.4%	19.8%	22.9%
Camping	20.6%	19.0%	22.1%
Tide pooling	15.0%	13.6%	16.3%
Swimming or body surfing	8.2%	7.2%	9.3%
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	7.3%	6.3%	8.3%
Fishing from shore/pier (e.g. hook and line, crabbing, spearfishing, etc.)	5.5%	4.6%	6.4%
Boating/sailing	3.8%	3.1%	4.5%
Horseback riding	3.2%	2.6%	3.9%
Fishing from charter boat/guide service (e.g. hook and line, crabbing, spearfishing, etc.)	3.1%	2.4%	3.8%
Fishing from private boat (e.g. hook and line, crabbing, spearfishing, etc.)	2.8%	2.1%	3.4%
Kayaking or other paddling activity (canoe, stand up paddle board)	2.7%	2.1%	3.3%
Watching birds, whales, seals and/or other marine life from private boat	2.6%	2.0%	3.2%
Watching birds, whales, seals and/or other marine life from charter boat/guide service	2.0%	1.5%	2.6%
Snorkeling/free diving from shore	1.7%	1.2%	2.2%
Surfing (from board or kayak)	1.2%	0.8%	1.6%
Personal watercraft (jet skis, wave runner)	0.9%	0.6%	1.3%
Skim boarding	0.8%	0.4%	1.1%
SCUBA diving from private boat	0.6%	0.3%	0.9%
Snorkeling/free diving from private boat	0.6%	0.3%	0.8%
SCUBA diving from shore	0.5%	0.2%	0.8%
SCUBA diving from charter boat/guide service	0.4%	0.2%	0.7%
Hang gliding / parasailing	0.3%	0.1%	0.5%
Windsurfing/Kite boarding	0.2%	0.0%	0.4%
Snorkeling/free diving from charter boat/guide service	0.2%	0.0%	0.3%
Other	3.3%	2.6%	3.9%

Source: Current study

After noting all coastal activities conducted on their most recent trip, participants were asked to choose their primary activity, displayed in Table 14 below. The top five activities were beach going (32 percent), sightseeing or scenic enjoyment (22.6 percent), camping (11.3 percent), hiking or biking (7 percent), and photography (3.6 percent). Respondent answers under “other” activities varied, with the most popular answers being clamming, kite flying, and walking.

Table 14. Primary recreation activity for the last trip

Activity	Average % of total sample	95% Confidence Interval	
		Low	High
Beach going (sitting, walking, jogging/running, dog walking, kite flying, etc.)	32.0%	30.2%	33.7%
Sightseeing/Scenic enjoyment	22.6%	21.0%	24.2%
Camping	11.3%	10.1%	12.5%
Hiking or Biking	7.0%	6.1%	8.0%
Photography	3.6%	2.8%	4.3%
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	2.9%	2.3%	3.6%
Watching birds, whales, seals and/or other marine life from shore	2.6%	2.0%	3.2%
Collection of non-living resources (driftwood, beach glass, etc)	1.9%	1.4%	2.4%
Fishing from charter boat/guide service (e.g. hook and line, crabbing, spearfishing, etc.)	1.6%	1.1%	2.1%
Fishing from private boat (e.g. hook and line, crabbing, spearfishing, etc.)	1.5%	1.0%	2.0%
Beach driving	1.5%	1.0%	1.9%
Fishing from shore/pier (e.g. hook and line, crabbing, spearfishing, etc.)	1.4%	1.0%	1.9%
Sitting in your car watching the scene	1.4%	0.9%	1.8%
Swimming or body surfing	1.2%	0.8%	1.7%
Tide pooling	1.1%	0.7%	1.5%
Kayaking or other paddling activity (canoe, stand up paddle board)	0.9%	0.6%	1.3%
Snorkeling/free diving from shore	0.7%	0.4%	1.1%
Boating/sailing	0.6%	0.3%	0.9%
Watching birds, whales, seals and/or other marine life from charter boat/guide service	0.5%	0.2%	0.8%
Horseback riding	0.4%	0.1%	0.6%
Snorkeling/free diving from private boat	0.3%	0.1%	0.6%
Surfing (from board or kayak)	0.3%	0.1%	0.5%
SCUBA diving from shore	0.3%	0.1%	0.5%
Skim boarding	0.1%	0.0%	0.3%
Personal watercraft (jet skis, wave runner)	0.1%	0.0%	0.3%
Watching birds, whales, seals and/or other marine life from private boat	0.1%	0.0%	0.2%
SCUBA diving from private boat	0.1%	0.0%	0.1%
Hang gliding / parasailing	0.0%	0.0%	0.1%
Windsurfing/Kite boarding	0.0%	0.0%	0.1%
Snorkeling/free diving from charter boat/guide service	0.0%	0.0%	0.0%
SCUBA diving from charter boat/guide service	0.0%	0.0%	0.0%
Other	1.9%	1.4%	2.4%

Source: Current study

Figure 11 shows the three activity participation rates – for the last 12 months, the last trip, and the primary activity of the last trip – all together. Beach going and sightseeing or scenic enjoyment are the most popular activities under all three measurements; although camping is identified by fewer respondents overall, it is the third most popular primary activity listed.

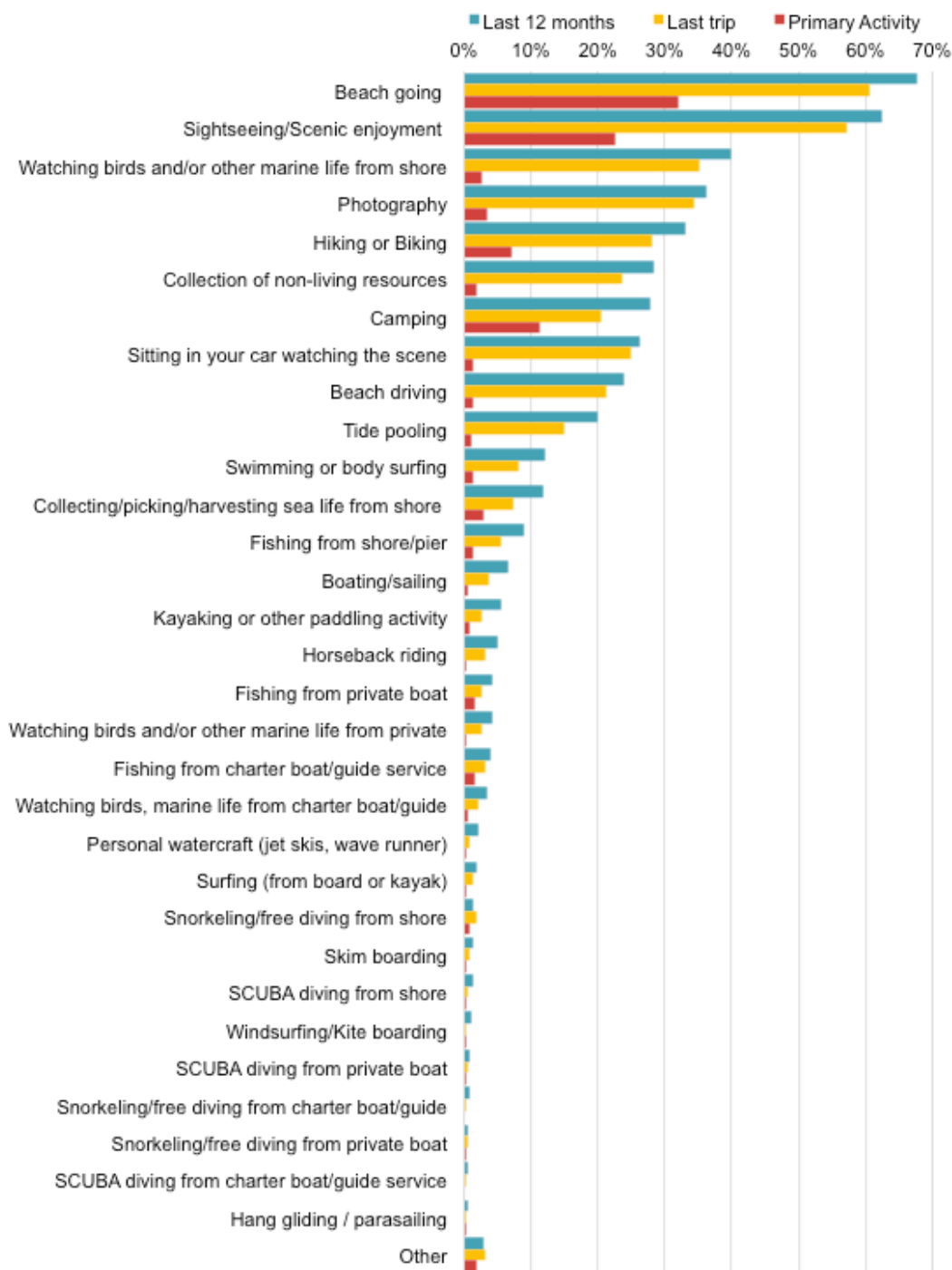


Figure 9. Activity participation rates for the last year and last trip.

TRIP EXPENDITURES

Table 15 displays the average expenditures made for each item across all respondents on their last trip. Averaged across all respondents (including those without lodging expenses), the highest expense was lodging or campsite fees, at \$25.96. However, the most prevalent type of expenditures made was for car fuel, with 77.1 percent of respondents reporting such expenditures. The highest average expenditures included car fuel (\$24.02) and food and beverages at a restaurant or bar (\$23.95). Expenditures on food and beverage were the most common type of expense, whether at a restaurant or bar (66.3 percent) or from a store (65.9 percent). Adding together the average expenditures per item across all items identifies a total trip expenditures estimate of approximately \$117.14 per person, per trip.

Table 15. Average trip expenditures per person by item across all respondents, last trip

Item	Across all respondents			
	Average expenditures (\$)	95% Confidence Interval		% of observations
		Low	High	
Lodging/Campsite Fee	\$25.96	\$23.69	\$28.23	35.2%
Car fuel	\$24.02	\$22.68	\$25.36	77.1%
Food and beverages at a restaurant or bar	\$23.95	\$22.78	\$25.12	66.3%
Food and beverages from a store	\$14.29	\$13.29	\$15.29	65.9%
Shopping and souvenirs (t-shirts, posters, gifts, etc.)	\$9.87	\$9.04	\$10.71	35.0%
Airline flight	\$2.43	\$1.23	\$3.62	1.1%
Charter fee (whale watching, etc.)	\$2.10	\$1.43	\$2.77	2.3%
Bus/Ferry/Train ticket	\$1.81	\$1.20	\$2.42	8.0%
Park entrance, museum, aquarium, or other entrance fee	\$1.51	\$1.26	\$1.76	13.0%
Other	\$1.50	\$0.98	\$2.02	3.4%
Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)	\$1.49	\$1.19	\$1.78	13.0%
Lessons, clinics, camps	\$1.45	\$0.51	\$2.39	0.9%
Car rental	\$1.28	\$0.75	\$1.81	1.9%
Boat rental	\$1.07	\$0.61	\$1.54	1.6%
Parking	\$1.05	\$0.87	\$1.23	14.0%
Boat fuel	\$0.83	\$0.54	\$1.13	2.1%
Bait and tackle	\$0.71	\$0.46	\$0.97	4.1%
Equipment rental (Surfboard, bike, kayak, stand up paddle, etc)	\$0.67	\$0.45	\$0.89	2.5%
One-day fishing license fee	\$0.57	\$0.41	\$0.72	3.2%
Dive equipment rental and airfills	\$0.32	\$0.11	\$0.53	0.8%
Boat ramp fees	\$0.26	\$0.04	\$0.47	1.1%
Total:	\$117.14	\$103.51	\$130.77	

Source: Current study

Figure 10 displays the relative average expenditures made per person per trip for all items as displayed in Table 15. Expenditures on lodging, car fuel, and food and beverages combined make up 75.3 percent of the total average trip expenditure per person.

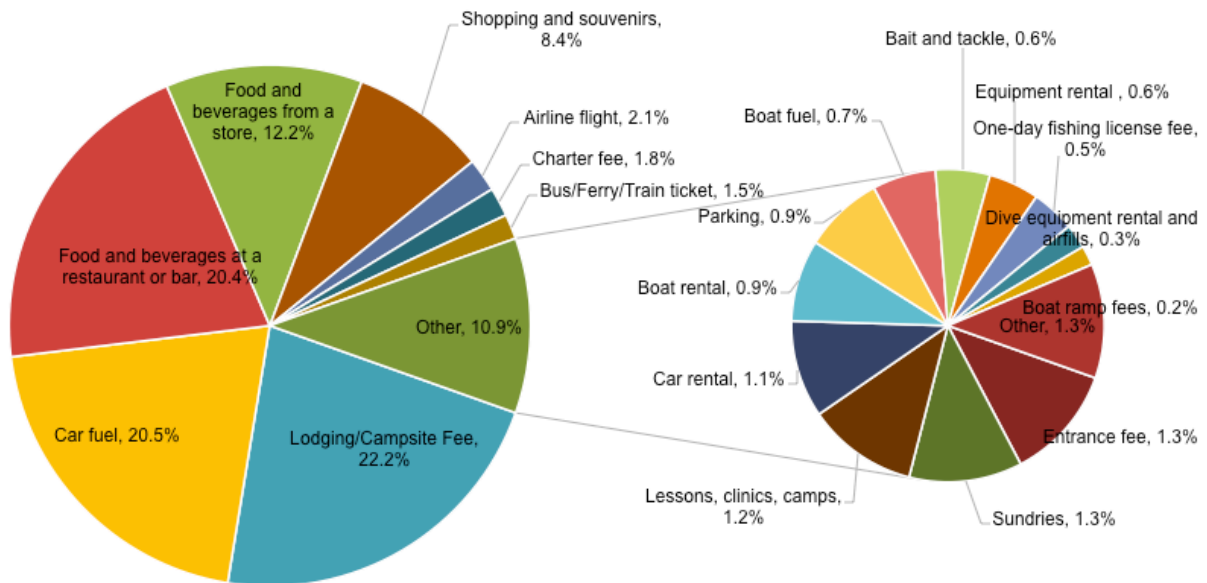


Figure 10. Average expenditure per trip for coastal visitation

Table 16 displays the average expenditure for each item across only respondents who indicated expenses for that item. For example, among all respondents who spent money on airfare – the highest average expenditure found -- the amount was approximately \$230.99 per person per last trip. Lessons, clinics, and camp fees were the second highest expenditure (\$163.51), followed by charter fees (\$91.61). These big-ticket items, however, were only indicated by 1.1, 0.9, and 2.3 percent of the respondents, respectively. The expenditures indicated by the most respondents were, as seen above, car fuel and food and beverages, whether from a restaurant or store. Expenses listed as “other” included money spent at casinos (range: \$20-400), firewood, and activities like golf and horseback riding.

It is important to explicitly note that the average expenditures per item presented in Table 16 should not be added together. Because the expenditure on each item is averaged over only those respondents that spent money on that item, summing these values would give an inaccurate representation of individual expenditures – not every coastal visitor buys plane tickets, lessons, lodging, and car rentals, for example.

Table 16. Average expenditures per item per person across respondents reporting expenditures for a certain item, last trip

Item	Average expenditures (\$)	95% Confidence Interval		% of observations
		Low	High	
Airline flight	\$230.99	\$140.12	\$321.87	1.1%
Lessons, clinics, camps	\$163.51	\$61.98	\$265.03	0.9%
Charter fee (whale watching, etc.)	\$91.61	\$71.71	\$111.51	2.3%
Lodging/Campsite Fee (if you stayed overnight)	\$73.66	\$68.56	\$78.76	35.2%
Car rental	\$69.47	\$48.43	\$90.51	1.9%
Boat rental	\$67.21	\$44.80	\$89.62	1.6%
Boat fuel	\$39.34	\$29.08	\$49.60	2.1%
Dive equipment rental and airfills	\$39.31	\$17.18	\$61.44	0.8%
Food and beverages at a restaurant or bar	\$36.13	\$34.70	\$37.56	66.3%
Car fuel	\$31.29	\$29.69	\$32.89	77.1%
Shopping and souvenirs (t-shirts, posters, gifts, etc.)	\$28.18	\$26.34	\$30.02	35.0%
Equipment rental (Surfboard, bike, kayak, stand up paddle, etc)	\$26.23	\$20.40	\$32.05	2.5%
Boat ramp fees	\$23.23	\$2.24	\$44.21	1.1%
Bus/Ferry/Train ticket	\$22.56	\$15.76	\$29.37	8.0%
Food and beverages from a store	\$21.73	\$20.36	\$23.11	65.9%
One-day fishing license fee	\$17.72	\$14.74	\$20.71	3.2%
Bait and tackle	\$17.52	\$12.00	\$23.05	4.1%
Park entrance, museum, aquarium, or other entrance fee	\$11.57	\$10.05	\$13.10	13.0%
Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)	\$11.48	\$9.64	\$13.32	13.0%
Parking	\$7.49	\$6.43	\$8.55	14.0%
Other	\$43.81	\$30.36	\$57.27	3.4%

Source: Current study

Table 17 displays the estimated total number of recreation trips and direct expenditures per year among the study population. Given that the average Washington State resident took an average of 0.80 coastal recreation trips per year (average across all survey respondents), we estimated a total of 4.1 million recreation trips per year among the study population. These trips were defined as an intentional trip to the coast outside of an individual’s daily routine. With respondents spending an average of \$117.14 per trip, we estimated that the study population’s total annual coastal recreation trip expenditures were approximately \$481 million (4.1 million trips x \$117.14 per trip = \$481 billion).

Table 17. Estimated number of recreation trips and direct expenditures

		95% Confidence Interval	
		Low	High
Study population (>18 yrs)	5,143,186	5,143,186	5,143,186
Average # of recreational trips/year per person	0.80	0.65	0.96
Estimated number of recreation trips for total study population	4,107,776	3,334,407	4,926,698
Average expenditure/trip	\$117.14	\$103.51	\$130.77
Total estimated average annual recreational expenditures	\$481,203,852	\$345,159,567	\$644,287,609

Source: Current study

2.7 Opt-in Survey Results

TRIPS AND ACTIVITIES

All survey respondents indicated that they had visited the coast in the past 12 months. On average, respondents reported 20 trips to the coast over that time period (Table 18).

Table 18. Opt in Survey: Washington coastal visitation summary statistics

Last 12 months	Respondents who visited the Washington Coast	397
	Average # of trips over all respondents	20

Source: Current study

Respondent answers to questions about their activity participation in the past 12 months, the last trip, and their primary activity on their last trip are summarized below. For “activity participation in the past 12 months”, respondents were asked to indicate which coastal activities they conducted in the last 12 months on the Washington Coast. Respondents could select multiple activities. For “activity participation in last trip”, respondents were asked to indicate which activities they conducted in their last trip to the region. A trip was defined as an intentional trip outside of the respondent’s daily routine. For “primary activity in last trip” respondents were further asked to identify the primary activity of the trip. Respondents could indicate only one primary activity.

Table 19 displays the activity participation rates of survey respondents over the last 12 months. The top five most popular activities among survey respondents were beach going (82.4 percent), scenic enjoyment (72.8 percent), watching marine life (63.2 percent), photography (58.4 percent), and biking or hiking (55.7 percent). These activities were also the most popular in the panel survey (Table 12), although at lower participation rates. Active recreation, like surfing, swimming, and kayaking had much higher rates of participation than in the panel survey, reflecting the respondent audience’s interests. Approximately 7.8 percent of survey respondents indicated that they also participated in “other” activities. The most popular activities people indicated as “other” activities were dining and participating in beach clean-ups.

Table 19. Opt in Survey: Activity participation in each activity in the last 12 months

Activity	Average % of total sample
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	82.4%
Scenic enjoyment/sightseeing	72.8%
Watching birds, whales, seals, and/or other marine life (from shore or boat)	63.2%
Photography	58.4%
Biking or hiking	55.7%
Camping	54.7%
Surfing (from board or kayak)	48.4%
Sitting in your car watching the scene	44.6%
Tide pooling	41.6%
Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)	39.8%
Swimming or body surfing	32.5%
Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)	28.7%
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	21.2%
Beach driving	20.4%
Boating/sailing	16.4%
Coastal tribal event (e.g., attendance at annual tribal celebrations)	12.1%
Free diving/snorkeling (from shore, from boat)	6.0%
Skim boarding	5.3%
SCUBA diving (from shore, from boat)	4.5%
Kite boarding	2.0%
Windsurfing	1.8%
Horseback riding	1.3%
Hang gliding/parasailing	0.0%
Other	7.8%

Source: Current study

When asked specifically about coastal activities conducted on their most recent “last” trip, participant activity rates differed slightly, see

Table 20. The top five activities respondents participated in on their last trip were beach going (59.9 percent), scenic enjoyment (52.9 percent), watching birds and/or other marine life from shore (41.8 percent), photography (41.6 percent), and surfing (41.6 percent). Participation rates for the top four activities were similar to those recorded in the panel survey, but more respondents in this opt-in survey participated in active recreation, with 41% participating in surfing, compared to 1.2% in the panel survey (Table 13). Again, the most popular activities people indicated as “other” activities were dining and visiting vacation homes.

Table 20. Opt in Survey: Participation in each activity for the last trip.

Activity	Average % of total sample
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	59.9%
Scenic enjoyment/sightseeing	52.9%
Watching birds, whales, seals, and/or other marine life (from shore or boat)	41.8%
Photography	41.6%
Surfing (from board or kayak)	41.6%
Biking or hiking	27.5%
Camping	27.2%
Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)	18.4%
Tide pooling	16.6%
Sitting in your car watching the scene	15.9%
Swimming or body surfing	11.1%
Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)	10.3%
Beach driving	8.1%
Boating/sailing	3.5%
Skim boarding	2.0%
SCUBA diving (from shore, from boat)	2.0%
Free diving/snorkeling (from shore, from boat)	1.5%
Coastal tribal event (e.g., attendance at annual tribal celebrations)	1.5%
Kite boarding	1.3%
Windsurfing	0.5%
Horseback riding	0.3%
Hang gliding/parasailing	0.0%
Other	8.1%
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	NA

Source: Current study

After noting all coastal activities conducted on their most recent trip, participants were asked to identify the primary activity of their last trip. The top five activities respondents participated in on their last trip were surfing (35.8 percent), beach going (15.4 percent), watching wildlife (8.6 percent), camping (7.1 percent) and scenic enjoyment (7.1 percent) (

Table 21). Again, active recreational activities were more prevalent here than in the panel survey, where only 0.3 percent of participants indicated surfing, and 0.9 percent indicated kayaking (Table 14). The activities indicated under “other” were varied, and included fishing, working, running, and participating in a beach cleanup.

Table 21. Opt In Survey: Primary recreational activity for the last trip

Activity	Average % of total sample
Surfing (from board or kayak)	35.8%
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	15.4%
Watching birds, whales, seals, and/or other marine life (from shore or boat)	8.6%
Camping	7.1%
Scenic enjoyment/sightseeing	7.1%
Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)	6.8%
Biking or hiking	2.5%
Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)	2.0%
Photography	1.8%
Tide pooling	1.8%
Boating/sailing	1.5%
SCUBA diving (from shore, from boat)	1.3%
Free diving/snorkeling (from shore, from boat)	0.8%
Beach driving	0.5%
Sitting in your car watching the scene	0.5%
Kite boarding	0.5%
Swimming or body surfing	0.5%
Skim boarding	0.3%
Coastal tribal event (e.g., attendance at annual tribal celebrations)	0.3%
Horseback riding	0.0%
Hang gliding/parasailing	0.0%
Windsurfing	0.0%
Other	5.3%
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	NA

Source: Current study

Figure 11 shows reported activity participation rates comparing trips over the last 12 months, the last trip, and the primary activity undertaken on the last trip. For trips in the last 12 months and for their last trip, respondents were asked to indicate all the coastal and ocean recreational activities they participated in. Respondents may have participated in multiple coastal and ocean recreational activities on their last trip but were asked to also indicate the primary or main activity on their last trip. For example, 82.4 percent of respondents indicated they participated in beach going activities (often along with other activities) in the last 12 months and 59.9 percent indicated they participated in beach going activities on their last trip, but only 15.4 percent indicated that on their last trip their primary activity was beach going. Similar to the panel survey, beach going and sightseeing or scenic enjoyment had the

highest participation rates when considering all activities participated in, but unlike the panel survey, surfing was the most popular primary activity on respondents' last trips.

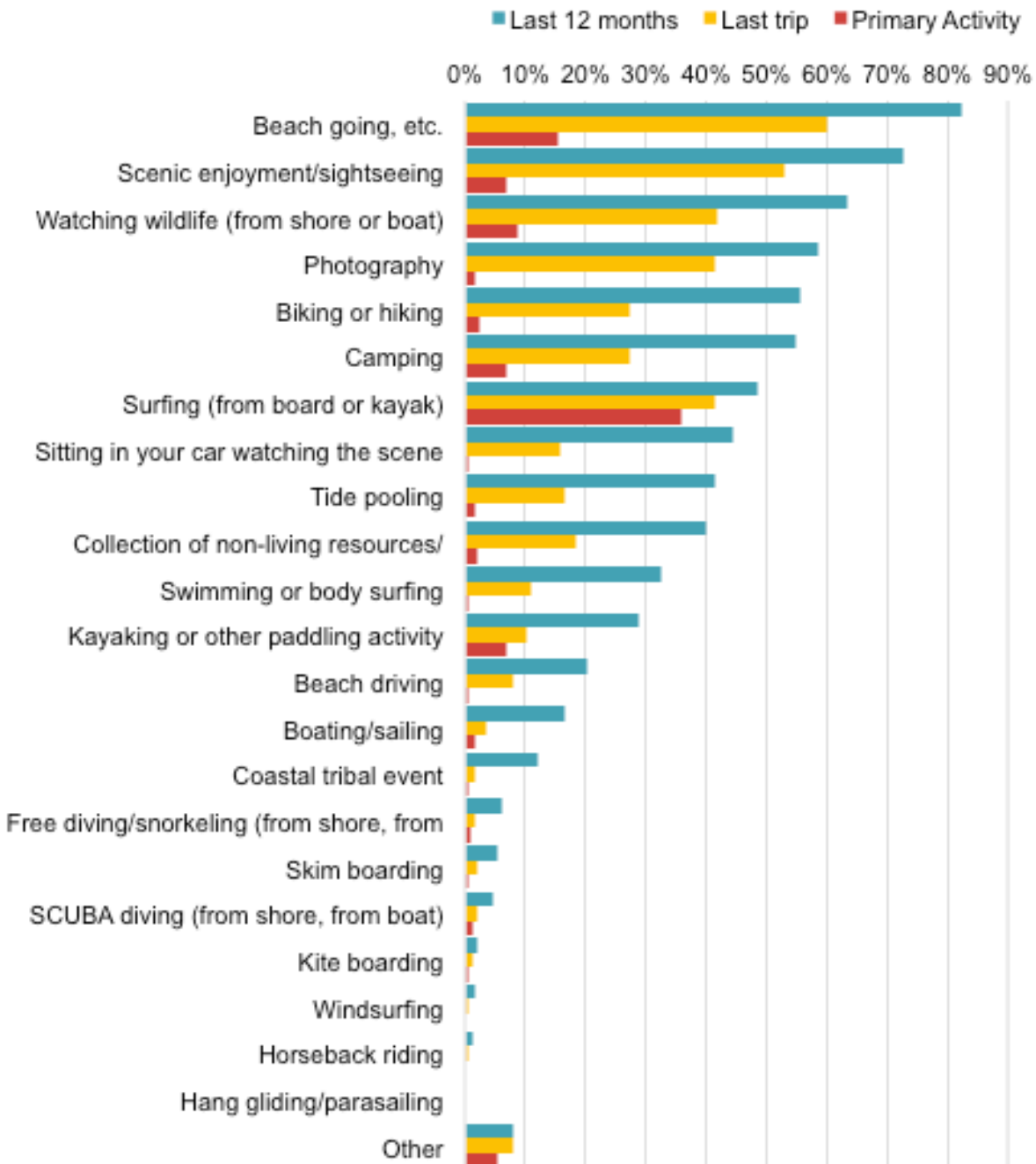


Figure 11. Opt in Survey: Activity participation rates, last year and last trip.

TRIP EXPENDITURES

Table 22 shows the average expenditures made for each item per person across all respondents on their last trip. The highest expense was \$32.98 for lodging (averaged across all respondents, including those that didn't have lodging expenses). The most common type of expenditure was for car fuel, with 85.1% of respondents reporting purchases on their last trip. For other expenditures, which averaged \$2.15 per respondent, the most common activity was for campsite fees. Summing the average expenditures per category across all categories identifies an estimate of total trip expenditures of approximately \$143.53 per person, per trip. The top expenditures are similar to those identified in the panel survey, where lodging, car fuel, and food were the highest average expenditures; car fuel was also the most common expense (Table 15). The total average expenditures was slightly higher for opt-in survey respondents than for panel respondents (\$117.14).

Table 22. Opt in Survey: Average trip expenditures per person by item across all respondents, last trip

Category	Across all respondents		
	Average expenditures (\$)	% of observations	# of respondents
Lodging (if you stayed overnight)	\$32.98	42.8%	170
Car fuel	\$25.67	85.1%	338
Food and beverages at a restaurant or bar	\$23.30	69.3%	275
Food and beverages from a store	\$17.68	77.6%	308
Airline flight	\$10.63	2.5%	10
Shopping and souvenirs (t-shirts, posters, gifts, etc.)	\$5.56	19.1%	76
Charter fee (whale watching, etc.)	\$4.68	3.0%	12
Bus/Ferry/Train ticket	\$3.50	14.9%	59
Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)	\$3.35	24.7%	98
Equipment rental (surfboard, bike, kayak, stand up paddle, etc.)	\$3.26	8.6%	34
Lessons, clinics, camps	\$3.14	1.8%	7
Car rental	\$2.78	2.5%	10
Park, museum, aquarium, or other entrance fee	\$2.71	24.4%	97
Other	\$2.15	7.3%	29
Parking	\$1.96	21.4%	85
Dive equipment rental and airfills	\$0.18	0.8%	3
	\$143.53		

Source: Current study

Figure 12 displays the relative average expenditures made per person per trip for all items as displayed in Table 22. Lodging, car fuel, and food & beverages in a restaurant and bar or from a store make up nearly three quarters of the average expenditures per person on a single trip, similar to, though slightly less than, the results of the panel survey (Figure 10).

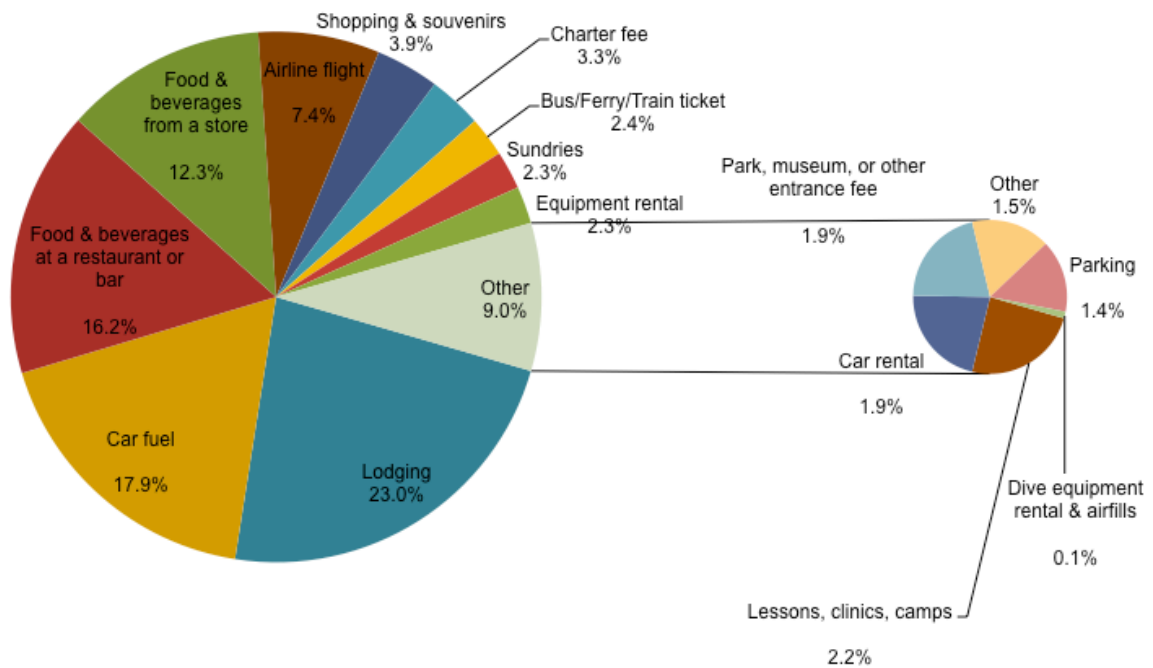


Figure 12. Opt in Survey: Average last trip expenditure per person by item across all respondents.

Table 23 shows the average expenditure for each category across only the respondents who indicated that they spent money in that category. For illustration: in Table 22, the average expenditure on an airline flight, across all survey respondents, was \$10.63. In Table 22, the 10 respondents who reported spending money on airline flights indicated an average cost per person of \$422.00, the most expensive average expenditure. The second highest average expenditure was for lessons, clinics, and camps, at \$177.83, and the third was \$154.96, for charter fees. These activities, however, were reported by 2.5, 1.8, and 3.0% of respondents, respectively. Car fuel, the expenditure reported by 85.1% of respondents, averaged \$30.15 per respondent. Again, the majority of expenditures under “Other” were for camping fees. The most expensive expenditures were similar to those found in the panel survey (Table 16), although opt-in survey respondents spent more on each category.

Table 23. Opt In Survey: Average expenditures per item per person across respondents reporting expenditures for a certain item, last trip.

Category	Average expenditures (\$)	% of observations	# of respondents
Airline flight	\$422.00	2.5%	10
Lessons, clinics, camps	\$177.83	1.8%	7
Charter fee (whale watching, etc.)	\$154.96	3.0%	12
Car rental	\$110.18	2.5%	10
Lodging (if you stayed overnight)	\$77.03	42.8%	170
Equipment rental (surfboard, bike, kayak, stand up paddle, etc.)	\$38.03	8.6%	34
Food and beverages at a restaurant or bar	\$33.63	69.3%	275
Car fuel	\$30.15	85.1%	338
Other	\$29.39	7.3%	29
Shopping and souvenirs (t-shirts, posters, gifts, etc.)	\$29.03	19.1%	76
Dive equipment rental and airfills	\$24.33	0.8%	3
Bus/Ferry/Train ticket	\$23.58	14.9%	59
Food and beverages from a store	\$22.79	77.6%	308
Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)	\$13.57	24.7%	98
Park, museum, aquarium, or other entrance fee	\$11.10	24.4%	97
Parking	\$9.17	21.4%	85

Source: Current study

2.8 Spatial Data Results

The spatial data gathered from this Study were analyzed and summarized into several data sets which can be seen in the associated Map Appendix of this report. Each survey method has two sets of maps, one set for grouped activities and one set for individual activities. Tables 23-26 detail the map products available and the sample size and number of activity points in each map product.

Geospatial data from this study were integrated into the Washington Marine Planning Mapping Application (<http://www.msp.wa.gov>), a decision support tool for coastal and ocean planning in for the state of Washington. Spatial information on coastal recreational use patterns are now available for analysis and collaborative sharing on the data viewer. We anticipate that this information will help the state's coastal and marine planners and managers make informed decision to help minimize potential negative impacts to recreational uses and values in the long term.

Table 24. Panel survey – activity grouping map products available

Activity Grouping	Wave 1	Wave 2	Survey Sample Size	Number of Data Points
All Activities	1,313	1,359	2,672	10,252
Shore-based Activities	1,008	1,134	2,142	3,124
Surface Water Activities	143	177	320	400
Wildlife and Sightseeing Activities	925	919	1,844	2,918
Diving Activities	28	20	48	59

Table 25. Panel survey – individual activity map products available

Activity	Wave 1	Wave 2	Survey Sample Size	Number of Data Points	Maps Products Available
Sightseeing/Scenic enjoyment	473	517	990	1,839	yes
Beach going (sitting, walking, jogging/running, dog walking, kite flying, etc.)	501	516	1,017	1,712	yes
Photography	257	303	560	1,074	yes
Watching birds, whales, seals and/or other marine life from shore	273	269	542	991	yes
Hiking or Biking	187	202	389	727	yes
Sitting in your car watching the scene	192	185	377	683	yes
Collection of non-living resources (driftwood, beach glass, etc)	163	170	333	577	yes
Camping	133	123	256	513	yes
Beach driving	121	129	250	446	yes
Tide pooling	105	92	197	349	yes
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	65	72	137	232	no
Swimming or body surfing	62	63	125	201	no
Fishing from shore/pier (e.g. hook and line, crabbing, spearfishing, etc.)	31	39	70	127	no
Other activity	45	22	67	97	no
Horseback riding	23	26	49	92	no
Boating/sailing	23	19	42	89	no
Kayaking or other paddling activity (canoe, stand up paddle board)	17	25	42	78	no
Fishing from private boat (e.g. hook and line, crabbing, spearfishing, etc.)	23	17	40	75	no
Watching birds, whales, seals and/or other marine life from private boat	15	16	31	64	no
Fishing from charter boat/guide service (e.g. hook and line, crabbing, spearfishing, etc.)	20	16	36	58	no
Watching birds, whales, seals and/or other marine life from charter boat/guide service	12	16	28	57	no
Skim boarding	5	6	11	28	no
Snorkeling/free diving from shore	7	4	11	25	no
Surfing (from board or kayak)	8	7	15	24	no
Personal watercraft (jet skis, wave runner)	3	5	8	21	no
Windsurfing/Kite boarding	1	5	6	15	no
Hang gliding / parasailing	3	5	8	14	no
SCUBA diving from shore	5	2	7	13	no
SCUBA diving from private boat	2	3	5	11	no
SCUBA diving from charter boat/guide service	4	0	4	7	no
Snorkeling/free diving from charter boat/guide service	2	1	3	7	no
Snorkeling/free diving from private boat	1	1	2	6	no

Table 26. Opt in survey – activity grouping map products available

Activity	Survey Sample Size	Number of Data Points
All Activities	397	7,286
Shore-based Activities	354	2,781
Surface Water Activities	253	1,164
Wildlife and Sightseeing Activities	334	3,170
Diving Activities	26	67

Table 27. Opt in survey – individual activity map products available

Activity	Survey Sample Size	Number of Data Points	Map Product Available
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	299	936	yes
Scenic enjoyment/sightseeing	268	969	yes
Watching birds, whales, seals, and/or other marine life (from shore or boat)	242	988	yes
Photography	215	857	yes
Biking or hiking	189	489	yes
Surfing (from board or kayak)	189	588	yes
Camping	188	395	yes
Sitting in your car watching the scene	151	356	yes
Tide pooling	142	277	yes
Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)	138	375	yes
Swimming or body surfing	110	226	no
Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)	87	249	no
Beach driving	69	118	no
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	65	127	no
Boating/sailing	38	62	no
Coastal tribal event (e.g., attendance at annual tribal celebrations)	37	56	no
Other	27	104	no
Free diving/snorkeling (from shore, from boat)	16	36	no
Skim boarding	16	21	no
SCUBA diving (from shore, from boat)	12	31	no
Kite boarding	7	11	no
Windsurfing	4	7	no
Horseback riding	3	8	no

4. Conclusion

This Study collected survey and spatial data on coastal recreational uses in the Washington Pacific coast region using a cost-effective, internet-based survey tool. The results provide an important spatial baseline to inform Washington’s current and future marine planning and management efforts.

This Study included a strong stakeholder outreach and participatory component and the Team enlisted help from state planners, coastal recreational business leaders, and recreational users who provided data and information to help address a critical gap for the region. Survey respondents contributed over 17,000 activity markers along the Pacific coast of Washington—collectively creating the region’s first comprehensive map for coastal recreation use. This participatory approach has helped build awareness of and investment in state and regional planning efforts among recreational users, groups, and associations.

Appendix A: Panel Survey Questions

[Demographic questions are asked in a separate survey module by Knowledge Networks (the online survey provider)]

Q1. We are interested in knowing about your coastal and ocean recreation activity on the Pacific coast of Washington. Have you been to the Pacific coast of Washington (dark blue area) at least once in the last 12 months?

[Insert Figure: Map of region, with shaded area distinguishing study region.]

- Yes.....Continue
- No.....Exit Interview

Q2. Please estimate how many trips you have made to the Pacific coast of Washington (see yellow area) in the last 12 months. Again a trip is defined as an **intentional trip** to the Pacific coast of Washington **separate from your daily routine**.

[NUMBER BOX; RANGE 1-365]

Q3. You previously responded that you made [from Q2] trips(s) to the Pacific coast of Washing in the last 12 months. Please indicate how many trips were made for the following primary purposes. The primary purpose is what primarily motivated you to take the trip(s) outside of your daily routine.

Outdoor Recreation
Leisure/Tourism
Visiting Family/Friends
Work Travel
Other

NOTE:

Outdoor Recreation includes activities such as beach going, sightseeing/scenic enjoyment, hiking, biking, walking, kayaking, boating/sailing, camping, photography, swimming, clamming, fishing, etc.

Leisure and Tourism includes activities such as dining, shopping, golf, attending festivals/events, eating at restaurants, etc.

Q4. We are interested in knowing what types of outdoor recreation activities you do when you go to the Pacific coast of Washington. Which of the following activities have you participated in **during the last 12 months** in the Pacific coast of Washington?

[PLEASE SHOW OPTIONS IN ONE LIST BUT RANDOMIZE ORDER OF SECTIONS. DO NOT INSERT HEADER]

[SECTION 1]

- a) Beach going (sitting, walking, jogging/running, dog walking, kite flying, etc.)

- b) Beach driving
- c) Hiking or Biking
- d) Camping
- e) Photography

[SECTION 2]

- f) Sightseeing/Scenic enjoyment
- g) Sitting in your car watching the scene
- h) Collection of non-living resources (agates, driftwood, beach glass, etc)
- i) Watching birds, whales, seals and/or other marine life from shore
- j) Watching birds, whales, seals and/or other marine life from private boat
- k) Watching birds, whales, seals and/or other marine life from charter boat/guide service
- l) Horseback riding
- m) Tide pooling

[SECTION 3]

- n) Fishing from shore/pier (e.g. hook and line, crabbing, spearfishing, etc.)
- o) Fishing from private boat (e.g. hook and line, crabbing, spearfishing, etc.)
- p) Fishing from charter boat/guide service (e.g. hook and line, crabbing, spearfishing, etc.)
- q) Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)
- r) Hang gliding / parasailing
- s) Skim boarding
- t) Surfing (from board or kayak)
- u) Swimming or body surfing

[SECTION 4]

- v) Windsurfing/Kite boarding
- w) Personal watercraft (jet skis, wave runner)
- x) Snorkeling/free diving from shore
- y) Snorkeling/free diving from private boat
- z) Snorkeling/free diving from charter boat/guide service
- aa) Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)
- bb) Boating/sailing
- cc) SCUBA diving from shore
- dd) SCUBA diving from private boat
- ee) SCUBA diving from charter boat/guide service
- ff) Other, please list: [TEXTBOX]

Q5. For how long have you been visiting the Pacific coast of Washington and enjoying one or more of the activities you identified?

- Just the last year 1
- One to three years 2
- About four to ten years 3
- More than ten years 4

- All my life 5

Q6. Below is a map of the coastal counties within the Pacific coast of Washington. You previously responded that you visited this area [INSERT RESPONSE FROM Q3] time(s) for outdoor recreation in the last 12 months. Please indicate how many times you visited each of these coastal counties for outdoor recreation in the last 12 months on the map below. If you did not visit a particular coastal county, please choose 'zero'. Your best estimate of the county is fine.

- i. HERE WE HAVE A MAP OF THE STUDY AREA THAT INCLUDES THE COUNTIES OF THE WASHINGTON PACIFIC COAST. For each county the respondent should be prompted to tell us how many visits they made to the county in the last 12 months.

[PLEASE ENSURE THE RESPONSES ADD UP TO AT MINIMUM THE RESPONSE IN Q3] [PROMPT ONCE]

Information Page:

The following questions are about your **last trip** to the Pacific coast of Washington (see yellow area on map) that was primarily for outdoor recreation purposes. A trip is defined as an **intentional trip – separate from your daily routine**.

For coastal residents, daily routine activities could include daily dog walks on the beach or driving along the coast to get to work or the store. An intentional trip (e.g., day/weekend trips, vacations, etc) is NOT a part of your daily routine.

Based on this, we'd like you to answer the following questions about your **last trip** to the Pacific coast of Washington that was **primarily for outdoor recreation**.

Q7. What was the date of your **last trip** to the Pacific coast of Washington that was **primarily for outdoor recreation purposes**. Your best estimate is fine. [SHOW STUDY REGION MAP]
[INSERT CALENDAR FOR RESPONDENT TO INDICATE DATE]

Date:

Q8. How many days and nights did you spend at the coast during your **last trip** to the Pacific coast of Washington that was **primarily for outdoor recreation purposes**?
[FILL IN BOXES]

Q9. On your **last trip** to the Pacific coast of Washington that was **primarily for outdoor recreation purposes**, did you start your trip from your home?

- Yes.....1
- No.....2

Q10. Since you did not start your last trip from home, what city and state did you start your trip from?
[Appears only if answered no to Q9]

City: Fill In
State: Fill In

Q11. What was the primary mode(s) of transportation you used to get to the Pacific coast of Washington on your **last coastal recreation trip**?

- Bus 1
- Bike 2
- Fly. 3
- Walking 4
- Drove personal car..... 5
- Drove a rented car 6
- Rode with someone else – carpoled..... 7
- Train..... 8
- Ferry (without a personal vehicle) 9
- Other, please specify: **[TEXTBOX]**..... 10

Q12a. How would you describe the car that you used to get to the Pacific coast of Washington on your last trip?

[Appears if selected drove a personal/rented car in Q11]

Compact car, small sedan, or hybrid

Medium sedan

Large sedan/Wagon

SUV, Pickup trucks, or Mini van

Other (fill in)

Q12b. How many people (including yourself) were in the vehicle with you on the last trip?

[FILL IN BOX]

Q12c. How many of those passengers were your children/dependents?

[FILL IN BOX]

Q13a. Approximately how many people (including yourself) went on your last trip to the Pacific coast of Washington that was primarily for outdoor recreation purposes?

[FILL IN BOX]

Q13b. Approximately how many people on your last trip were under the age of eighteen?

[FILL IN BOX]

Q14. During your last trip to the Pacific coast of Washington, what outdoor recreation activities did you participate in?

[PLEASE SHOW OPTIONS IN ONE LIST BUT RANDOMIZE AND RECORD ORDER OF SECTIONS. DO NOT INSERT HEADER]

[SECTION 1]

- a) Beach going (sitting, walking, jogging/running, dog walking, kite flying, etc.)
- b) Beach driving

-
- c) Hiking or Biking
 - d) Camping
 - e) Photography

[SECTION 2]

- f) Sightseeing/Scenic enjoyment
- g) Sitting in your car watching the scene
- h) Collection of non-living resources (agates, driftwood, beach glass, etc)
- i) Watching birds, whales, seals and/or other marine life from shore
- j) Watching birds, whales, seals and/or other marine life from private boat
- k) Watching birds, whales, seals and/or other marine life from charter boat/guide service
- l) Horseback riding
- m) Tide pooling

[SECTION 3]

- n) Fishing from shore/pier (e.g. hook and line, crabbing, spearfishing, etc.)
- o) Fishing from private boat (e.g. hook and line, crabbing, spearfishing, etc.)
- p) Fishing from charter boat/guide service (e.g. hook and line, crabbing, spearfishing, etc.)
- q) Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)
- r) Hang gliding / parasailing
- s) Skim boarding
- t) Surfing (from board of kayak)
- u) Swimming or body surfing

[SECTION 4]

- v) Windsurfing/Kite boarding
- w) Personal watercraft (jet skis, wave runner)
- x) Snorkeling/free diving from shore
- y) Snorkeling/free diving from private boat
- z) Snorkeling/free diving from charter boat/guide service
- aa) Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)
- bb) Boating/sailing
- cc) SCUBA diving from shore
- dd) SCUBA diving from private boat
- ee) SCUBA diving from charter boat/guide service
- ff) Other, please list: [TEXTBOX]

Q15. Of the outdoor recreation activities you selected what was your primary activity during your **last coastal recreation trip** to the Pacific coast of Washington? (please select only one)
[PLEASE SHOW ACTIVITIES SELECTED IN QUESTION Q11 and ONLY ALLOW THE SELECTION OF ONE PRIMARY ACTIVITY]

Q16. Mapping of Ocean and Coastal Recreation activity locations
[MAPPING COMPONENT OF SURVEY]

In the mapping component the respondent will be presented with a navigable map of the coast (e.g., Google maps) and will be ask:

-
- 1) Navigate the map or use search function to zoom to the areas which they conducted ocean and coastal recreation activities on their last trip.
 - a. The user can utilize a search function (similar to google maps) to zoom to specific areas
 - b. The user can zoom in and out and move the map around to navigate the map to specific areas
 - c. If the user zooms out to far and attempts to drop an activity marker they will be prompted to zoom further in.
 - 2) For each activity marker placed the user will be asked to:
 - a. Associate one or more activity with the activity marker they place on the map
 - b. In addition, respondents are asked:
 - i. How many hours did you spend at this location on your last trips?
 - ii. Please indicate why you chose to recreate at this particular place on this trip:
 - a) The water is clean, clear and/or good to swim in
 - b) The site has good facilities/amenities/access (e.g. parking, bathrooms, picnic tables, marina, camping, trails, etc)
 - c) The site is beautiful or has striking natural features
 - d) The site is perfect for my particular activity (e.g. surf break, fishing area, dive site, etc)
 - e) Wildlife is abundant and diverse
 - f) It's close to home/work/where I'm staying
 - g) The site is large and offers room for exploration
 - h) The site is secluded, away from crowds, and offers privacy
 - i) This is where my friends or family have always gone
 - j) I have lots of memories from this place
 - k) This is a spiritual/inspiring place for me
 - l) There are specific natural resources I like to collect here
 - m) It is a place I can learn about, teach, or research the natural environment
 - n) I feel healthier after going to this place
 - 3) Once all activity markers have been placed the activity markers for the primary activity indicated in the previous portion of the survey will be presented
 - a. Users will be prompted to distribute 100 pennies across this primary activity to indicate the relative importance of each location to their activity on their last trip
 - b. This distribution of value will then be subsequently used with the trip expenditure data collected further in the survey to estimate the value of coastal and ocean recreation areas.

Q17a. During your **last trip** to the Pacific coast of Washington that was primarily for outdoor recreation purposes, please indicate if your party spent money on the following items.

- a. Parking
- b. Car fuel
- c. Airline flight

- d. Bus/Ferry/Train ticket
- e. Food and beverages from a store
- f. Food and beverages at a restaurant or bar
- g. Shopping and souvenirs (t-shirts, posters, gifts, etc.)
- h. Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)
- i. Car rental
- j. Dive equipment rental and airfills
- k. Equipment rental (Surfboard, bike, kayak, stand up paddle, etc)
- l. Lodging/Campsite Fee (if you stayed overnight)
- m. Charter fee (whale watching, etc.)
- n. Park entrance, museum, aquarium, or other entrance fee
- o. Lessons, clinics, camps
- p. One-day fishing license fee
- q. Bait and tackle
- r. Boat fuel
- s. Boat rental
- t. Boat ramp fees
- u. Other, please list **[TEXTBOX; PROMPT ONCE IF SELECTED BUT TEXT IS NOT ENTERED]**

Q17b. During your **last coastal recreation trip** to the Pacific coast of Washington, please estimate how much money **your party** spent on the following items and the number of people it covered.

[For Q14b show indicated expenditures from Q14a]

[GRID, NUMBER BOXES]

[All responses are required to be filled in]

Expense item	Cost: [NUMBER BOX, , RANGE IS 0-10000]	# of people covered
a) Parking		
b) Car fuel		
c) Food or beverage from a store		
d) List continues...		

[ENDDISPLAY]

Thank you so much for participating in our survey. We appreciate your help and input!

Appendix B: Opt-In Online Survey Questions

QSCREENER.

Please enter your age: [SPACE]

[TERMINATE IF RESPONDENTS AGE IS<18]

Q1. What state/province do you live in?

1. Washington
2. Oregon
3. British Columbia
4. Other <fill in>

Q2. You indicated you live in <fill in from Q1> State/Province. What county/municipality do you live in?
[Drop down list of counties/municipalities for each state/province]

Information Page:

The following questions are about where you recreated on Pacific coast of Washington (see yellow area on map) **during the last 12 months**. For the purposes of the survey, recreation includes activities such as beach going, wildlife viewing, scenic enjoyment, boating, clamming, surfing, kayaking, etc.

[Insert Figure: Map of region, with shaded area distinguishing study region.]

Q3. Which of the following recreation activities have you participated in **during the last 12 months** in the Pacific coast of Washington? Select all that apply.

[PLEASE SHOW OPTIONS IN ONE LIST BUT RANDOMIZE ORDER OF SECTIONS. DO NOT INSERT HEADER]

[SECTION 1]

- a) Beach going (sitting, walking, running, dog walking, kite flying, etc.)
- b) Beach driving
- c) Horseback riding
- d) Biking or hiking
- e) Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)
- f) Camping
- g) Photography
- h) Scenic enjoyment/sightseeing
- i) Sitting in your car watching the scene
- j) Watching birds, whales, seals and/or other marine life (from shore or boat)
- k) Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)

[SECTION 2]

- l) Boating/sailing
- m) Hang gliding/parasailing
- n) Kite boarding
- o) Skim boarding
- p) Surfing (from board or kayak)
- q) Swimming or body surfing
- r) Windsurfing

[SECTION 3]

- s) Tide pooling
- t) Free diving/snorkeling (from shore, from boat)
- u) Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)
- v) SCUBA diving (from shore, from boat)
- w) Coastal tribal event (e.g., attendance at annual tribal celebrations)
- x) Other, please list: [TEXTBOX]

Q4. Please estimate how many trips you have made to Pacific coast of Washington in the **last 12 months that were primarily for ocean or coastal recreation** (e.g., beach going, wildlife viewing, surfing, kayaking, etc.). A trip is defined as an **intentional trip outside of daily routine**.

[NUMBER BOX; RANGE 1-365]

Q5. Mapping of coastal and ocean recreation activity locations

[MAPPING COMPONENT OF SURVEY]

In the mapping component the respondent will be presented with a navigable map of the coast (e.g., Google maps) and will be ask:

- 1) Navigate the map or use search function to zoom to the areas which they conducted ocean and coastal recreation activities in last 12 months.
 - a. The user can utilize a search function (similar to google maps) to zoom to specific areas
 - b. The user can zoom in and out and move the map around to navigate the map to specific areas
 - c. If the use zooms out to far and attempts to drop an activity marker they will be prompted to zoom further in.
- 2) For each activity point the user will be asked to associate one or more activity with the activity marker they place on the map

Information Page:

Now we'd like you to think about your **last trip** to the Pacific coast of Washington that was **primarily for recreation purposes**. A trip is defined as an **intentional trip outside of daily routine**. Based on this, we'd like you to answer the following questions.

Q6. Which of the following recreation activities did you participate in during your **last trip** to Pacific coast of Washington? Select all that apply.

[PLEASE SHOW OPTIONS IN ONE LIST BUT RANDOMIZE AND RECORD ORDER OF SECTIONS. DO NOT INSERT HEADER]

[SECTION 1]

- a) Beach going (sitting, walking, running, dog walking, kite flying, etc.)
- b) Beach driving
- c) Horseback riding
- d) Biking or hiking
- e) Collection of non-living resources/beachcombing (agates, beach glass, beach mining, driftwood)
- f) Camping
- g) Photography
- h) Scenic enjoyment/sightseeing
- i) Sitting in your car watching the scene
- j) Watching birds and/or other marine life from shore (e.g. whale or seal watching)
- k) Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)

[SECTION 2]

- l) Boating/sailing
- m) Hang gliding/parasailing
- n) Kite boarding
- o) Skim boarding
- p) Surfing (from board or kayak)
- q) Swimming or body surfing
- r) Windsurfing

[SECTION 3]

- s) Tide pooling
- t) Free diving/snorkeling (from shore, from boat)
- u) Kayaking or other paddling activity (canoe, stand up paddle board, Tribal canoe journey)
- v) SCUBA diving (from shore, from boat)
- w) Coastal tribal event (e.g., attendance at annual tribal celebrations)
- x) Other, please list: [TEXTBOX]

Q7. Of the coastal and ocean recreation activities you just selected, what was your **primary** recreational activity during your last trip to Pacific coast of Washington? The primary activity is typically the main activity that brought you to the coast on your trip.

[PLEASE SHOW ACTIVITIES SELECTED IN QUESTION Q6 and ONLY ALLOW THE SELECTION OF ONE PRIMARY ACTIVITY]

Q8. How many nights did you spend at the coast during your **last trip** to Pacific coast of Washington?
[DROP DOWN BOX, RANGE: 0-4, 5+]

Q9a. During your **last trip** to the Pacific coast of Washington, please indicate if your party spent money on the following items.

- a. Parking
- b. Car fuel
- c. Airline flight
- d. Food and beverages from a store
- e. Food and beverages at a restaurant or bar
- f. Shopping and souvenirs (t-shirts, posters, gifts, etc.)
- g. Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)
- h. Car rental
- i. Dive equipment rental and airfills
- j. Equipment rental (Surfboard, bike, kayak, stand up paddle, etc.)
- k. Lodging (if you stayed overnight)
- l. Charter fee (whale watching, etc.)
- m. Park entrance, museum, aquarium, or other entrance fee
- n. Lessons, clinics, camps
- o. Other, please list **[TEXTBOX; PROMPT ONCE IF SELECTED BUT TEXT IS NOT ENTERED]**

Q9b. During your **last trip** to the Pacific coast of Washington, please estimate how much money **your party** spent on the following items and the number of people it covered.

[For Q9b show indicated expenditures from Q9a]

[GRID, NUMBER BOXES]

[All responses are required to be filled in]

Expense item	Cost: [NUMBER BOX, , RANGE IS 0-10000]	# of people covered
e) Parking		
f) Car fuel		
g) Food or beverage from a store		
h) List continues based on selection in Q9a...		

Information Page:

We have just a few more questions for you. Please keep in mind that your answers are confidential and your personal information will be kept private. The following questions are optional, you may skip any particular question by simply clicking 'continue'.

D1. Are you...?

- Male 1
- Female 2

D2. What is the highest level of school you have completed?

- No formal education..... 1
- Less than high school..... 2
- High school 3
- Some college..... 4
- Bachelor’s degree or higher..... 5

Please indicate what you consider your racial background to be. We greatly appreciate your effort to describe your background using the standard categories provided. These race categories may not fully describe you, but they do match those used by the Census Bureau. It helps us compare our survey respondents to the U.S. population.

D3. Please check one or more categories below to indicate what race(s) you consider yourself to be.

- White 1
- Black or African American..... 2
- Hispanic, Spanish, or Latino 3
- American Indian or Alaska Native..... 4
- Asian/Pacific Islander..... 5
- Other 6

D4. What was your total HOUSEHOLD income in the past 12 months?

- Less than \$25,000 1
- \$25,000 to \$49,999..... 2
- \$50,000 to \$74,999..... 3
- \$75,000 to \$99,999..... 4
- \$100,000 to \$124,999..... 5
- \$125,000 to \$149,999 6
- \$150,000 to \$174,999..... 7
- \$175,000 to \$199,000..... 8
- \$200,000 or greater 9
- Don’t know 10

QFEEDBACK. To help us improve future surveys, would you agree that the mapping portion of this survey easy to understand and use?

- Strongly Agree.....1
- Somewhat Agree.....2
- Neither Agree nor Disagree.....3
- Somewhat Disagree.....4
- Strongly Disagree.....5

QCOMMENTS. To help us improve future surveys, please provide any comments or feedback you may have that will help us improve this survey. Was there a specific section of the survey that you had trouble understanding? What would make it easier?

[ENDDISPLAY]

Thank you so much for participating in our survey. We appreciate your help and input!

POINT 97



An Economic and Spatial Baseline of Coastal Recreation in Washington

MAP APPENDIX

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Appendix C: Coastal Recreation Map Products for the Panel Survey

This appendix presents Washington Coast recreation maps informed by the activity markers placed by the respondents to our recreational panel survey. As described in final report, survey respondents provided information by placing a point or marker on a map and then indicated which activity or activities they conducted at each specific location on their last trip. Respondents also provided information on:

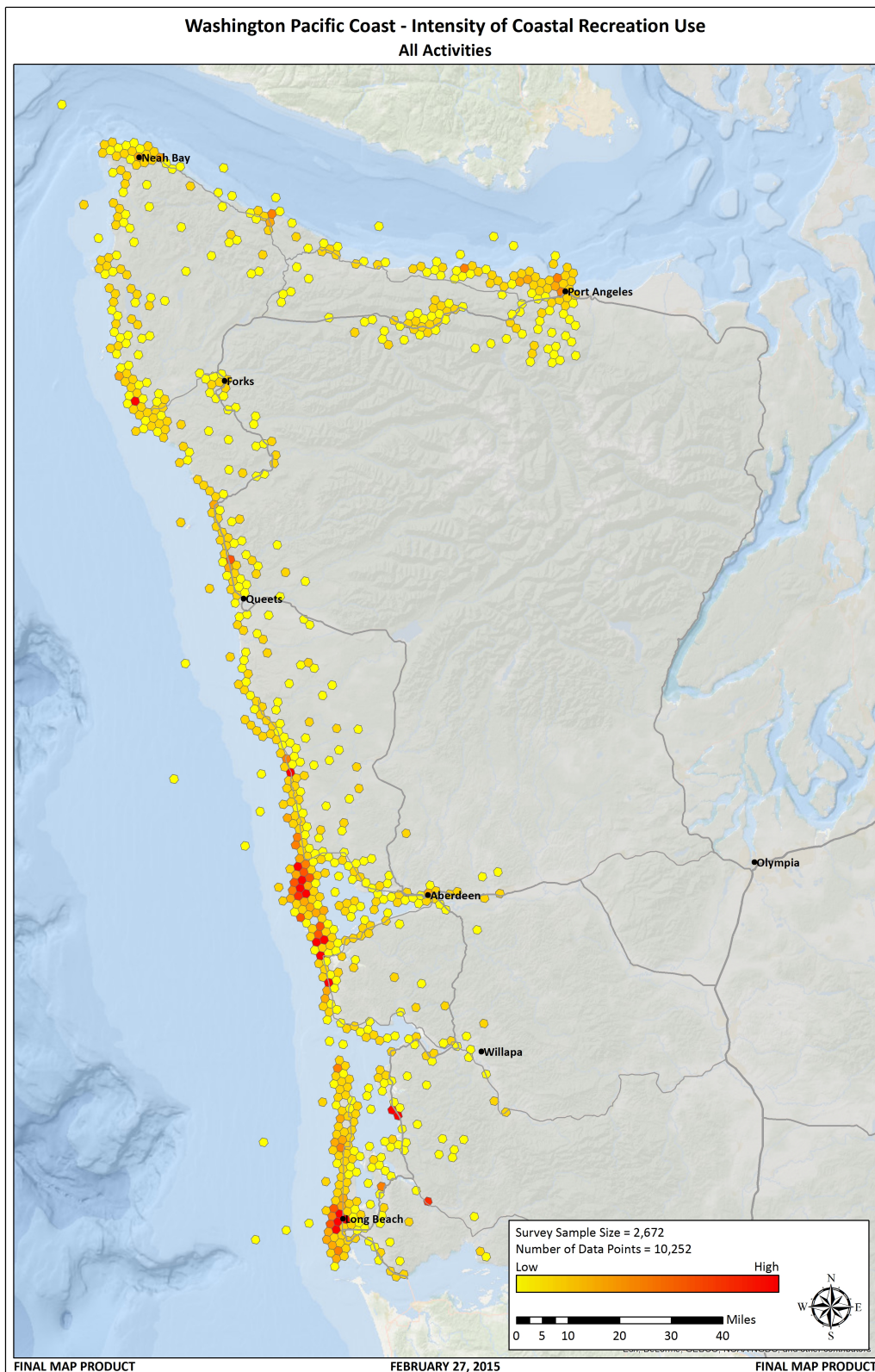
- The number of people on the trip with them;
- The number of recreation-based trips they have taken to the Pacific coast of Washington in the last 12 months;
- The primary recreation activity of their last trip;
- Trip expenditures on their last trip; and
- Using 100 pennies weighting the important of primary activity locations on their last trip.

To create the intensity of trip expenditures maps the trip expenditures of a respondent's last trip was spread across their primary activity locations using the 100 pennies allocation. These data were then extrapolated to the Washington state resident population to create the following data sets to display the intensity of recreational use and trip expenditures. The spatial data are a combined set across all survey waves accounting for seasonal variations in coastal recreation.

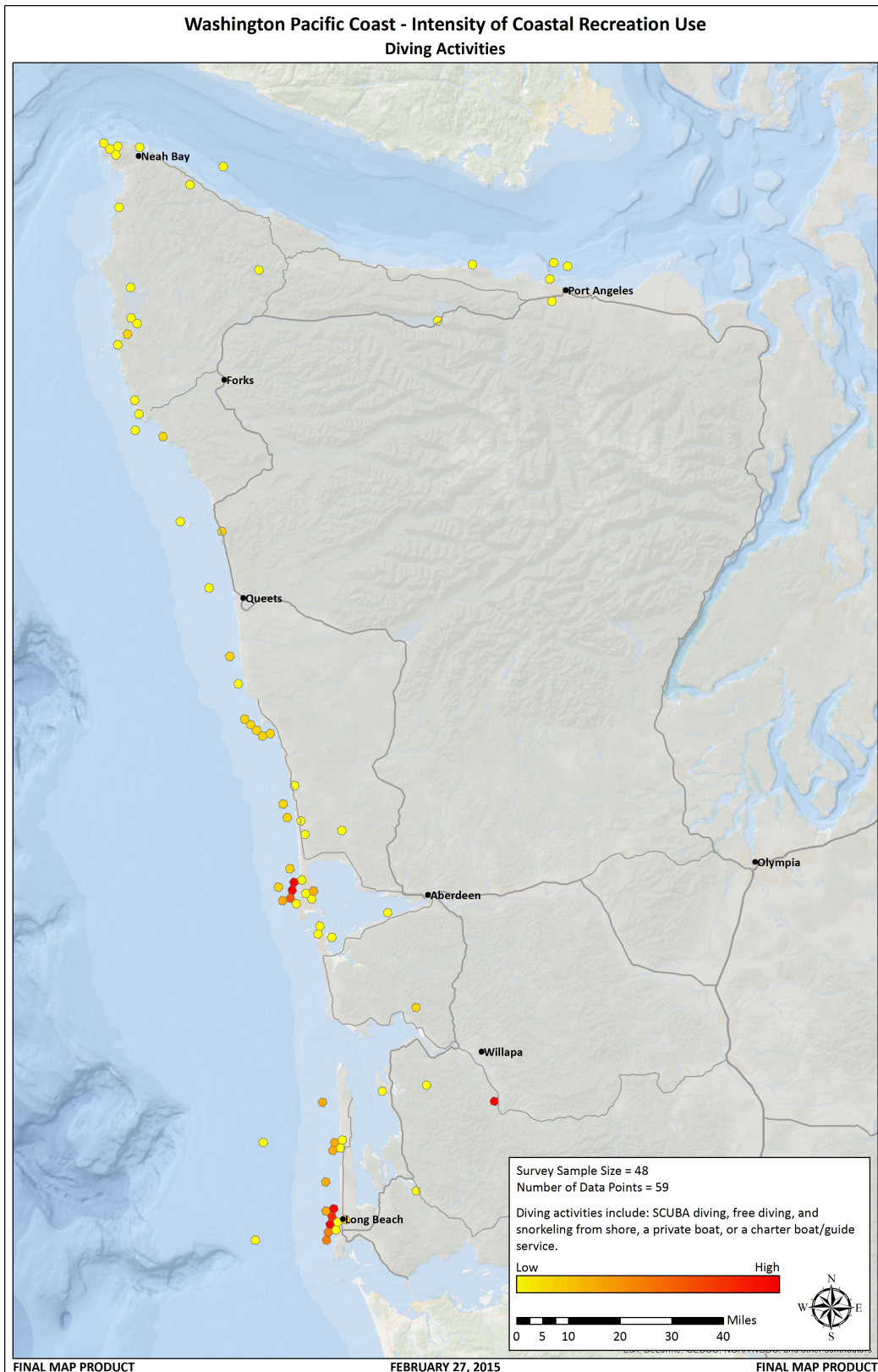
There are three sets of maps:

- The Grouped Activities section shows the Intensity of Use (person-trips) for all activities together and for grouped activity types;
- The Individual Activities-Intensity of Use section shows patterns of intensity for the top ten individual activities; and
- The Individual Activities-Intensity of Trip Expenditures section show patterns of trip expenditures for all and the top ten individual activities.

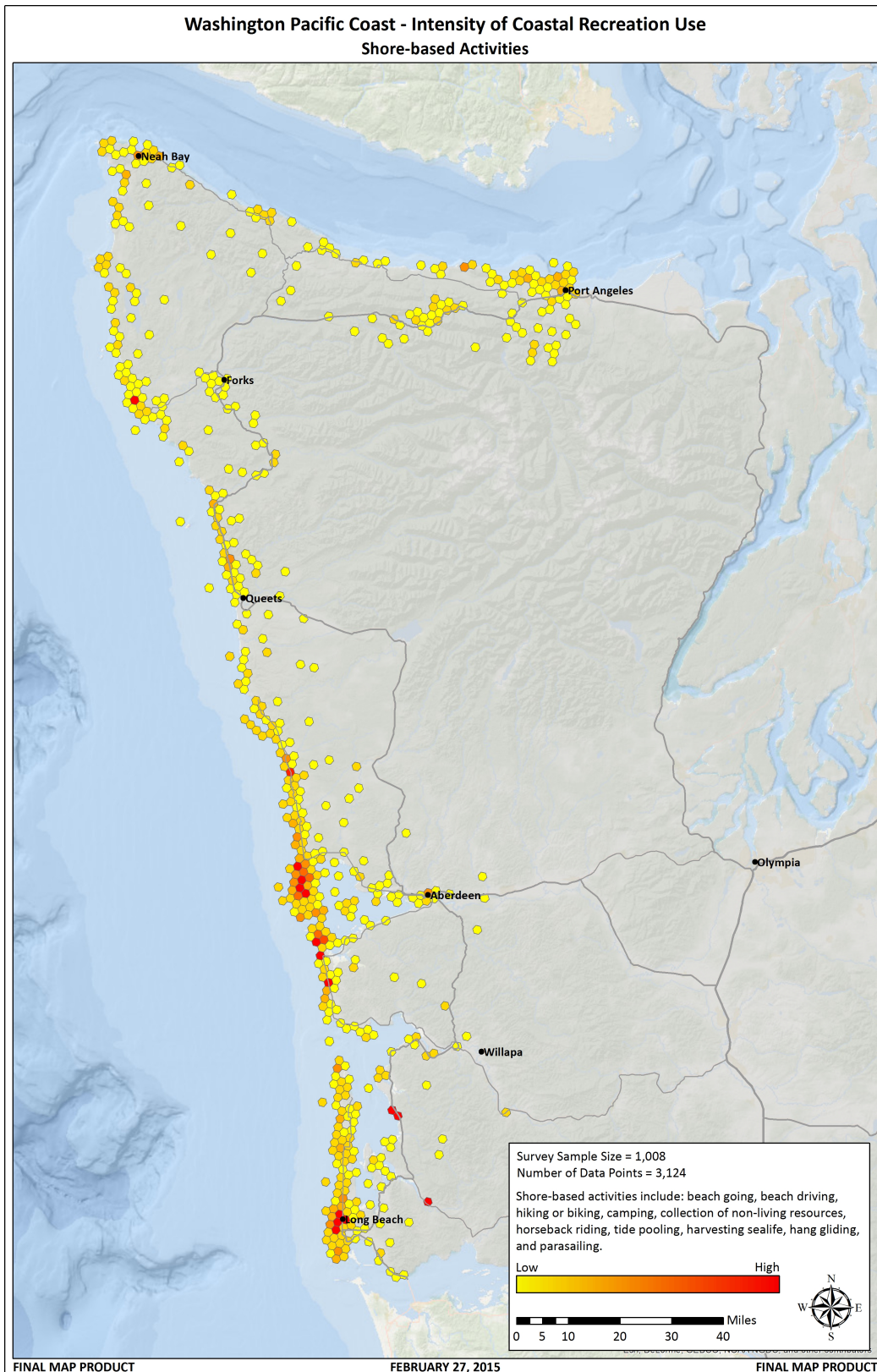
PANEL SURVEY - GROUPED ACTIVITIES



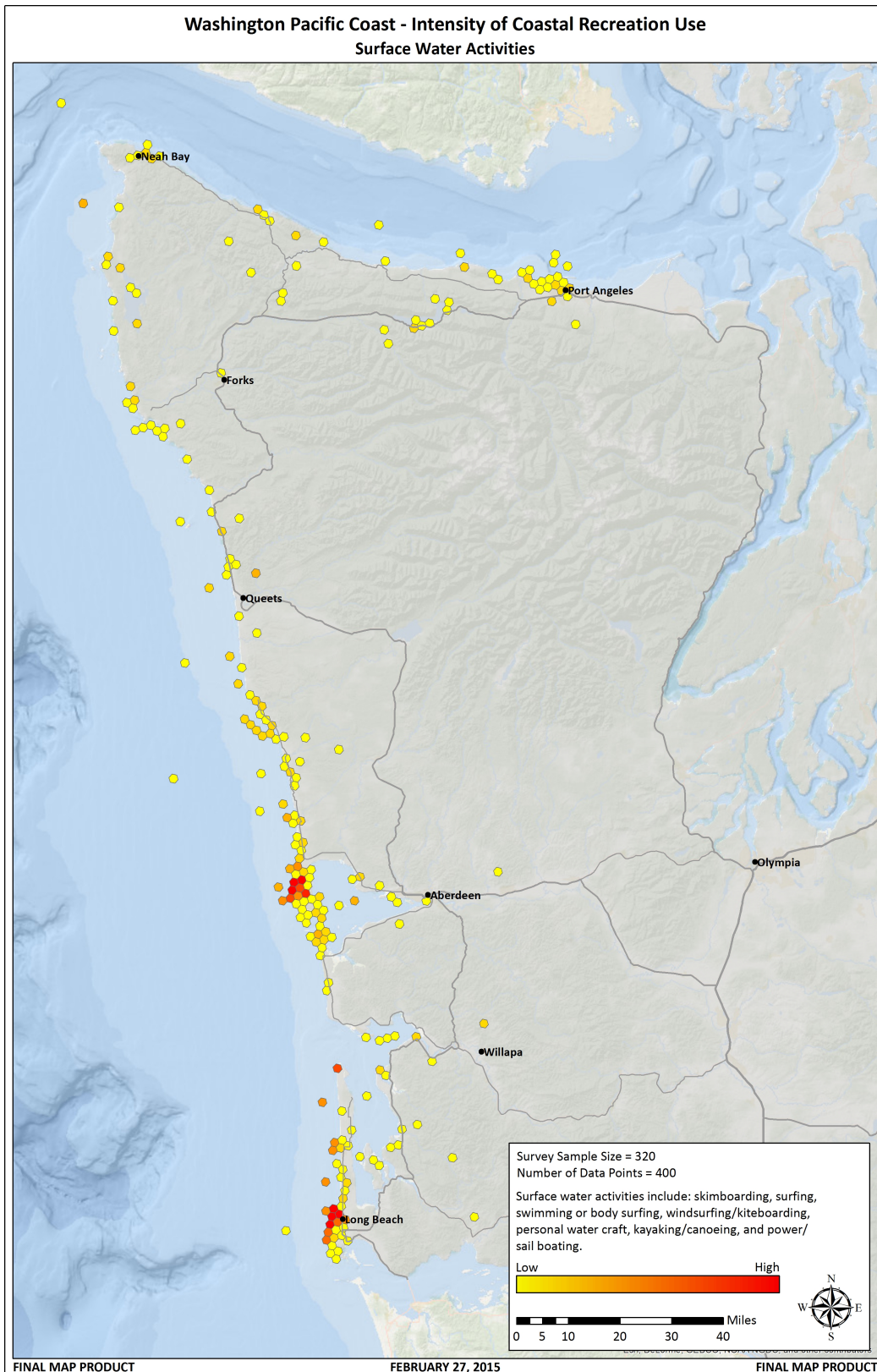
Map 1. Intensity of Use (person-trips) - all activities



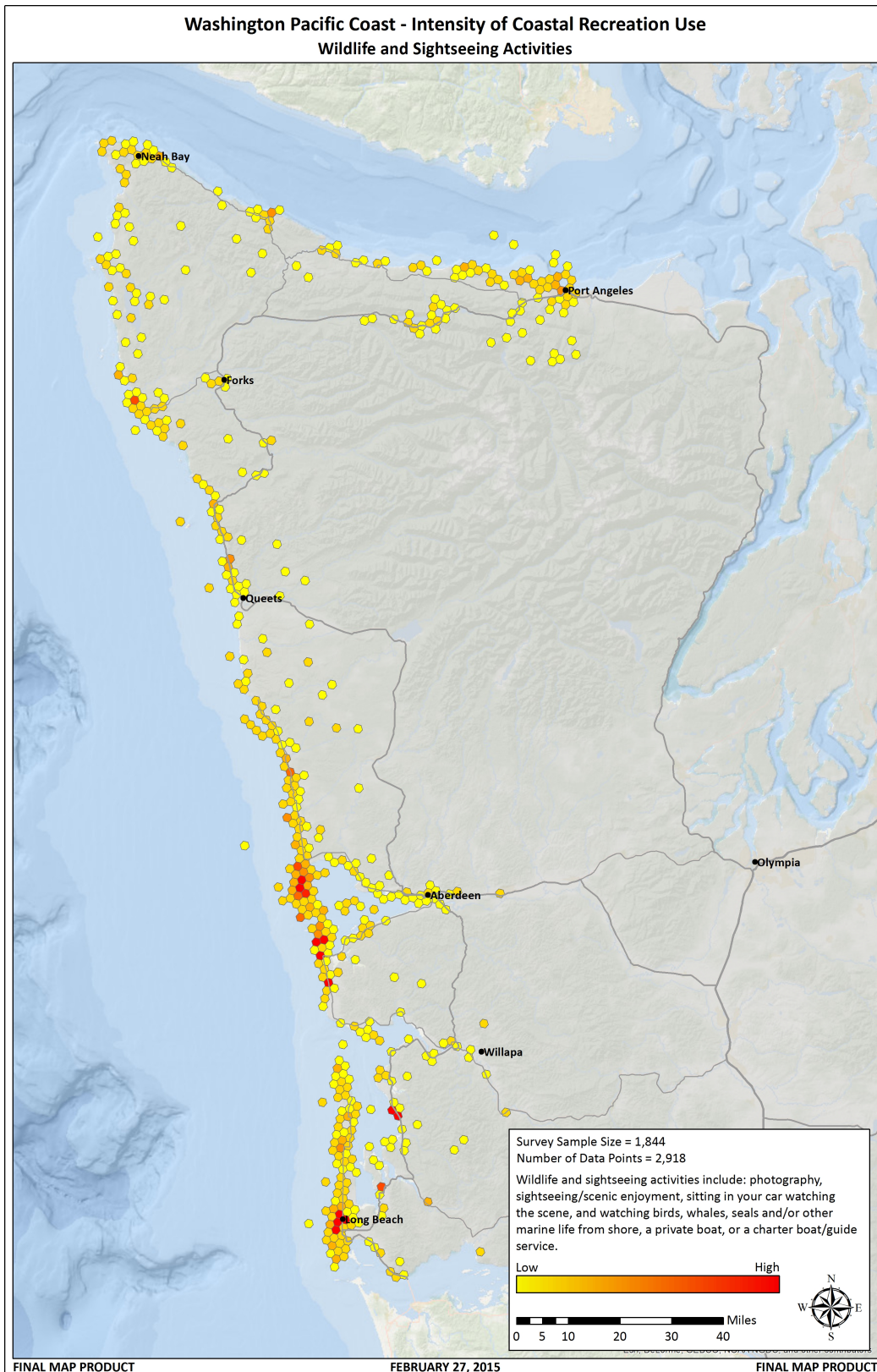
Map 2. Intensity of Use (person-trips) - grouped diving activities



Map 3. Intensity of Use (person-trips) - grouped shore-based activities

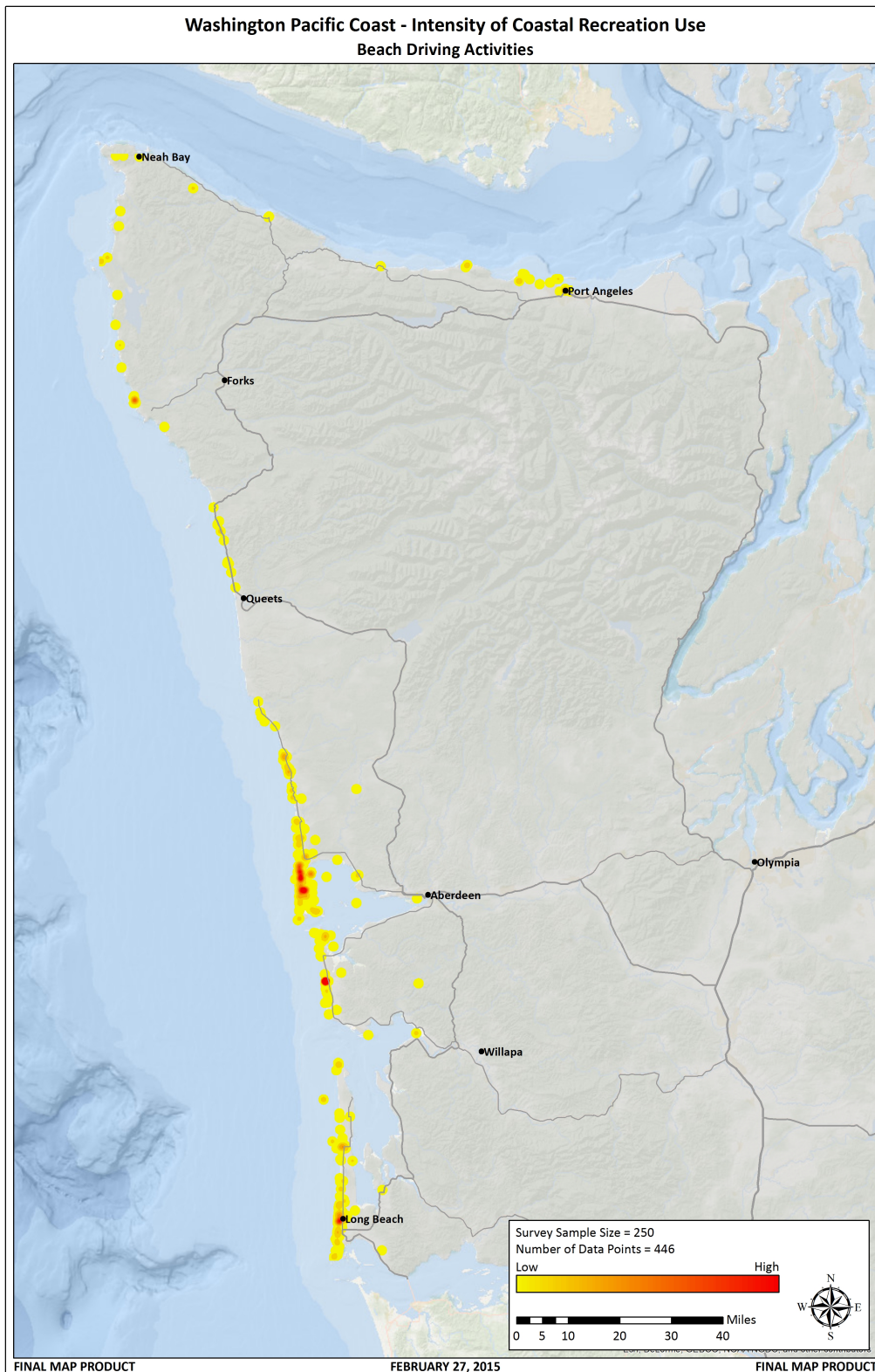


Map 4. Intensity of Use (person-trips) - grouped surface water activities

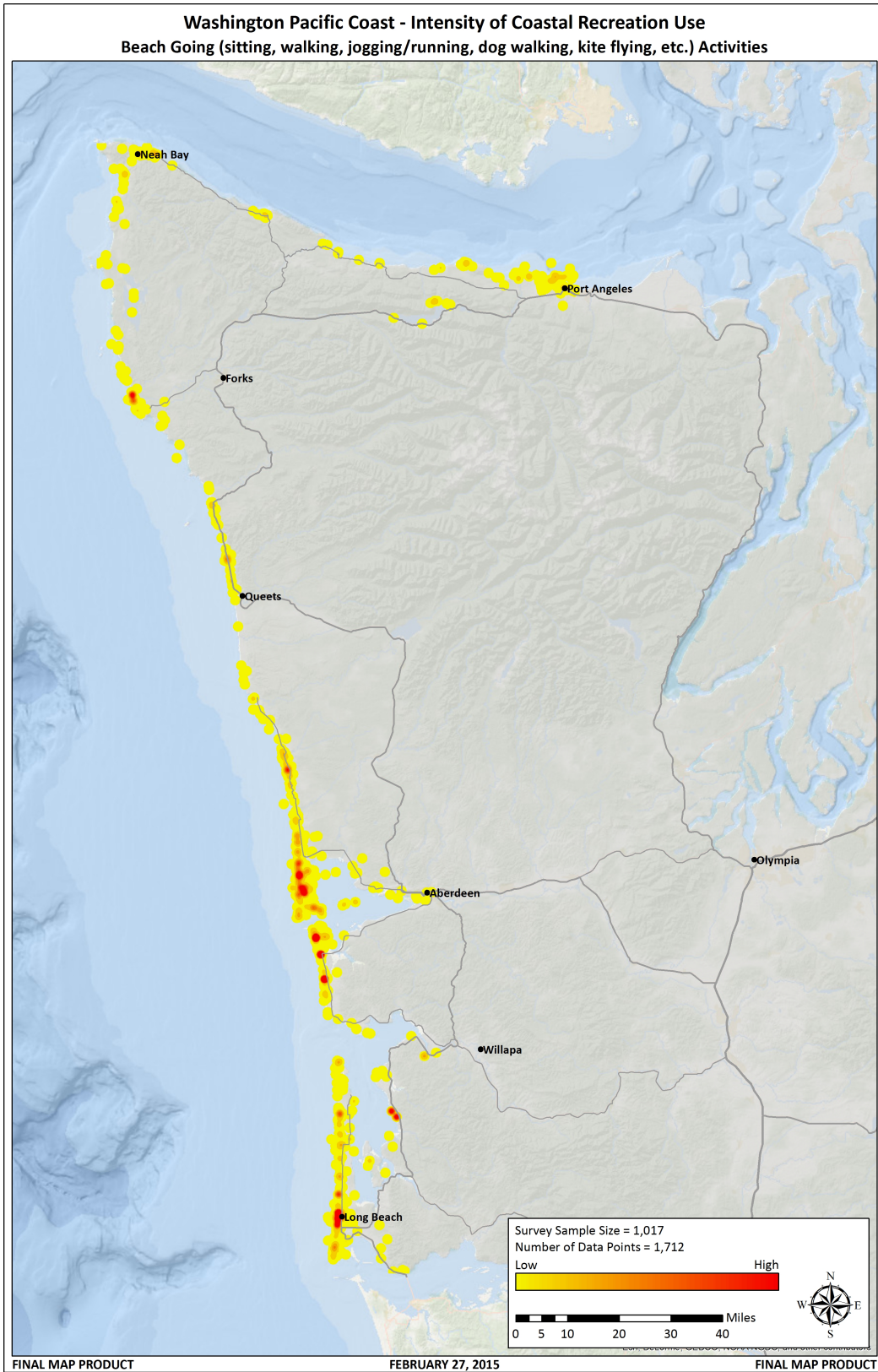


Map 5. Intensity of Use (person-trips) - grouped wildlife and sightseeing activities

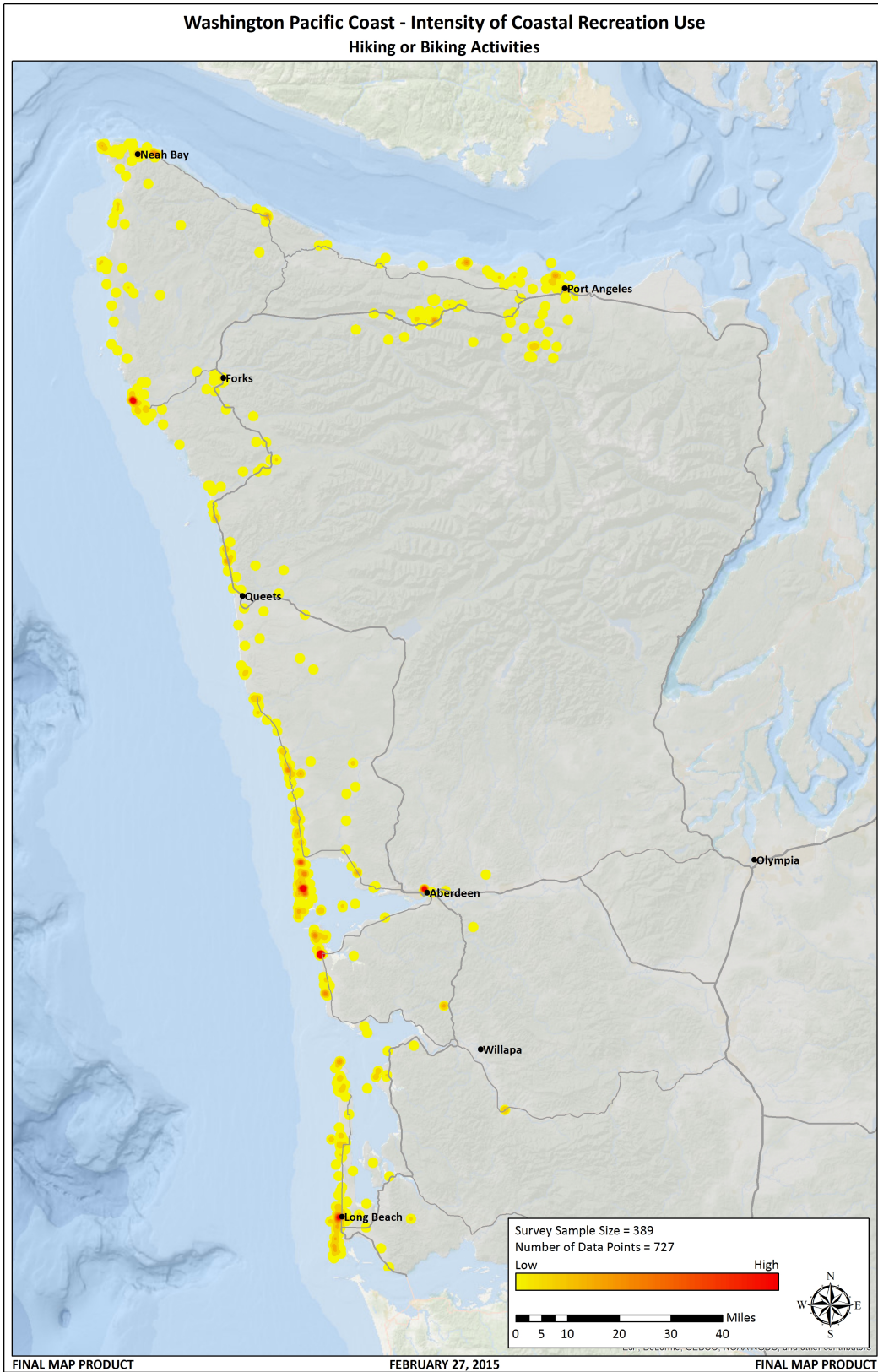
PANEL SURVEY – INDIVIDUAL ACTIVITIES – INTENSITY OF USE



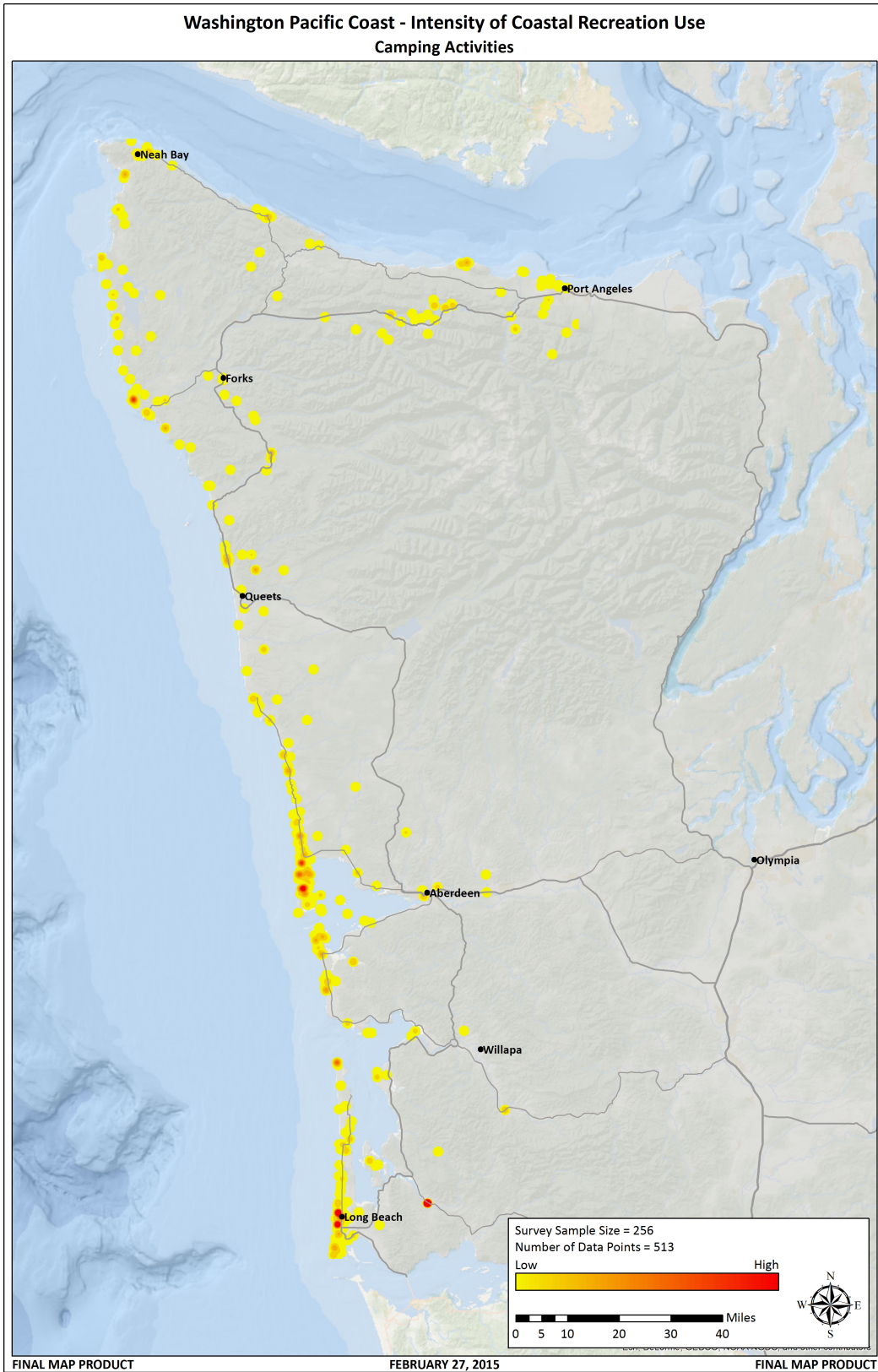
Map 6. Intensity of Use (person-trips) - beach driving



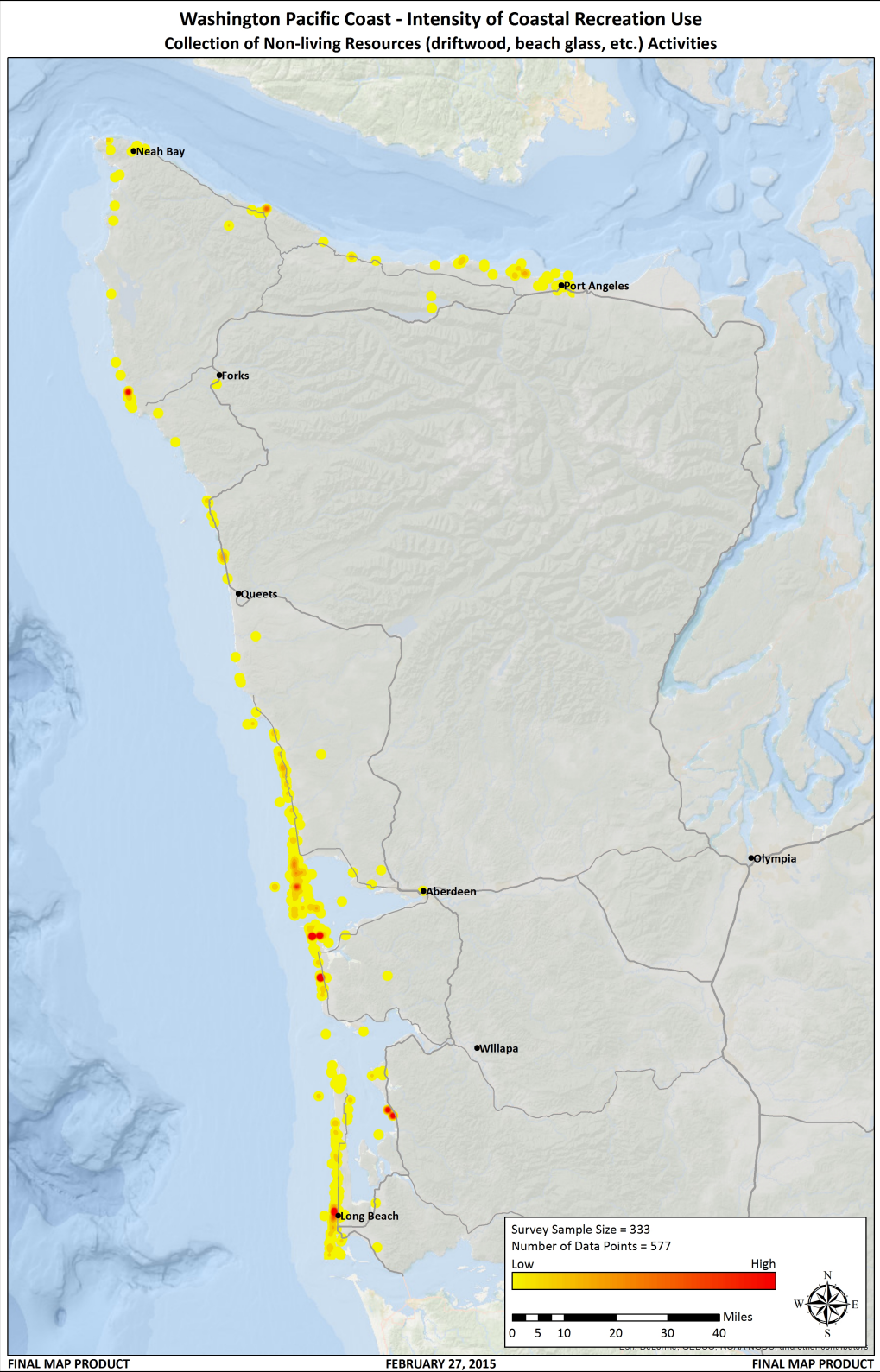
Map 7. Intensity of Use (person-trips) – beach going



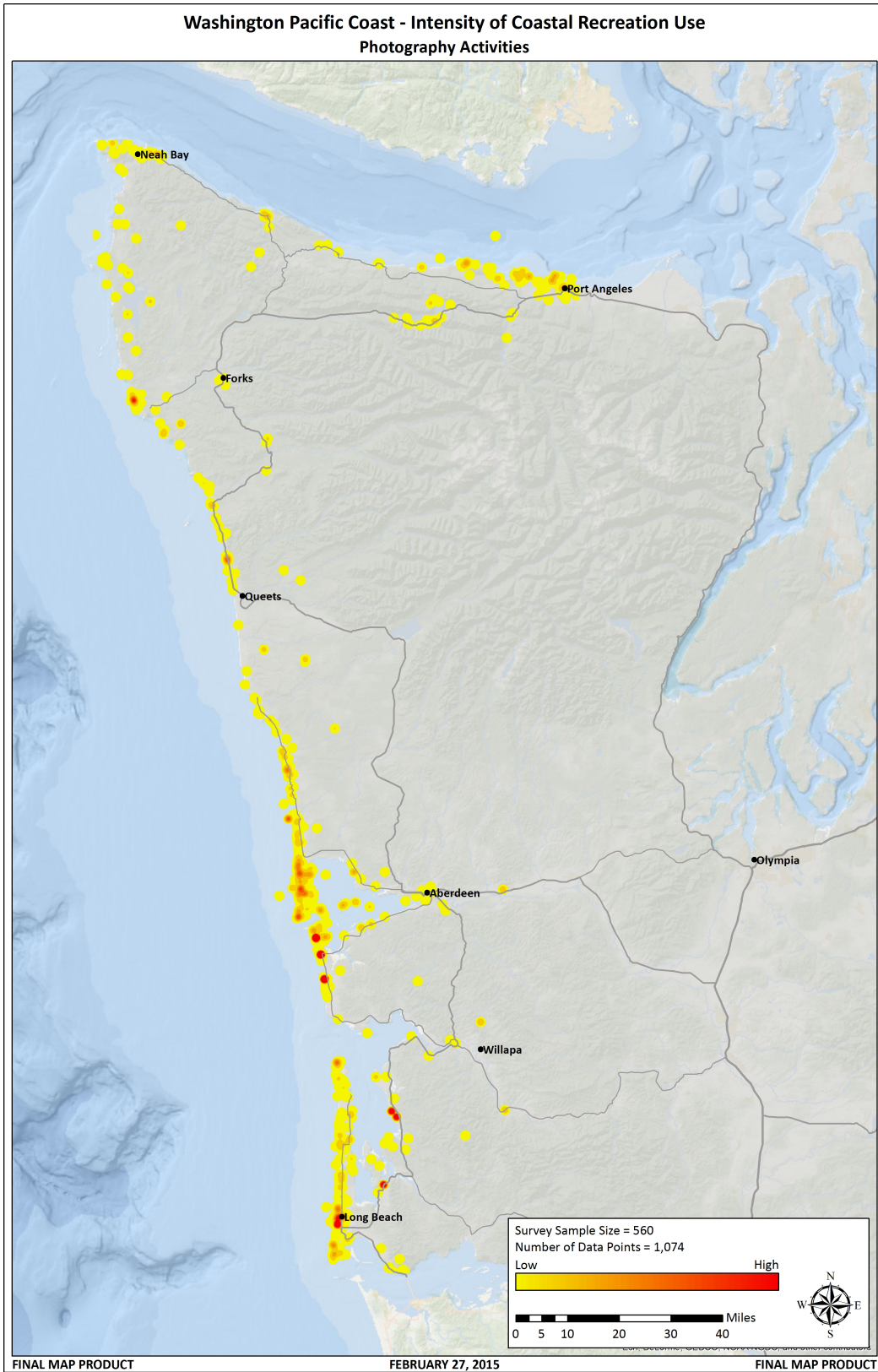
Map 8. Intensity of Use (person-trips) – hiking or biking



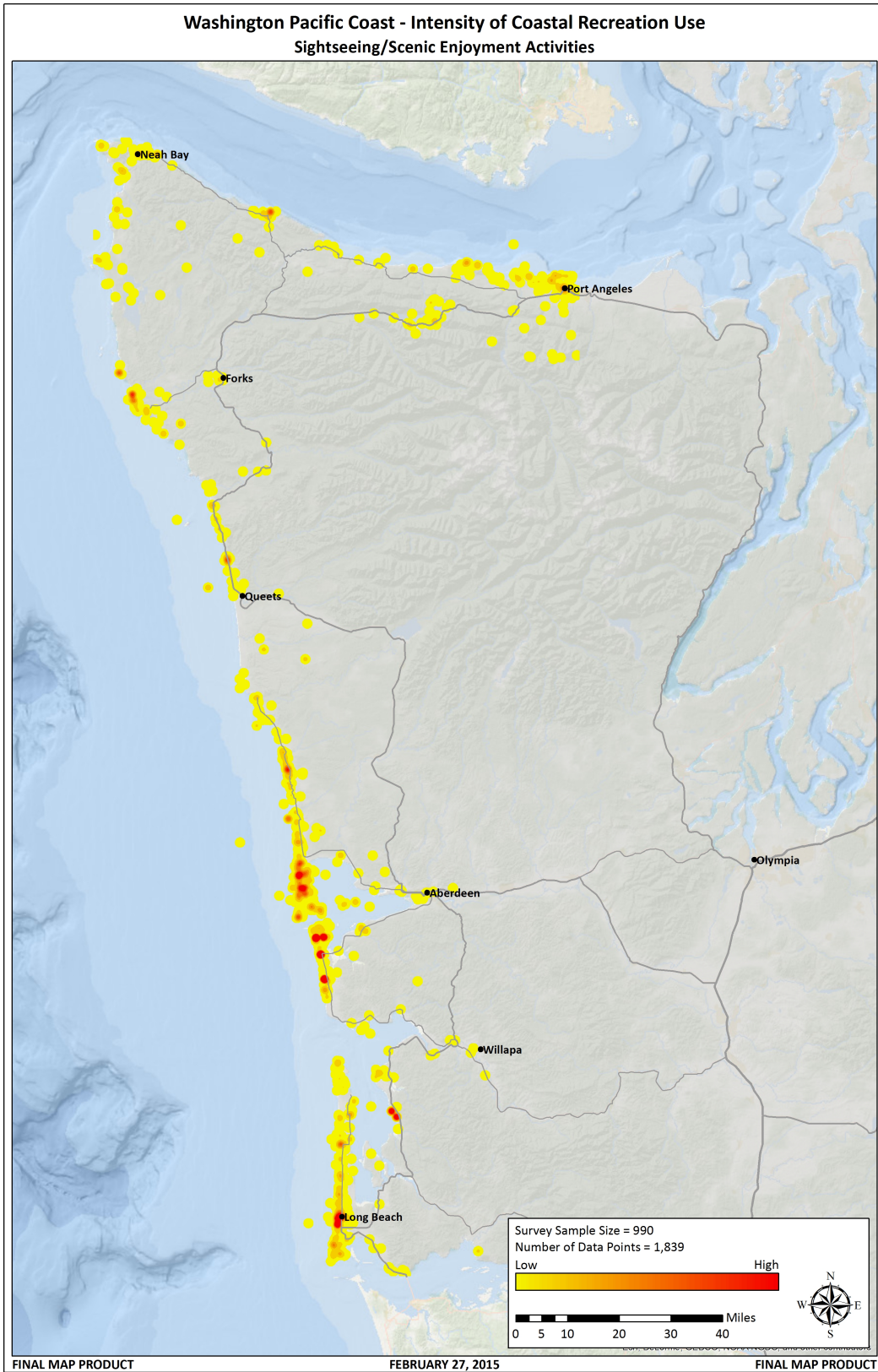
Map 9. Intensity of Use (person-trips) – camping



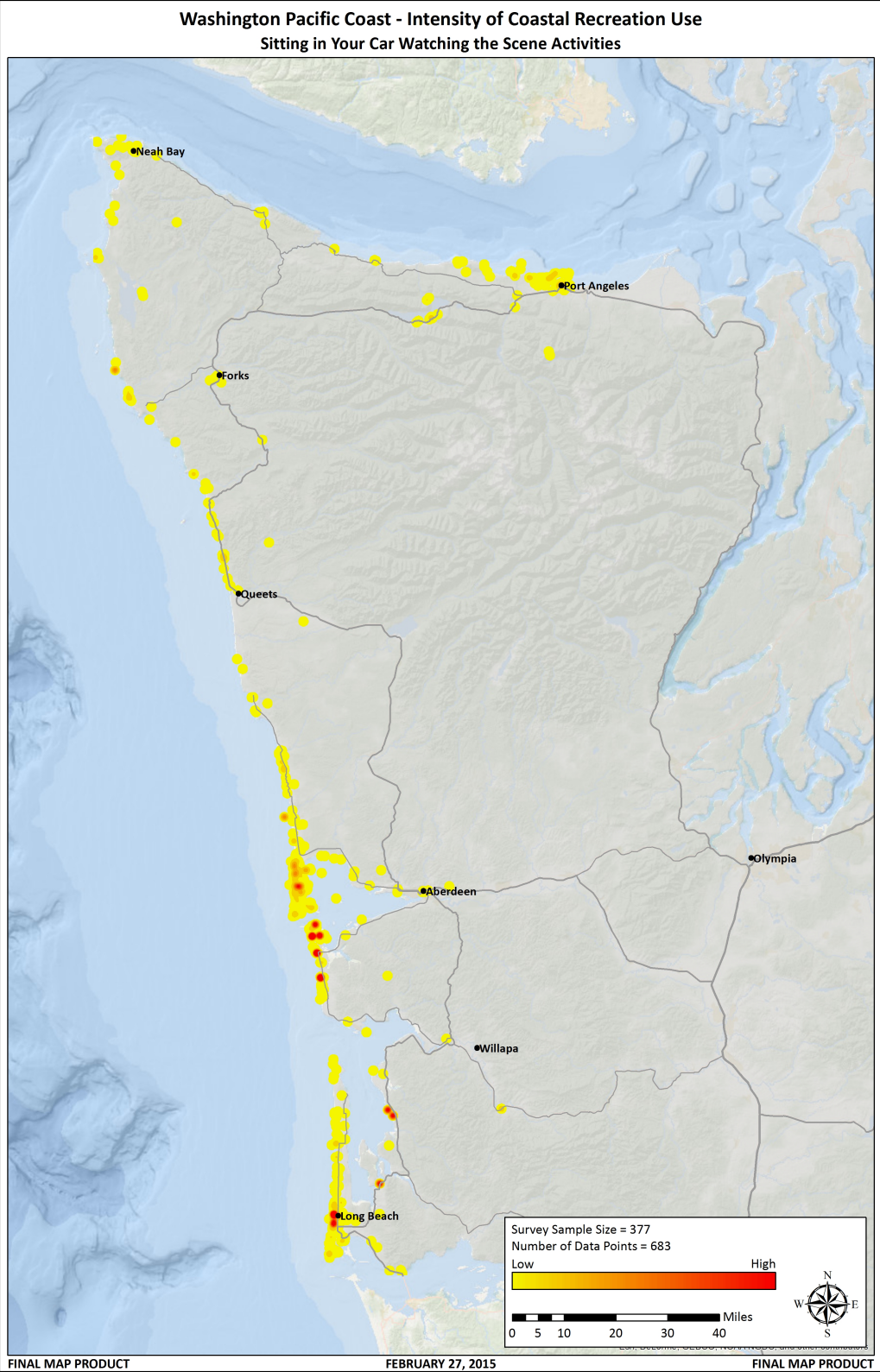
Map 10. Intensity of Use (person-trips) – collection of non-living resources



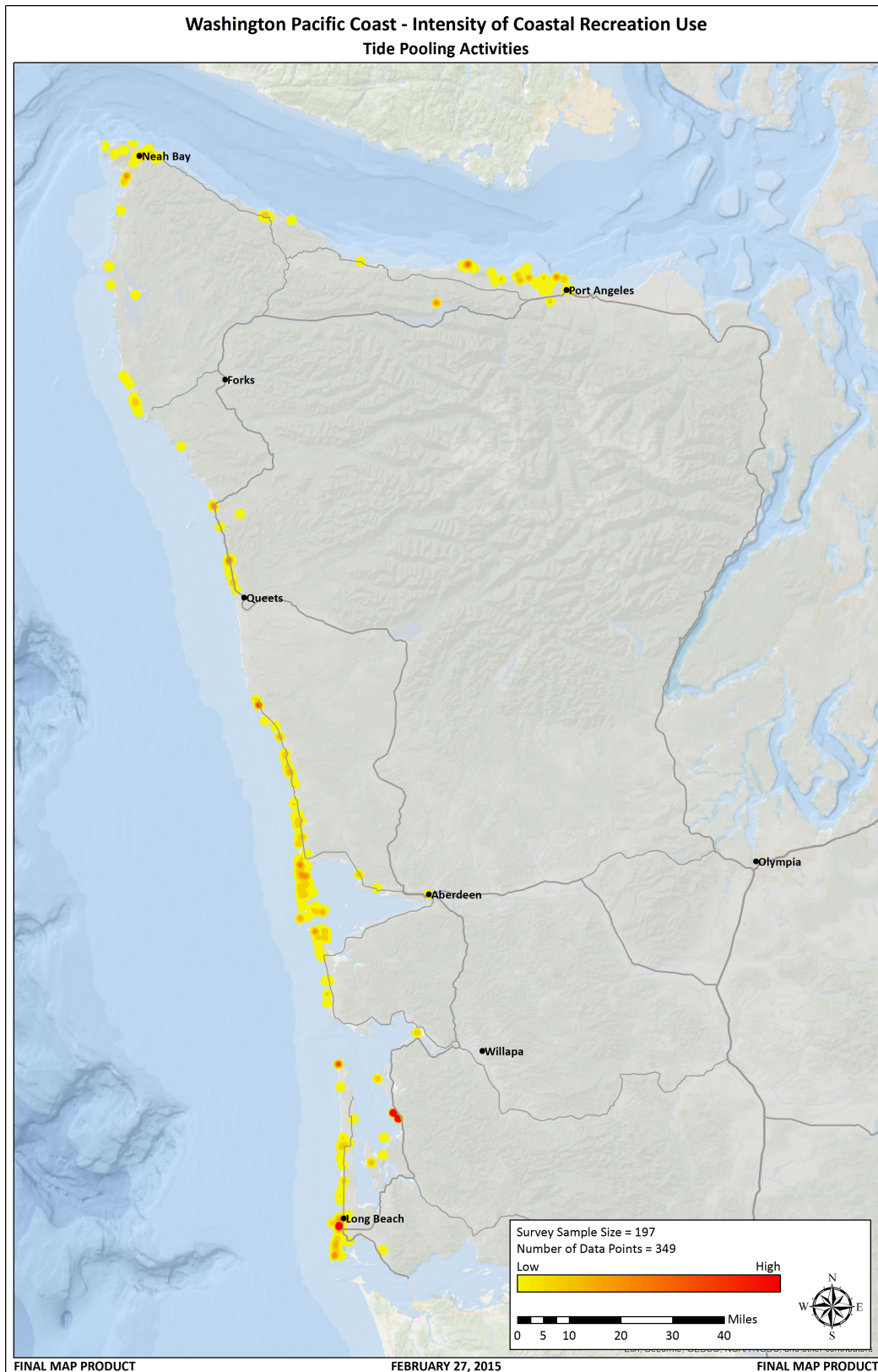
Map 11. Intensity of Use (person-trips) – photography



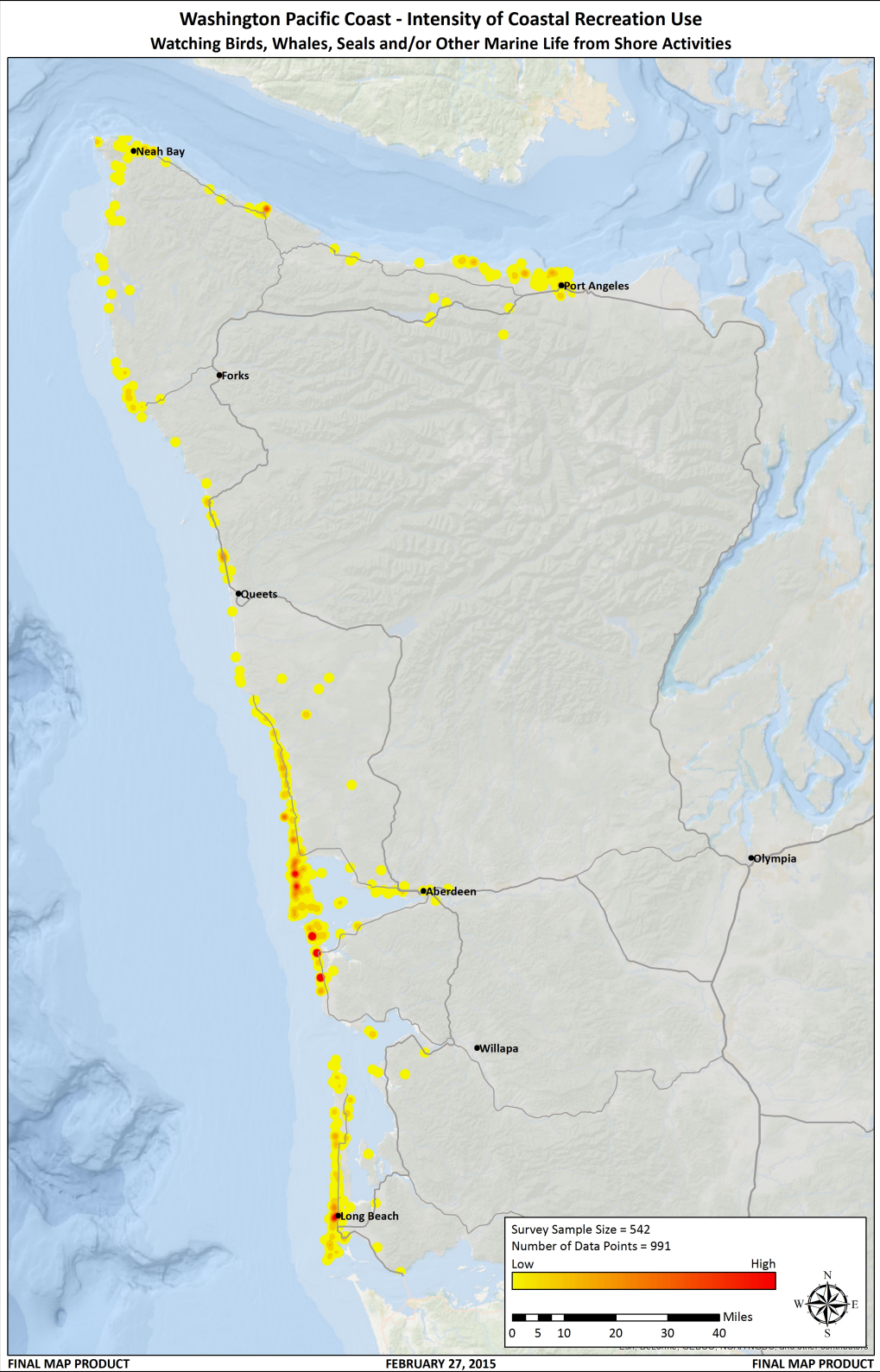
Map 12. Intensity of Use (person-trips) – sightseeing



Map 13. Intensity of Use (person-trips) – sitting in your car, watching the scene

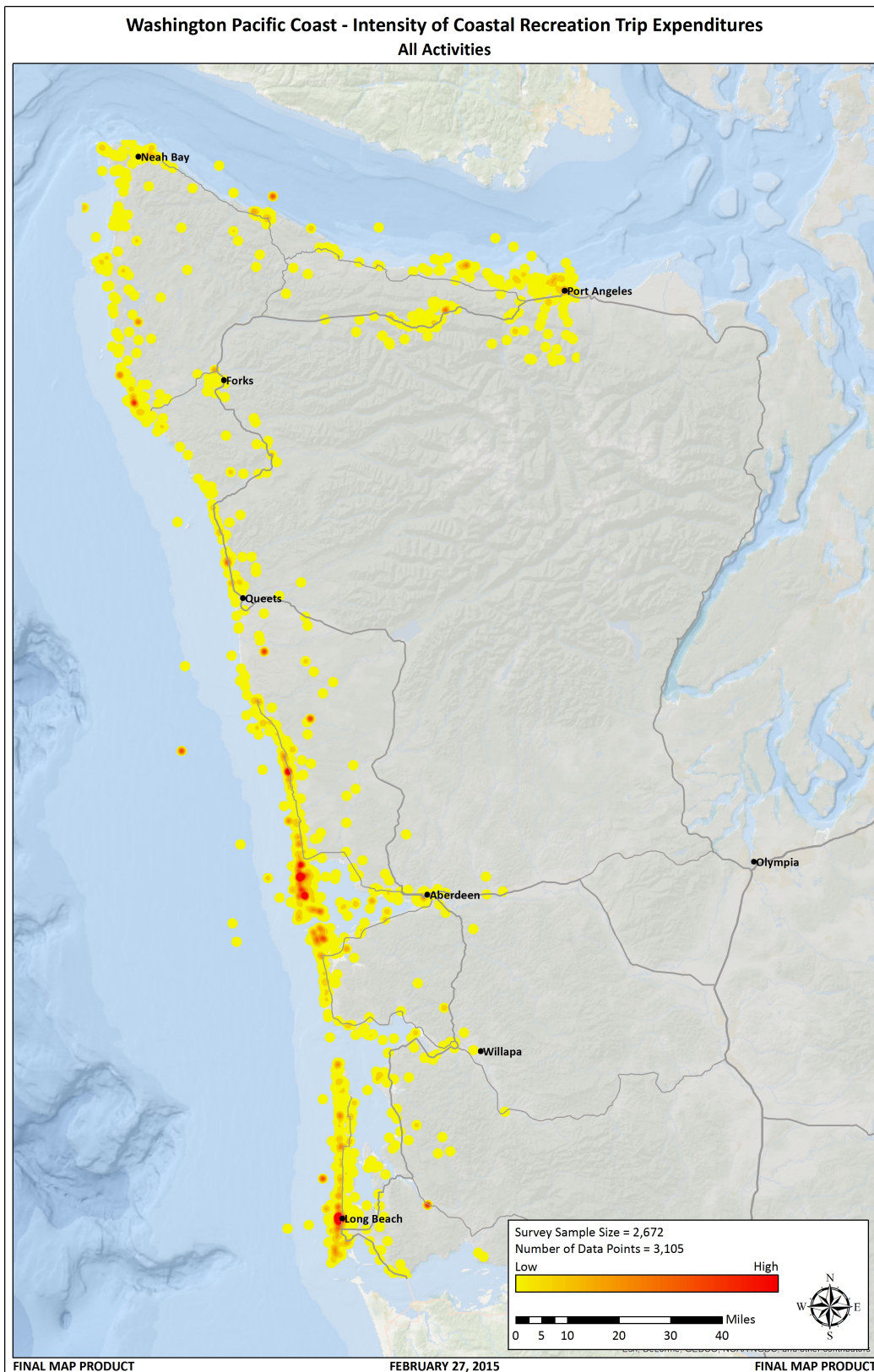


Map 14. Intensity of Use (person-trips) – tide pooling

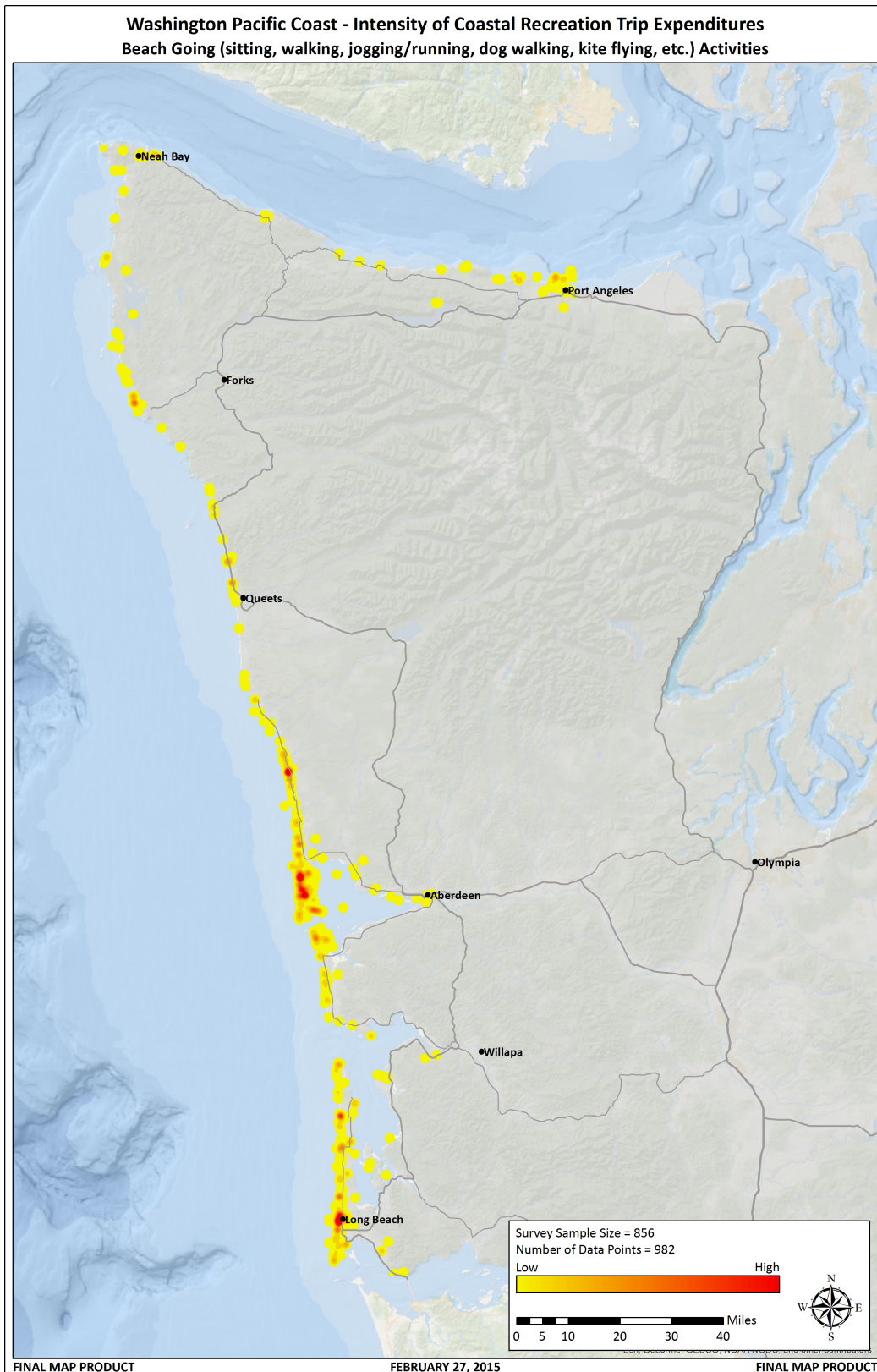


Map 15. Intensity of Use (person-trips) – wildlife viewing from shore

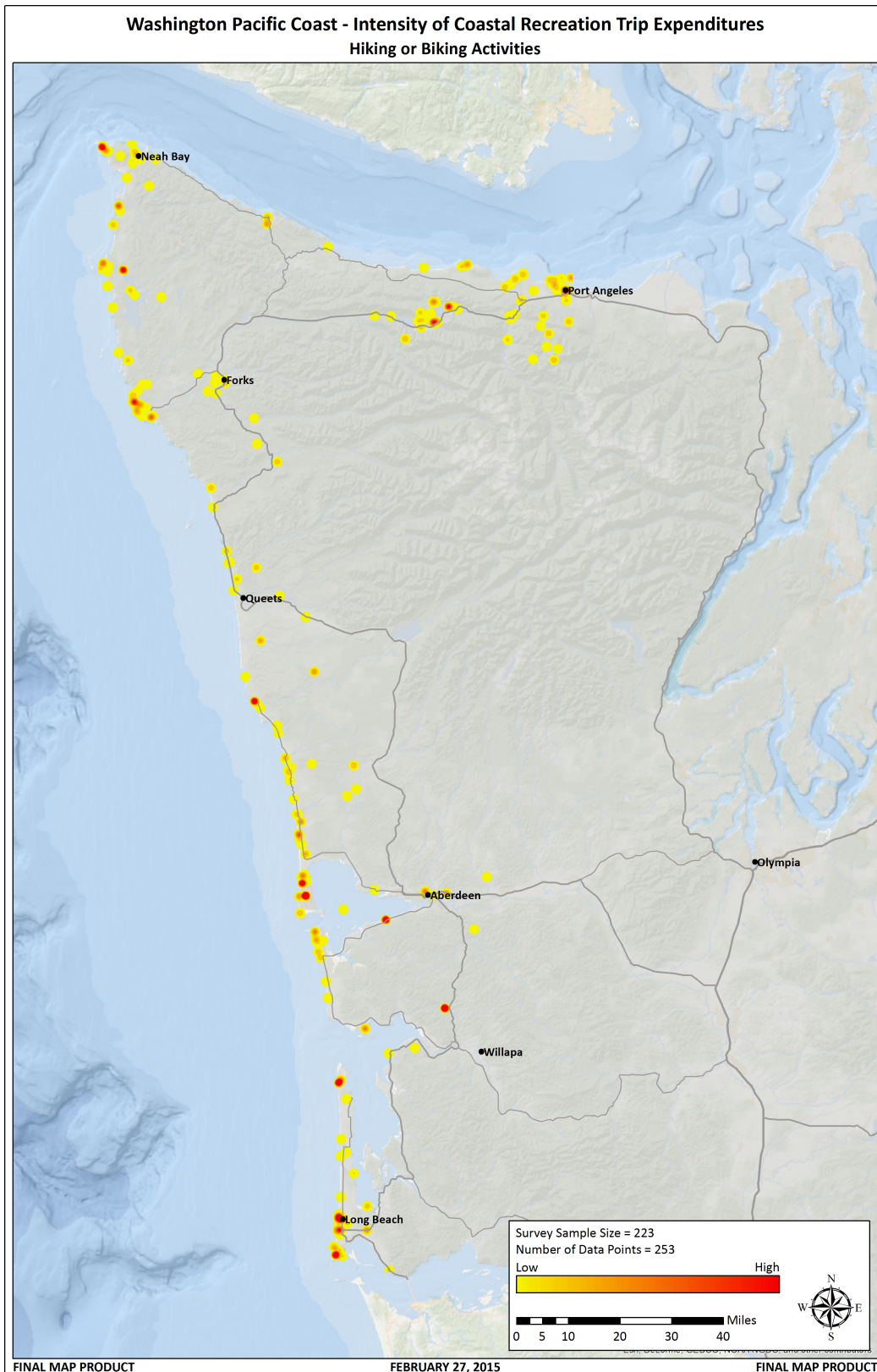
PANEL SURVEY – INDIVIDUAL ACTIVITIES – INTENSITY OF TRIP EXPENDITURES



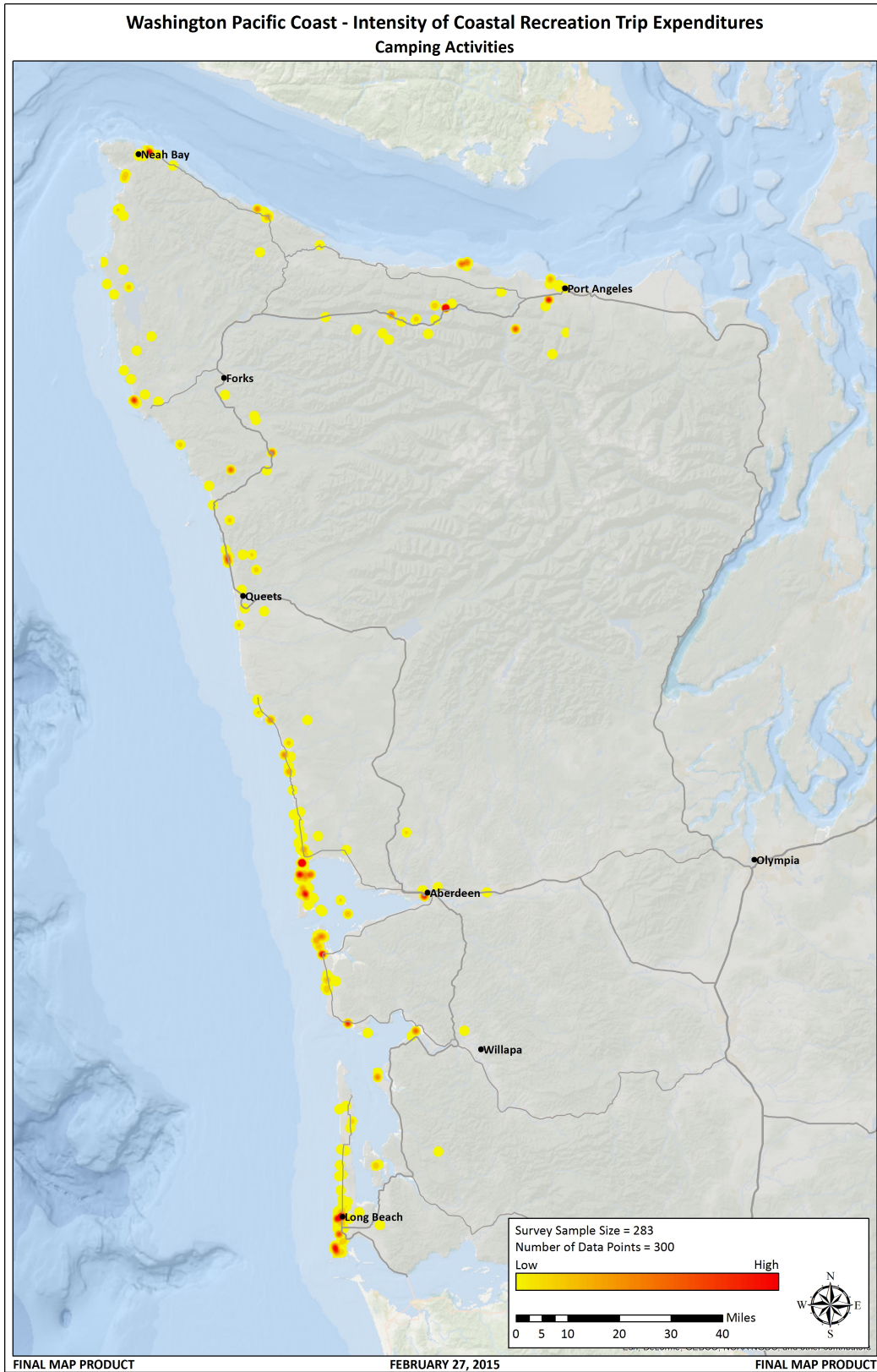
Map 16. Intensity of trip expenditures – all activities



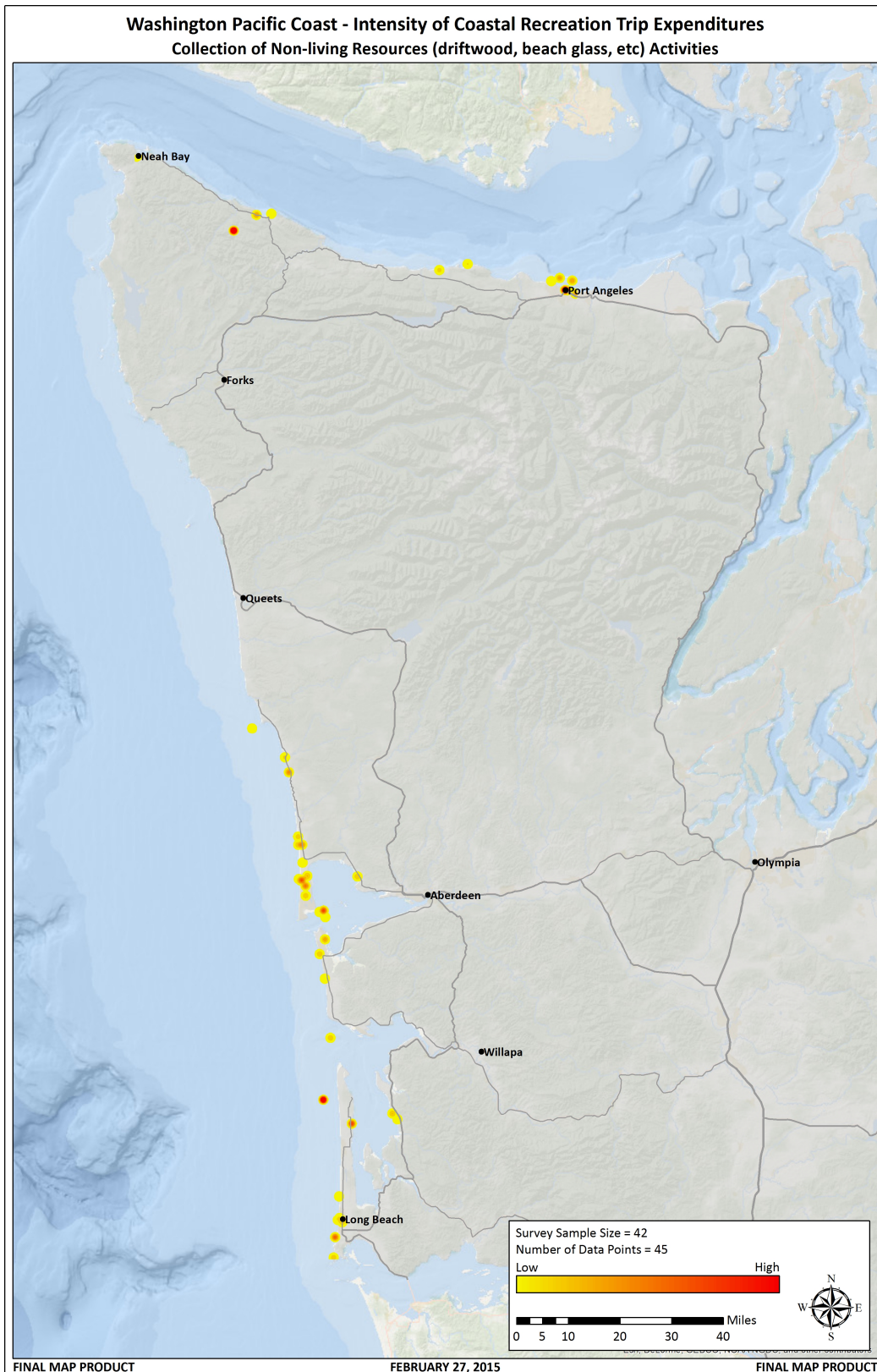
Map 17. Intensity of trip expenditures – beach going



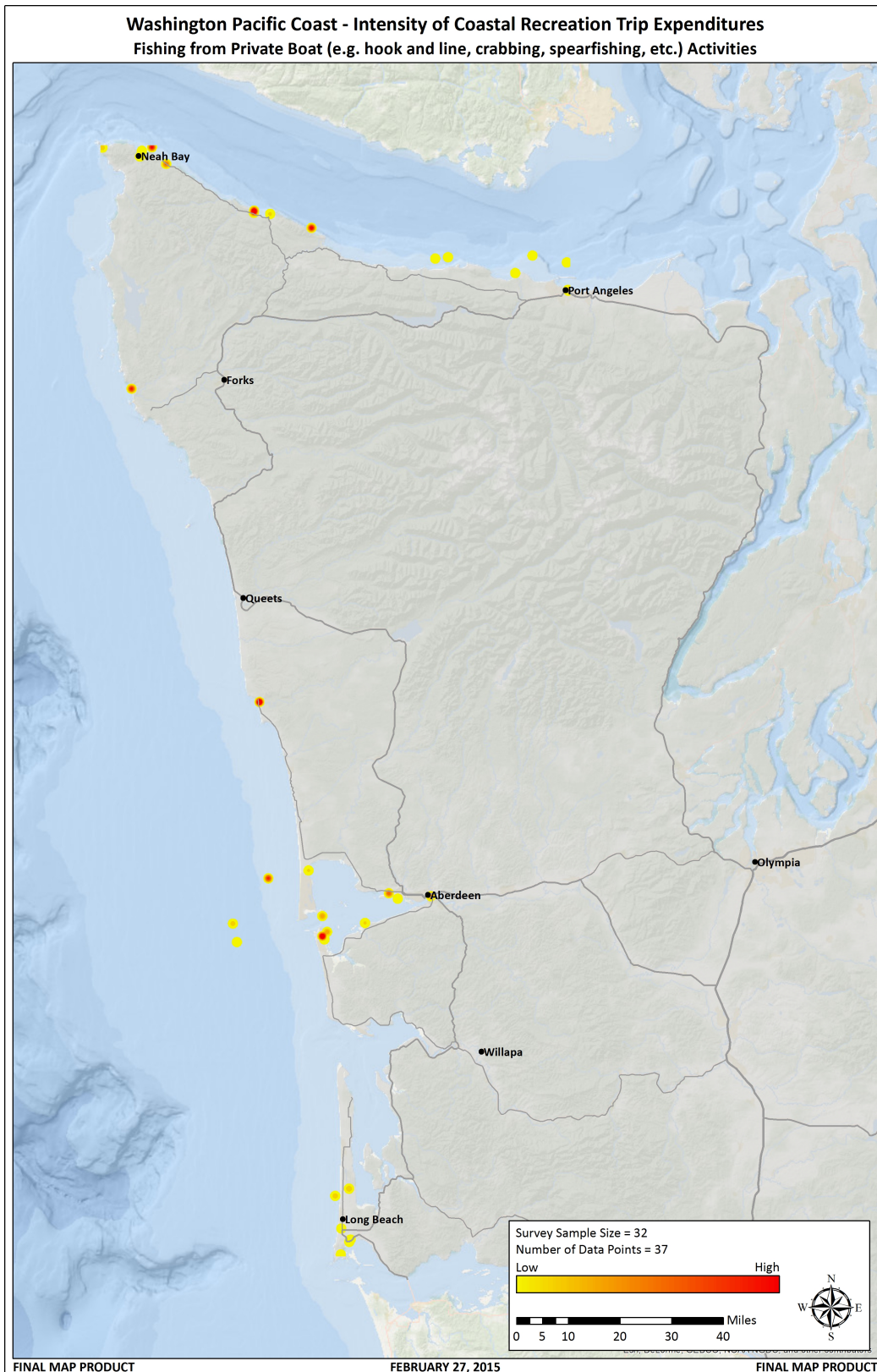
Map 18. Intensity of trip expenditures – hiking or biking



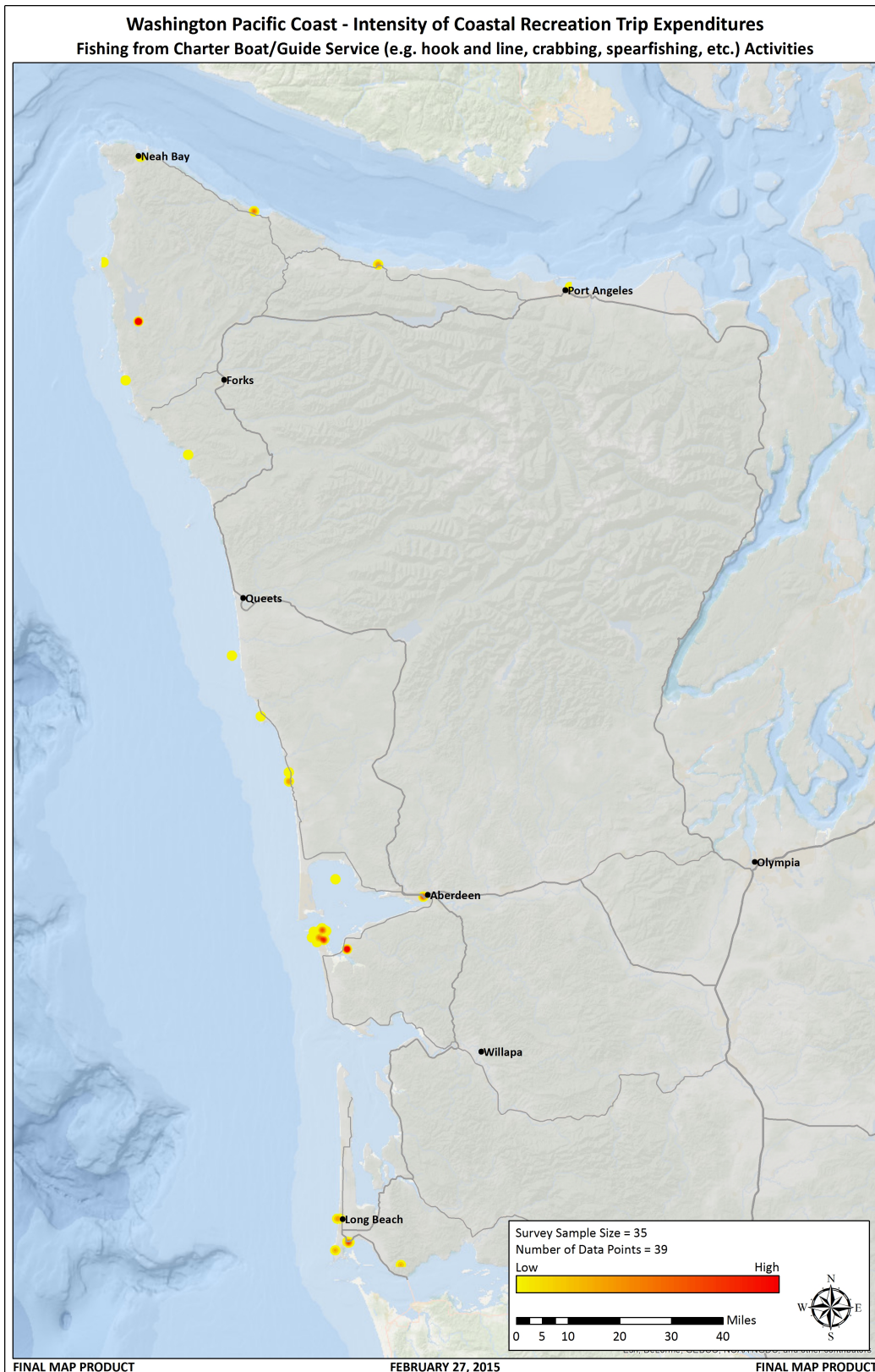
Map 19. Intensity of trip expenditures – camping



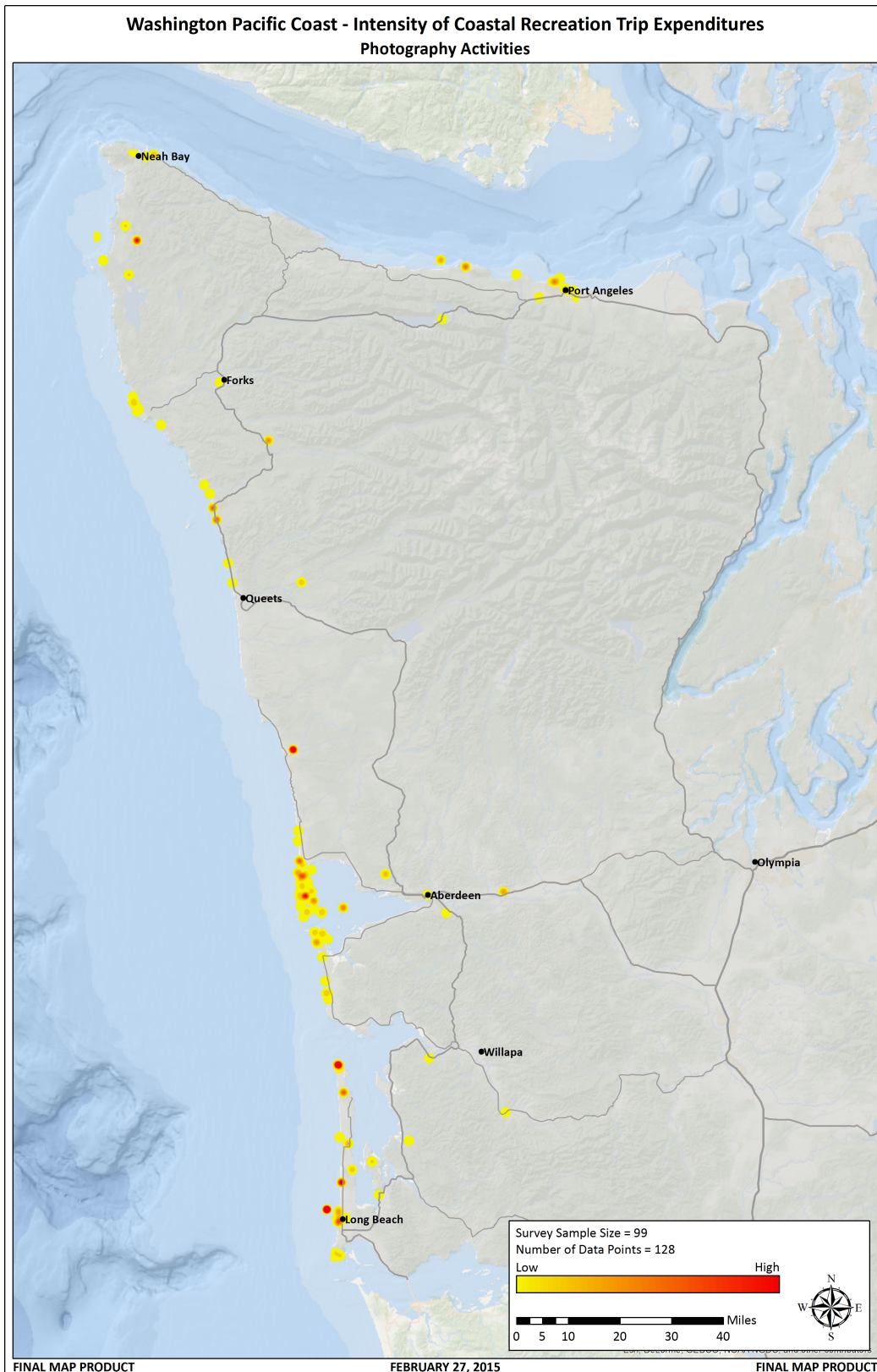
Map 20. Intensity of trip expenditures – collection of non-living resources



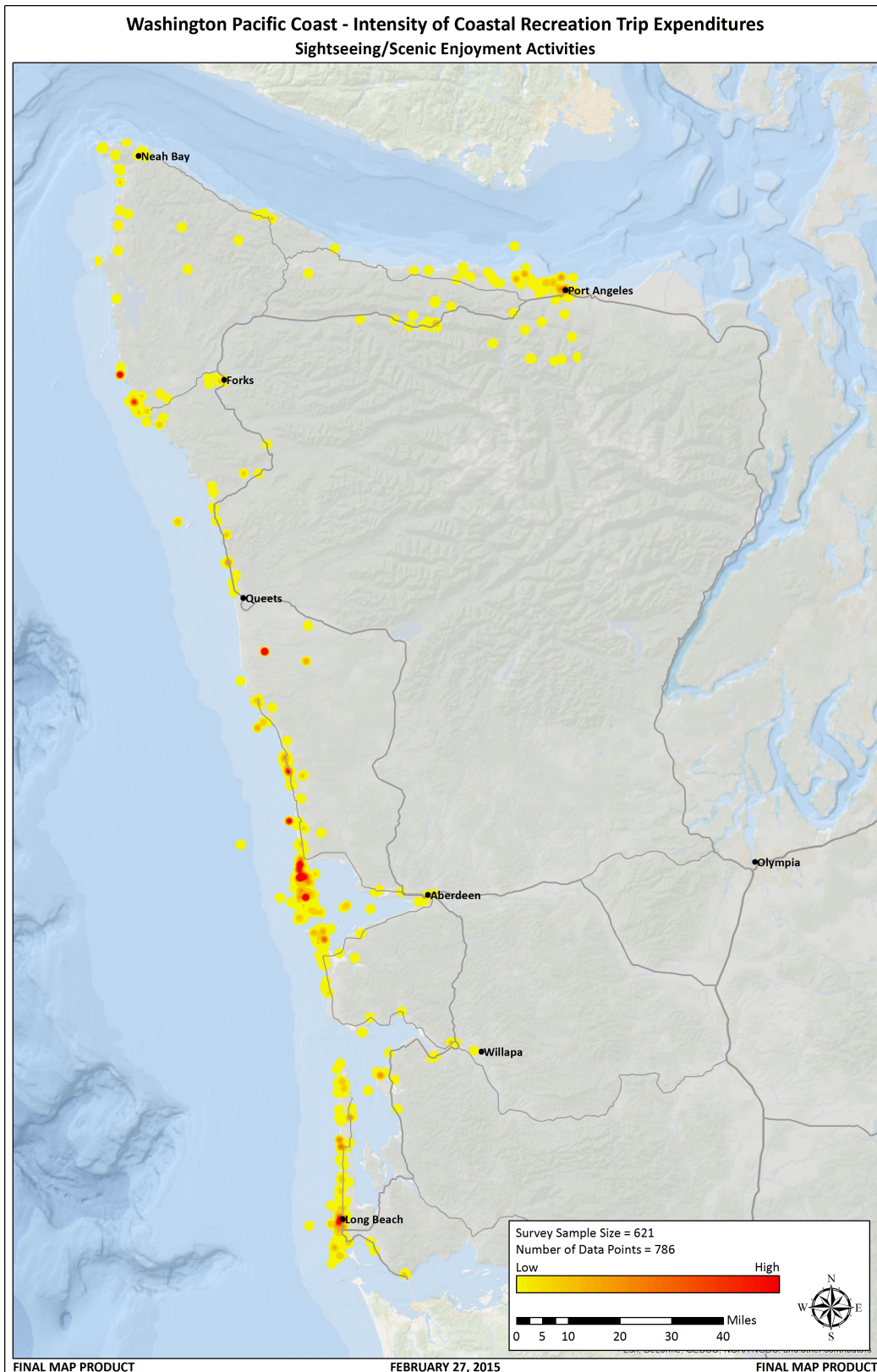
Map 21. Intensity of trip expenditures – fishing from private boat



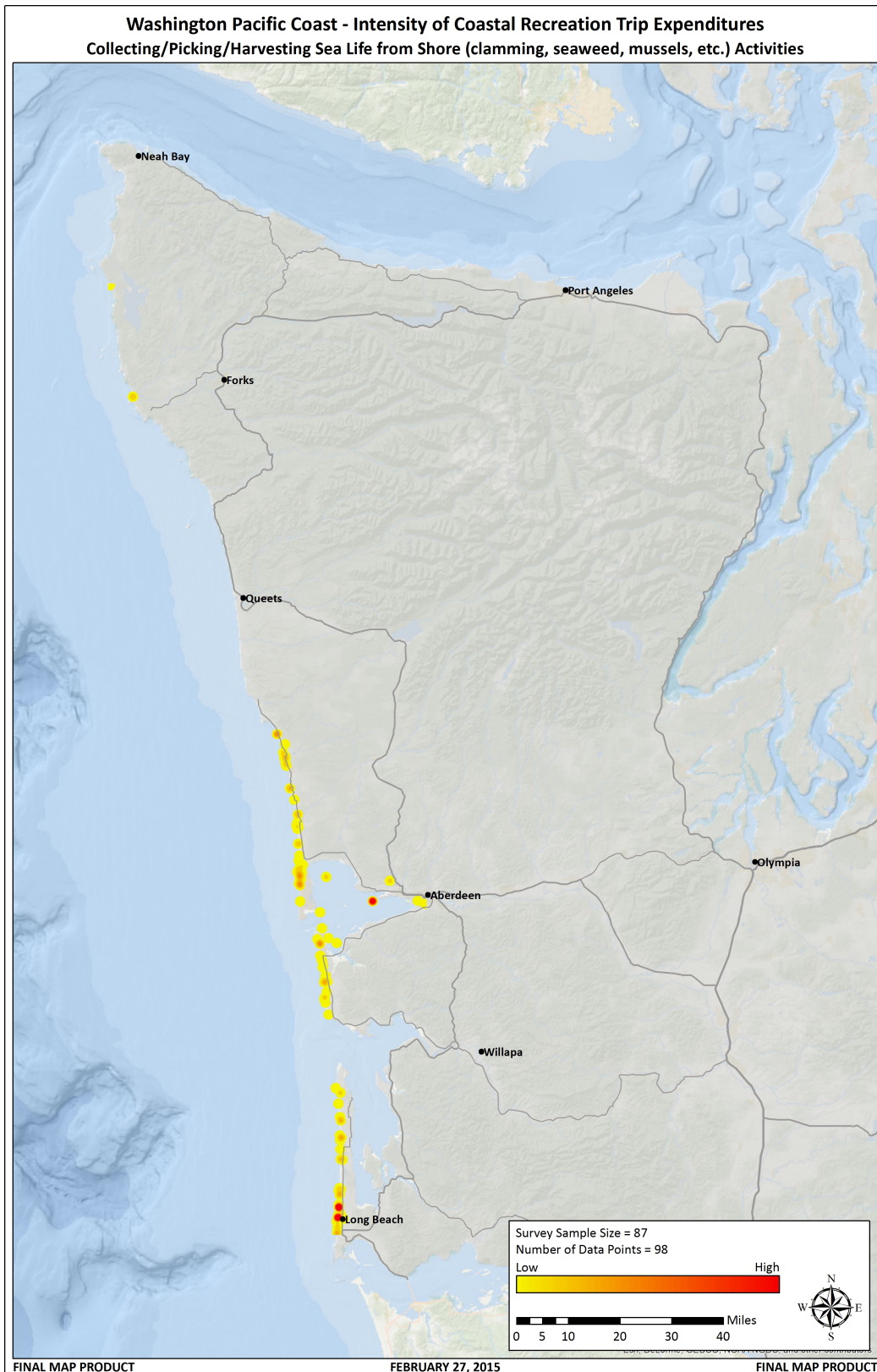
Map 22. Intensity of trip expenditures – fishing from charter boat or guide service



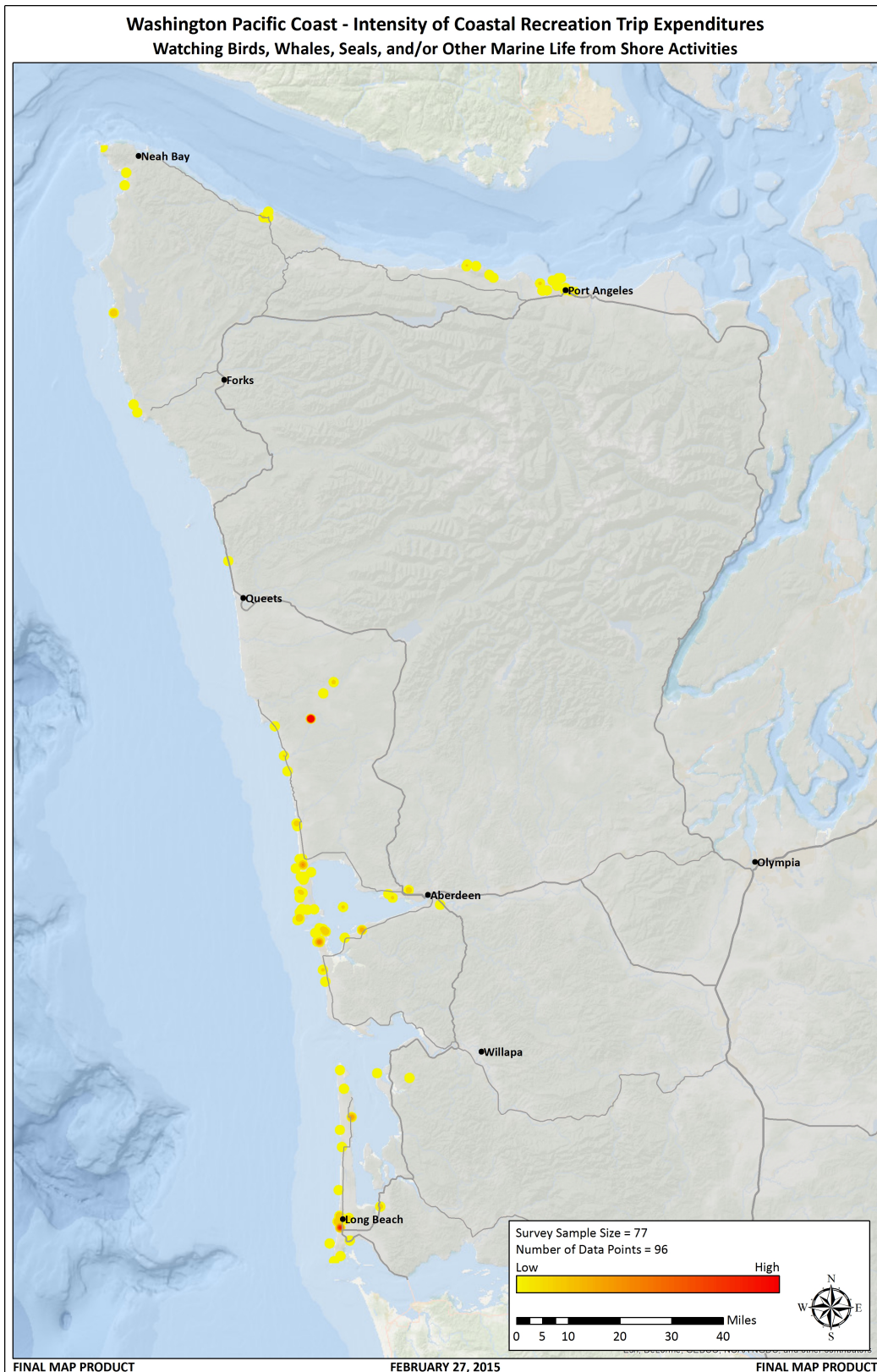
Map 23. Intensity of trip expenditures – photography



Map 24. Intensity of trip expenditures – sightseeing



Map 25. Intensity of trip expenditures – harvesting sea life from shore



Map 26. Intensity of trip expenditures – wildlife viewing from shore

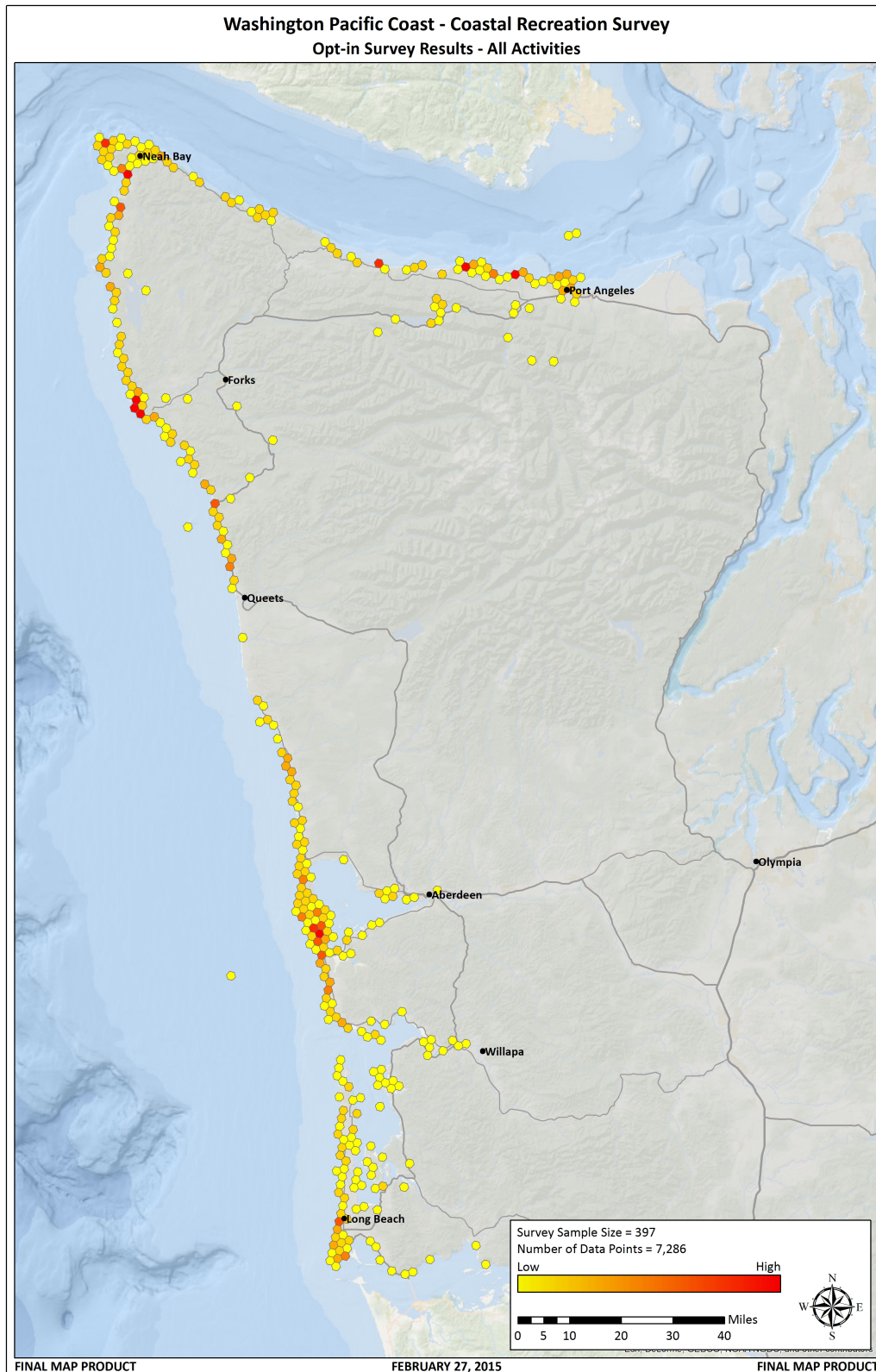
Appendix D: Coastal Recreation Map Products for the Opt-In Survey

This appendix presents Washington Coast recreation maps informed by the activity markers placed by the respondents of our recreational opt-in survey. As described in final report, survey respondents provided information by placing a point or marker on a map and then indicated which activity or activities they conducted at each specific location in the last 12 months. Each respondent was given equal weight in the analysis of this spatial data. The spatial data are a combined set across all survey waves accounting for seasonal variations in coastal recreation.

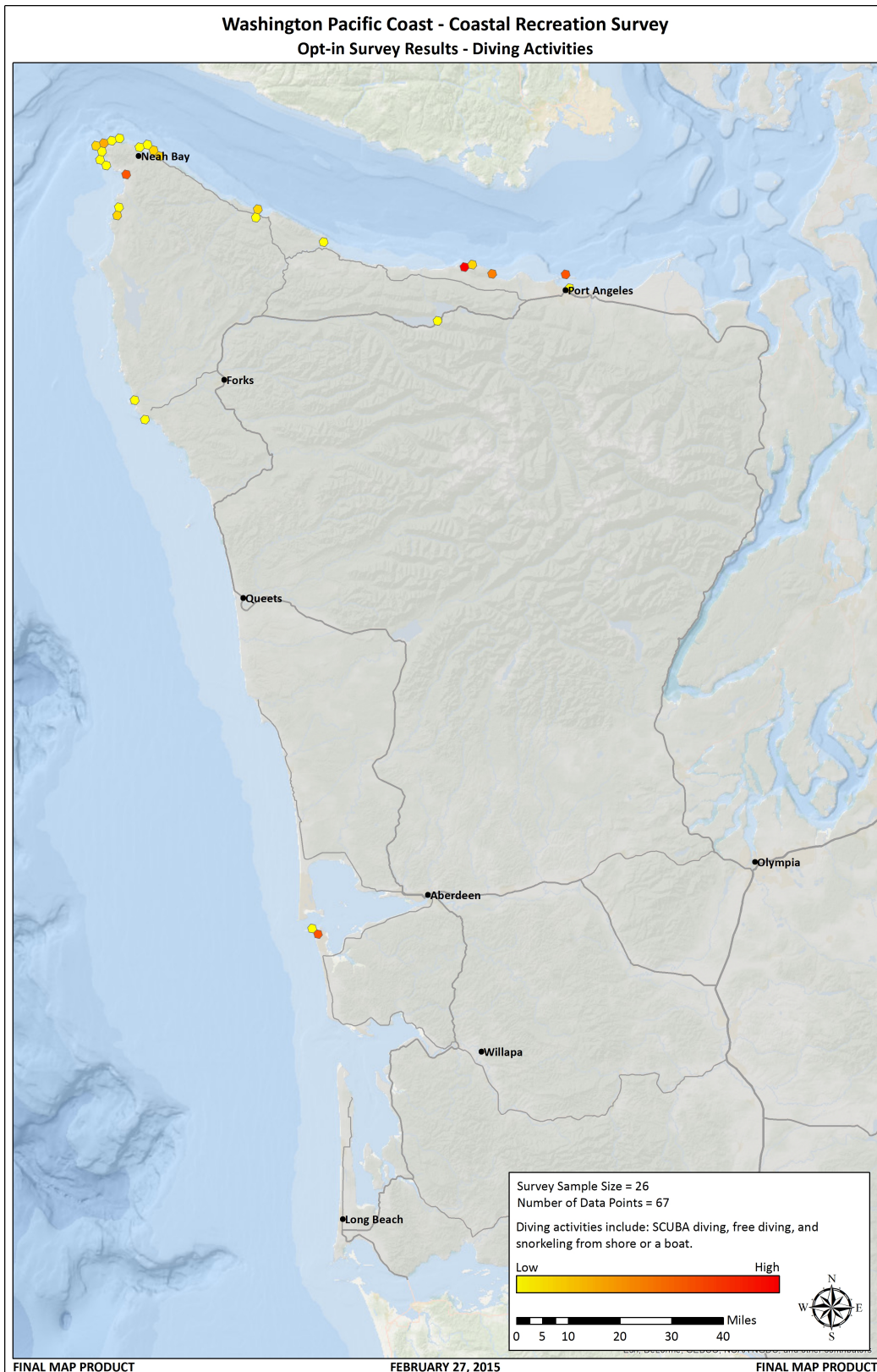
There are two sets of maps:

- The Grouped Activities section shows the Intensity of Use (person-trips) for all activities together and for grouped activity types; and
- The Individual Activities section shows patterns of intensity for the top ten individual activities; and

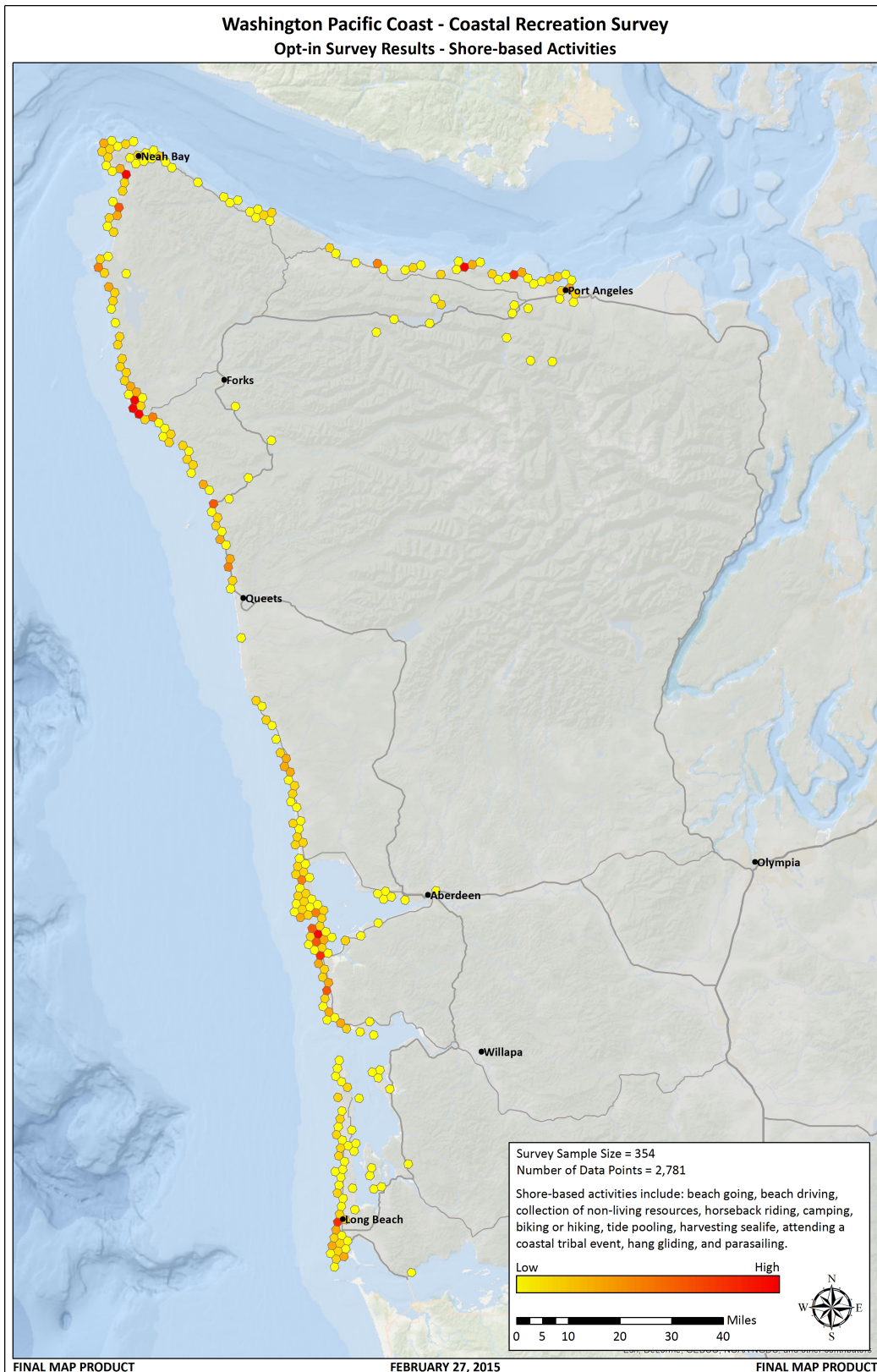
OPT IN SURVEY - GROUPED ACTIVITIES



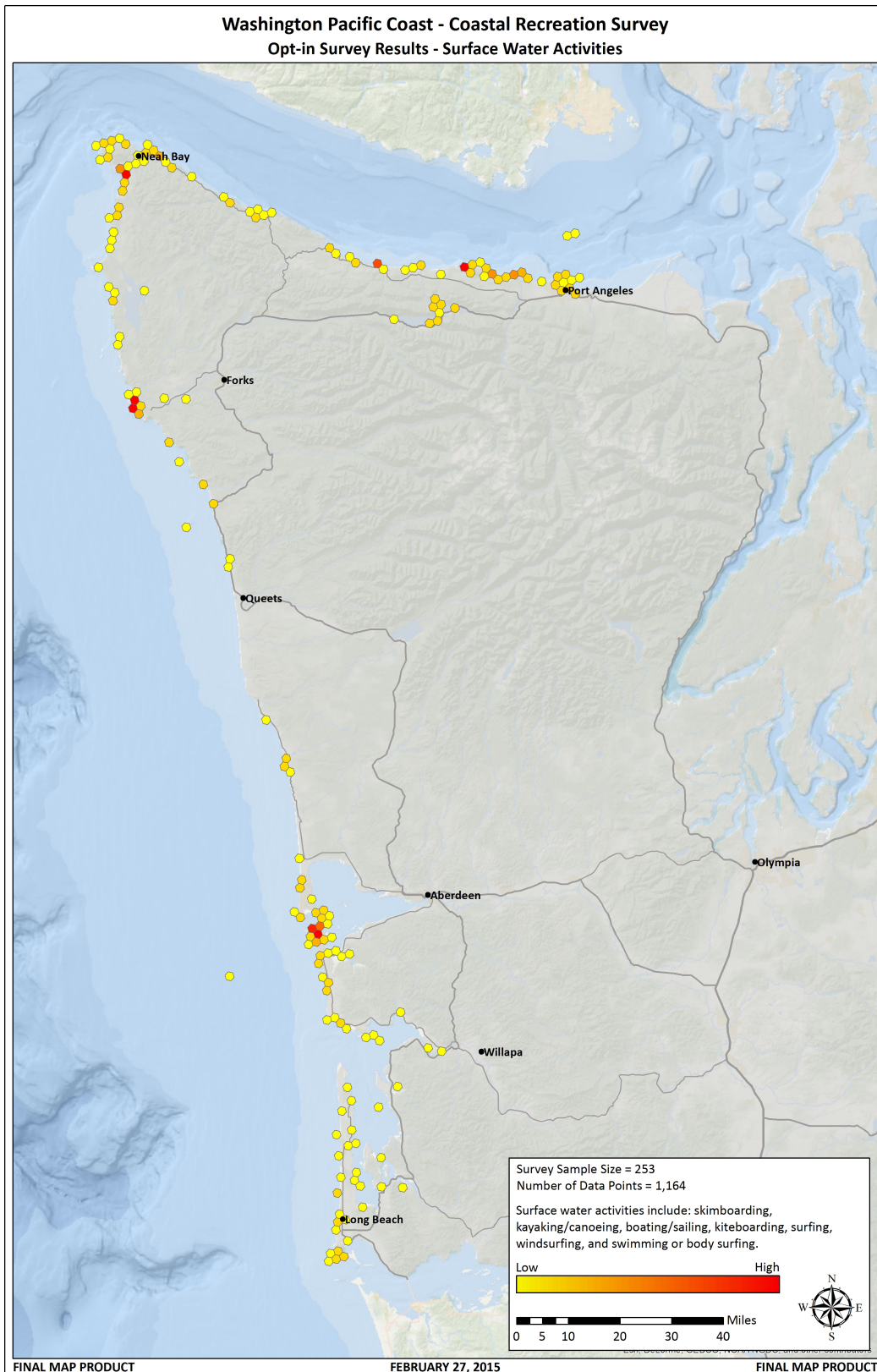
Map 27. Intensity of Use - Opt In Survey – all activities



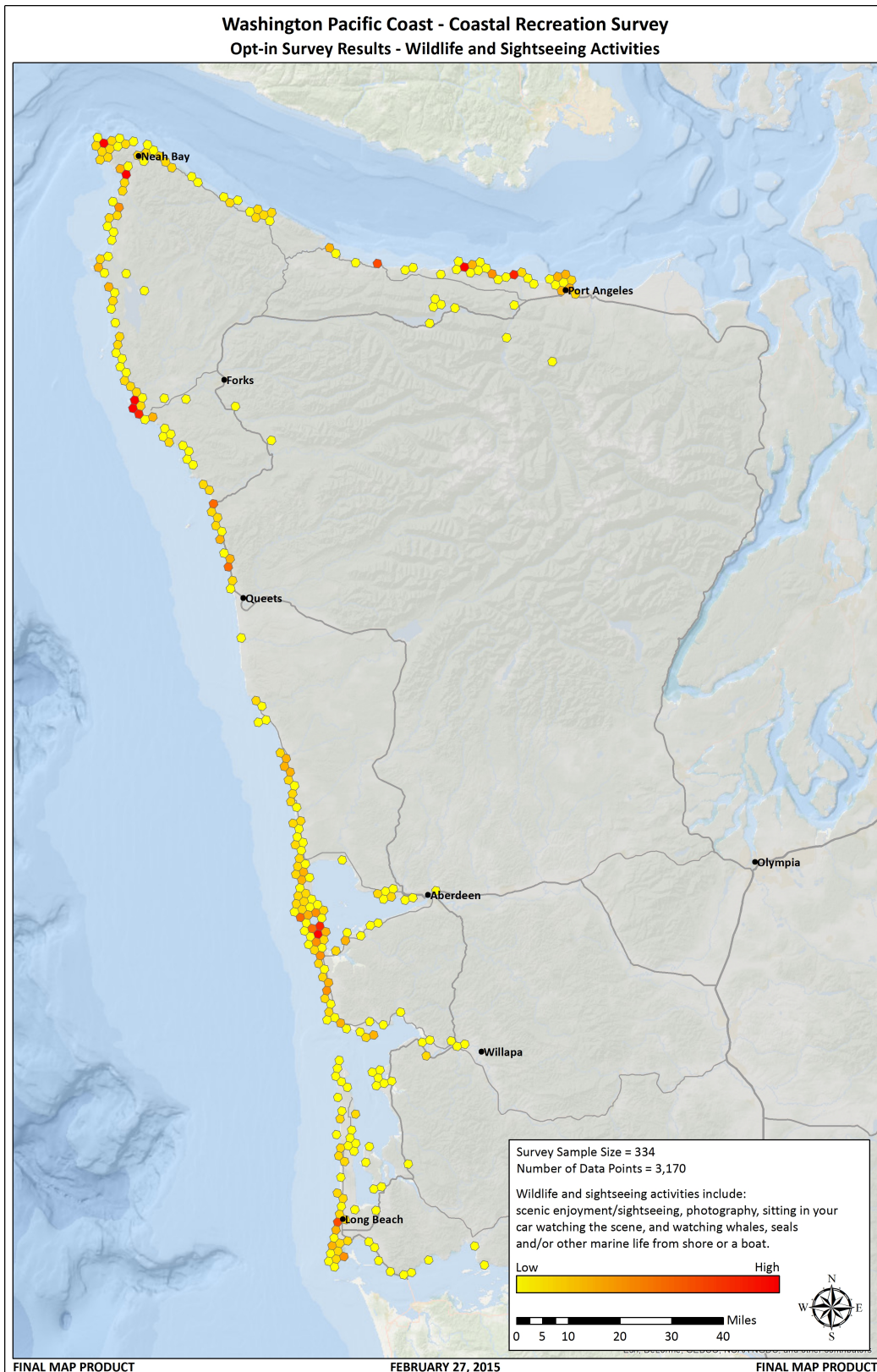
Map 28. Intensity of Use - Opt In Survey – grouped diving activities



Map 29. Intensity of Use - Opt In Survey – grouped shore-based activities

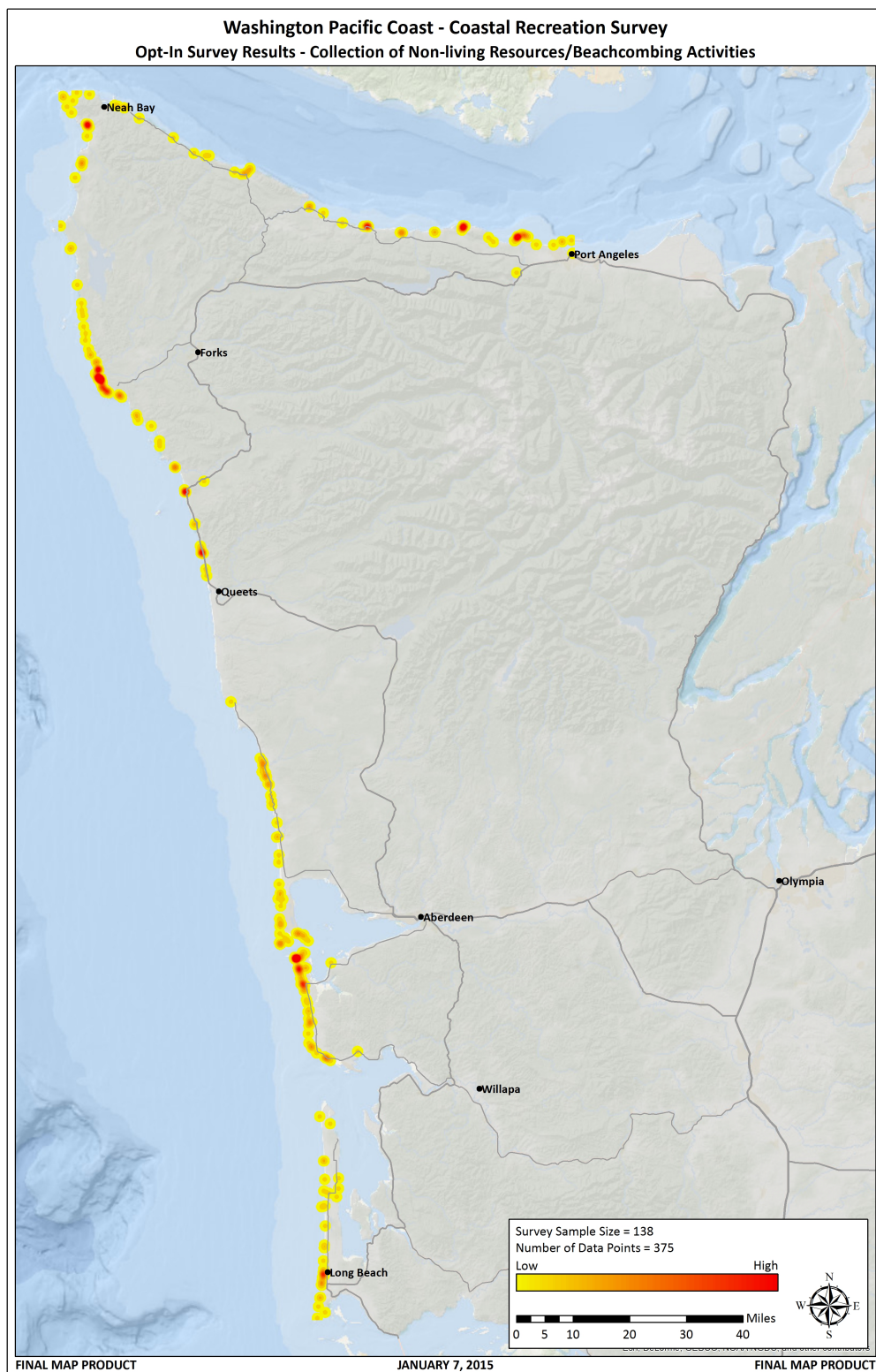


Map 30. Intensity of Use - Opt In Survey – grouped surface water activities

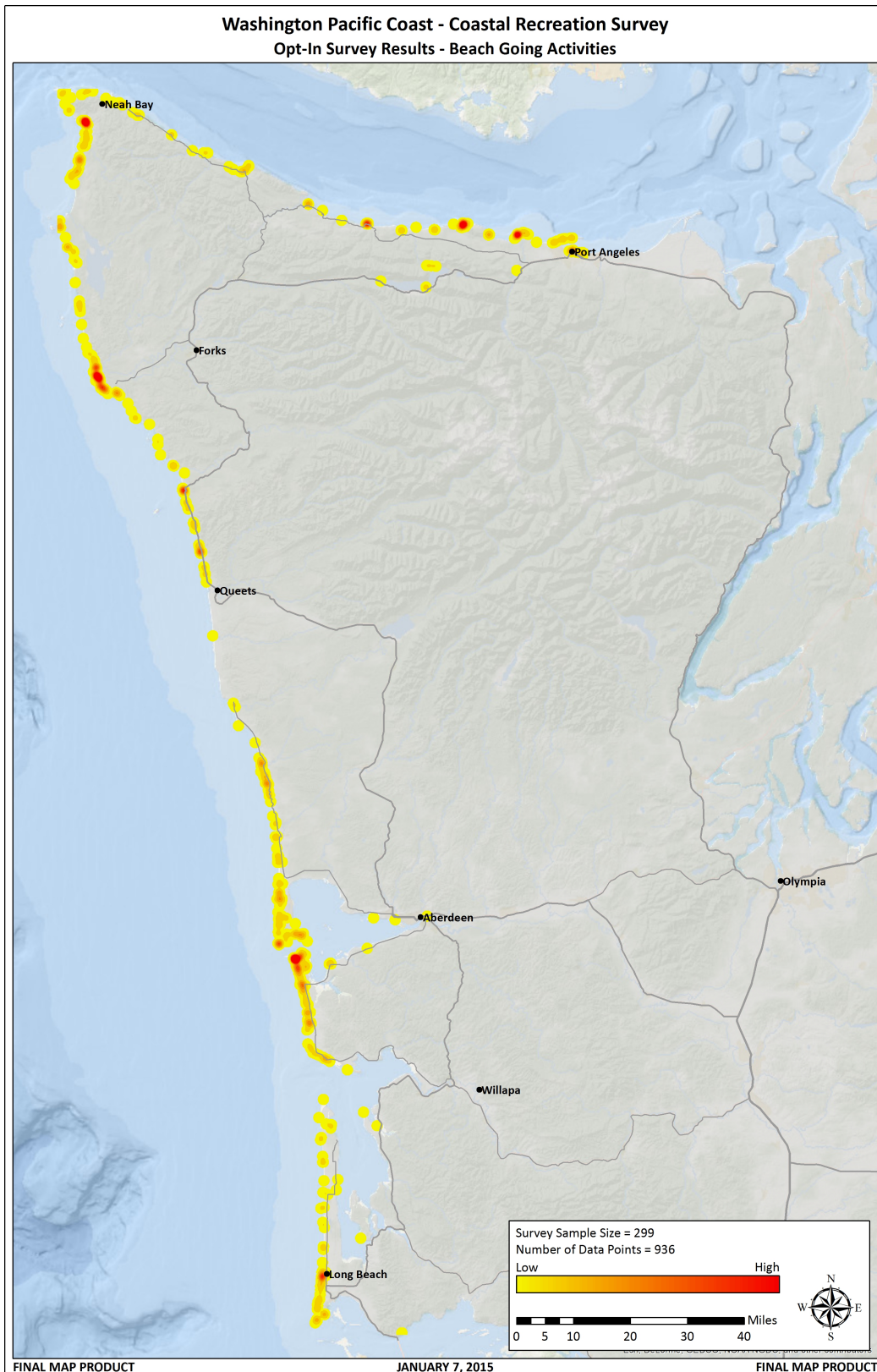


Map 31. Intensity of Use - Opt In Survey – grouped wildlife and sightseeing activities

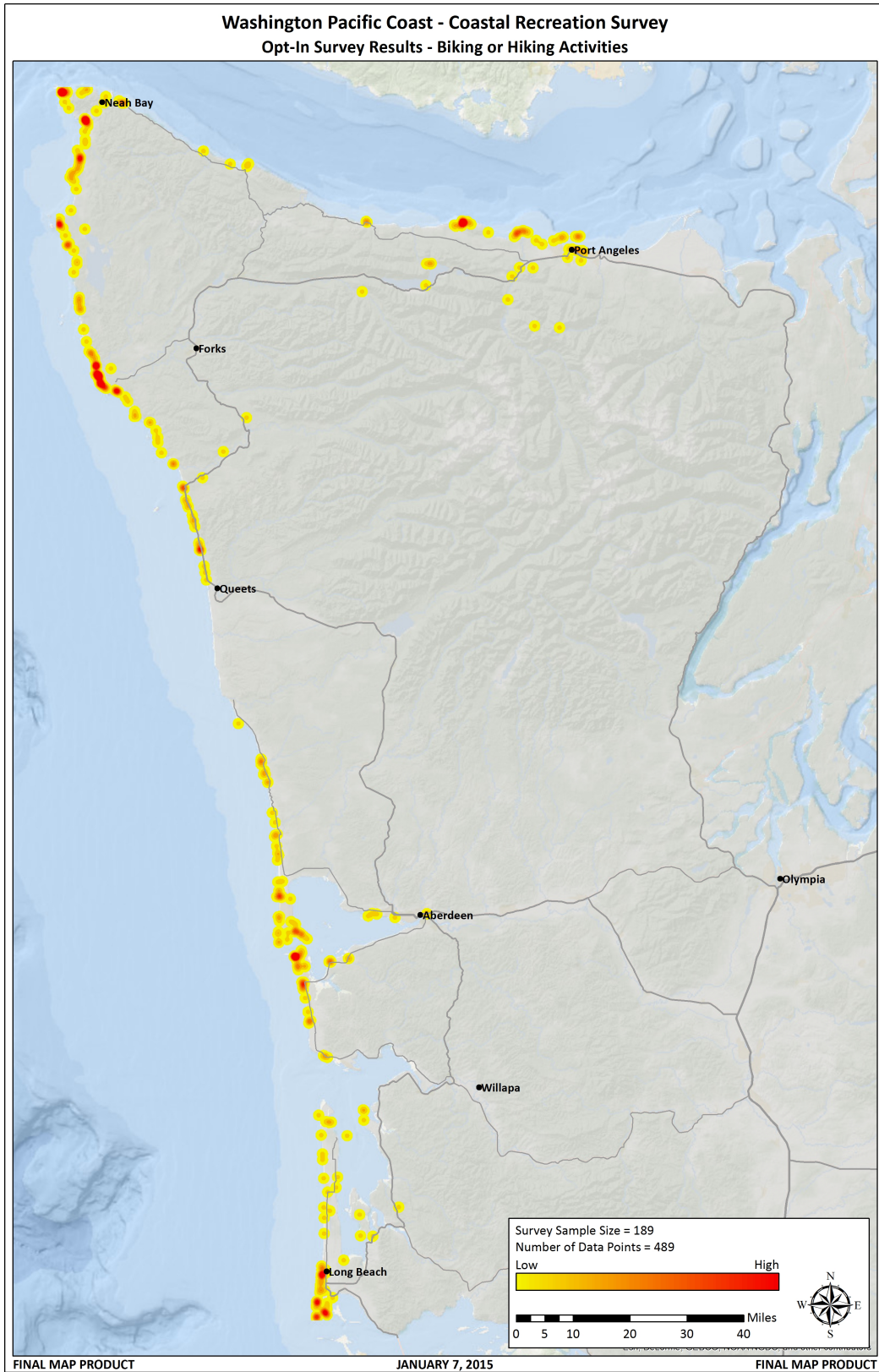
OPT IN SURVEY - INDIVIDUAL ACTIVITIES



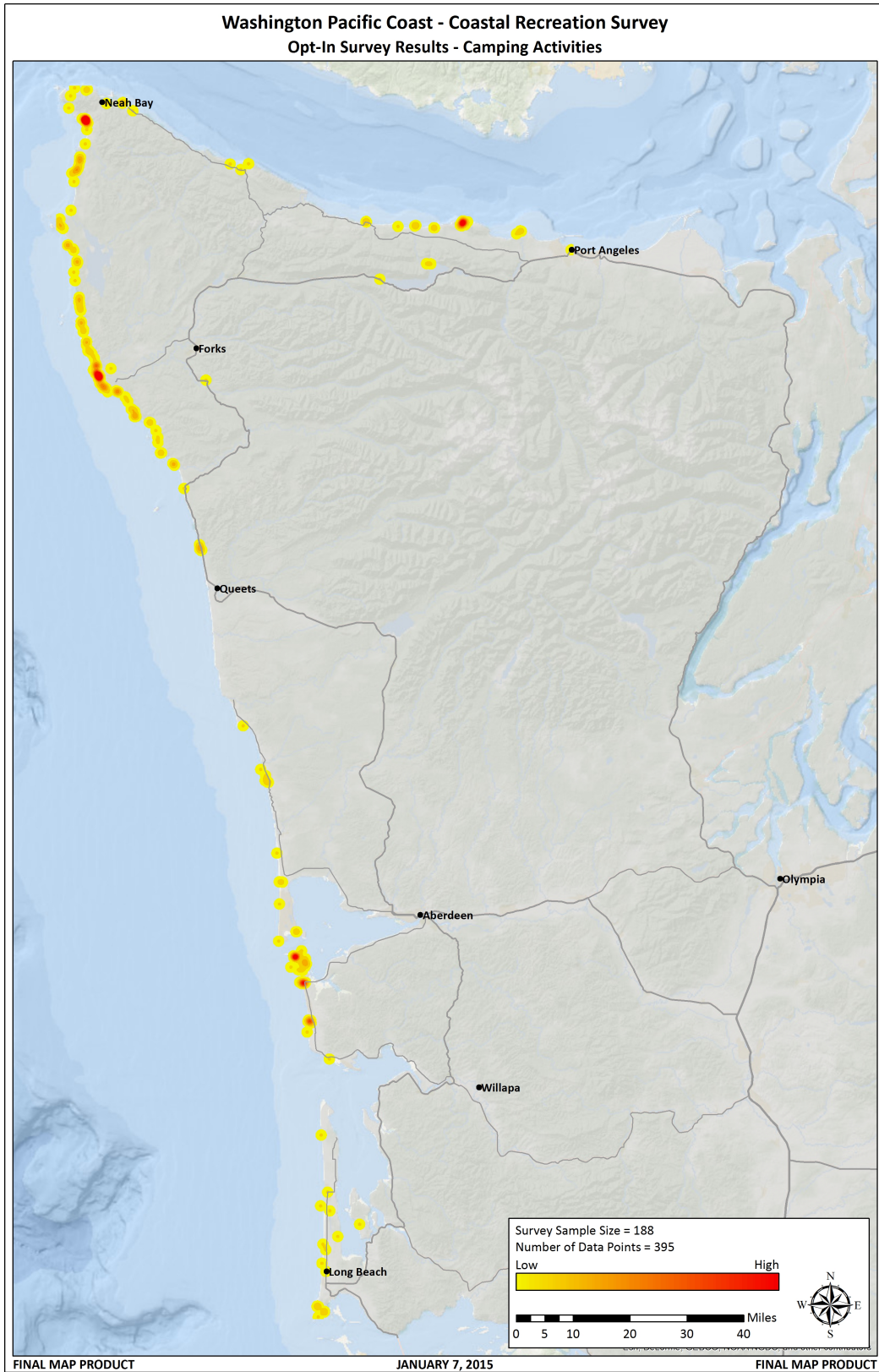
Map 32. Intensity of Use – Opt in Survey – collection of non-living resources



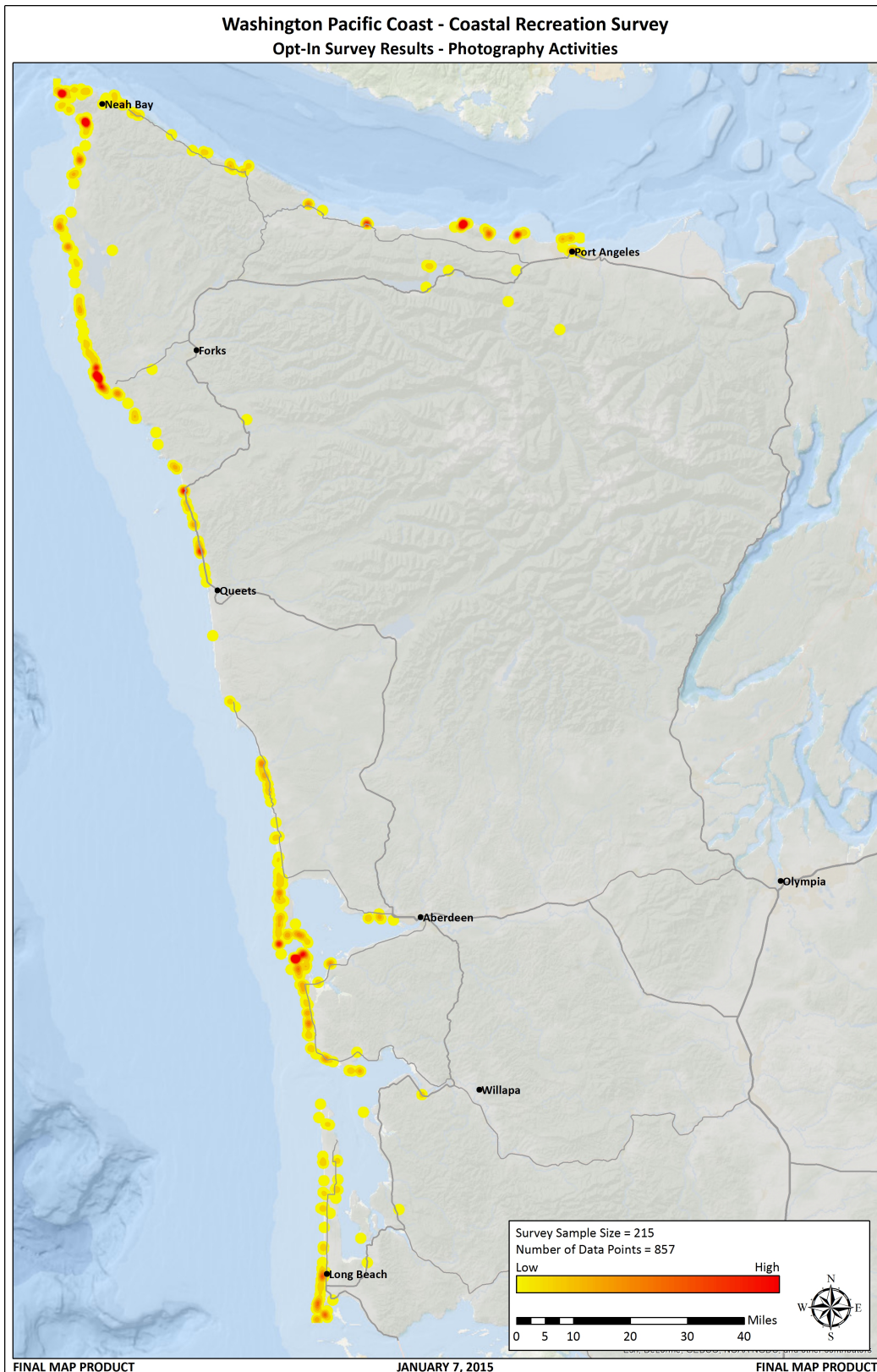
Map 33. Intensity of Use – Opt in Survey – beach going



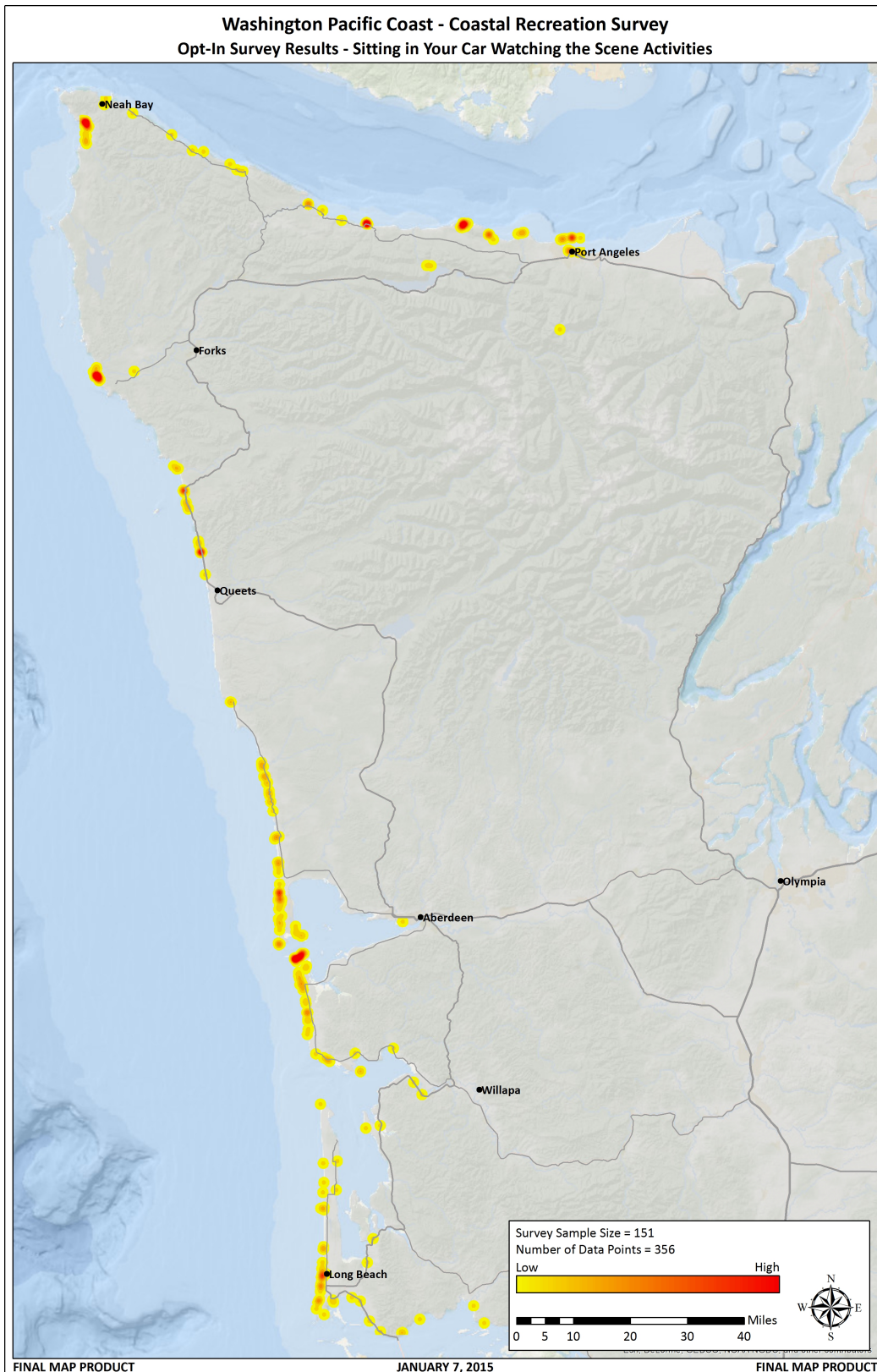
Map 34. Intensity of Use – Opt in Survey – biking or hiking



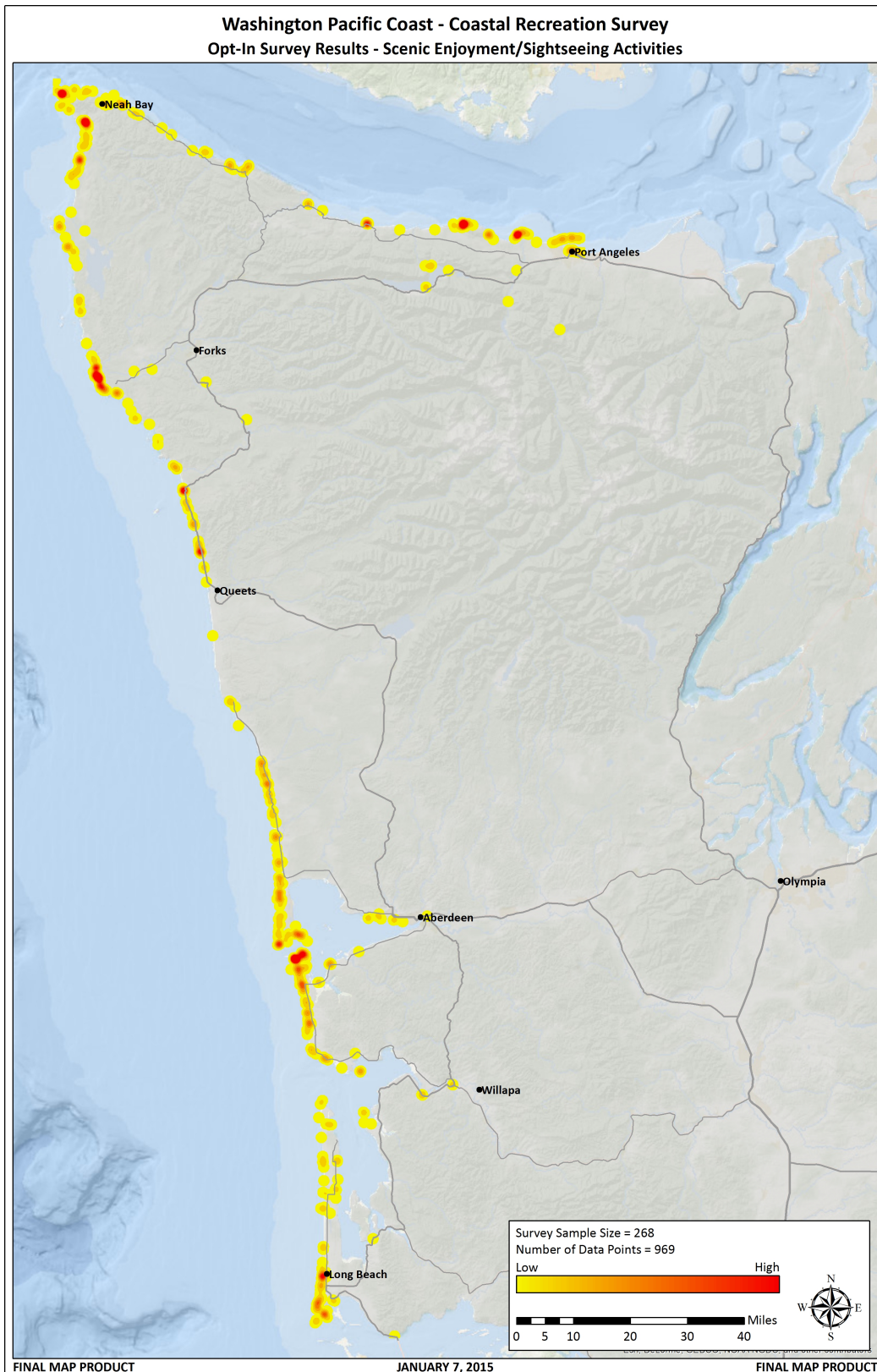
Map 35. Intensity of Use – Opt in Survey – camping



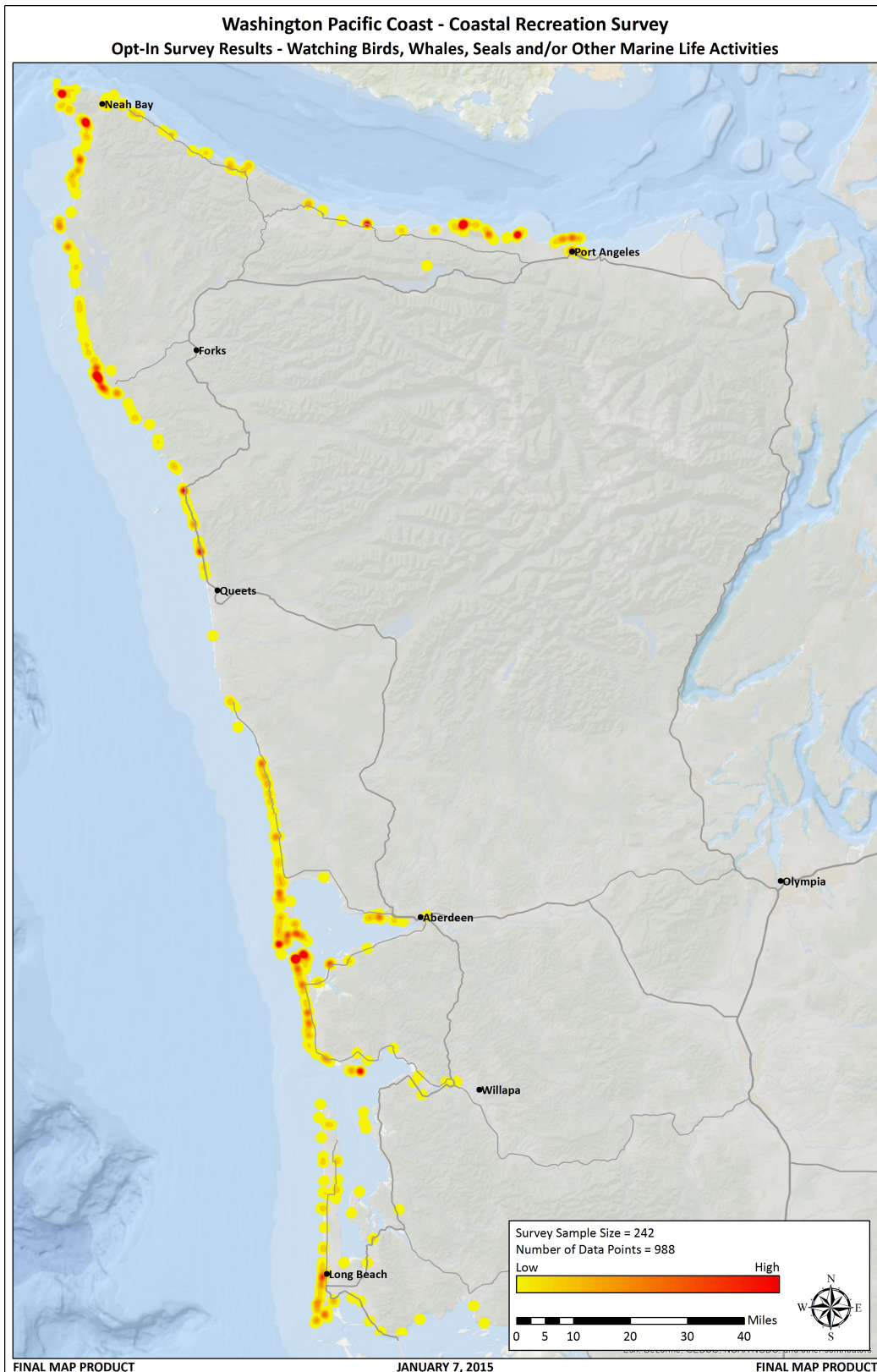
Map 36. Intensity of Use – Opt in Survey – photography



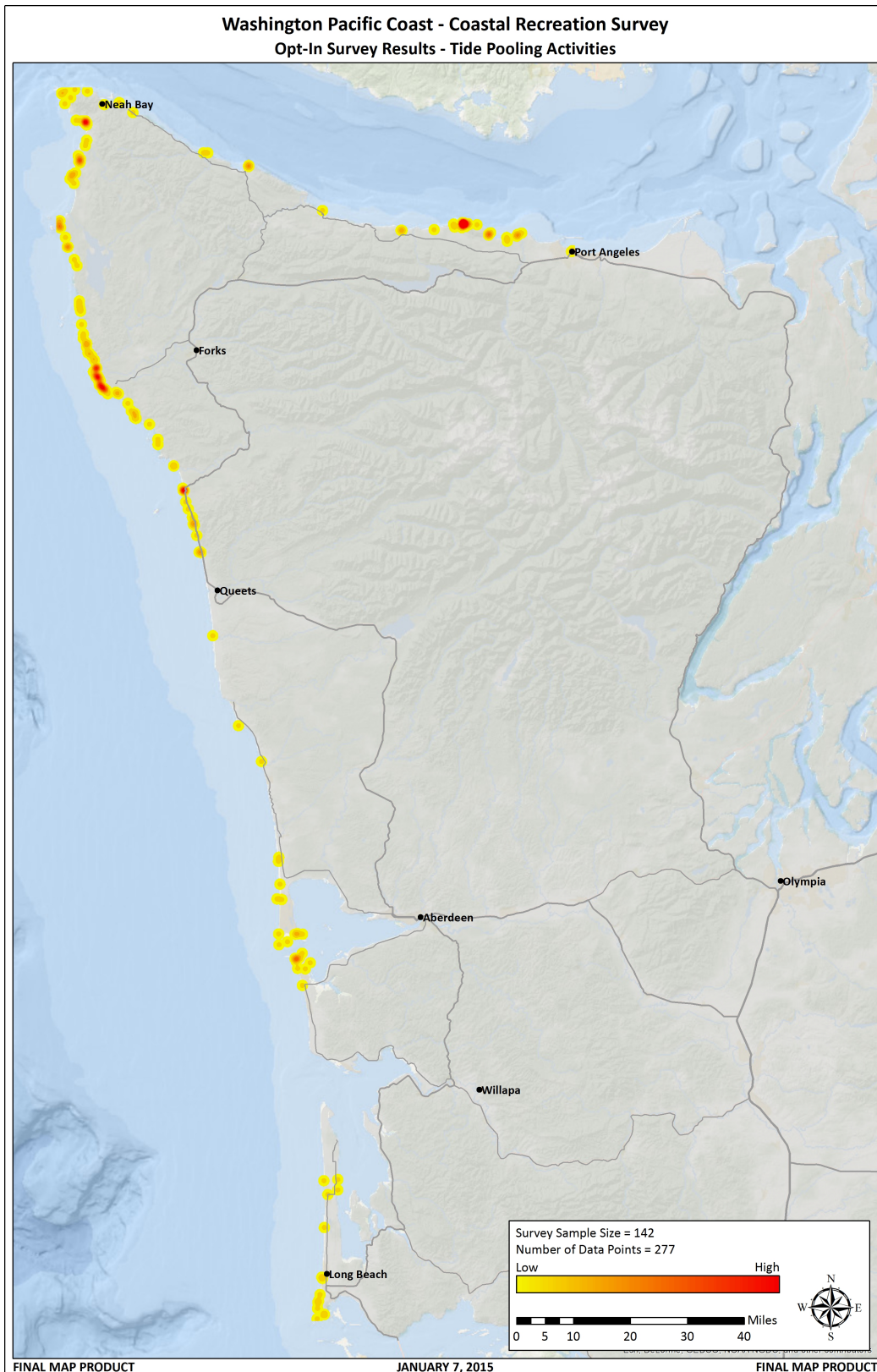
Map 37. Intensity of Use – Opt in Survey – sitting in your car, watching the scene



Map 38. Intensity of Use – Opt in Survey – sightseeing



Map 39. Intensity of Use – Opt in Survey – wildlife viewing



Map 40. Intensity of Use – Opt in Survey – tidepooling