



Marine Fisheries
Uses and Values Pilot Project
In support of the Oregon Territorial Sea Plan Revision

November 6, 2009

Project Overview

Goals and Methods

Our goal is to compile the first-ever comprehensive map (or series of maps) that illustrate the commercial and consumptive recreational fishing use patterns and values along the entire Oregon coast from Astoria to Brookings. This project is a unique opportunity to bring fishermen's expert knowledge directly to bear on marine planning processes. By asking fishermen to share their knowledge of their fishing grounds and giving them a forum in which to express their values, the project engages stakeholders, provides better information to the planning process, and integrates the human dimension into marine spatial planning.

The main objectives of this project are:

1. Comprehensively describe Oregon's commercial and consumptive recreational fishing community and incorporate fishermen's knowledge into the development of future amendments to the Oregon Territorial Sea Plan (TSP);
2. Develop accurate maps depicting the extent of the local fishing grounds and their stated and economic importance to local fleets (just stated importance for the consumptive recreational fleet)
3. Analyze areas of high or valuable use in relation to existing or prospective alternative ocean uses
4. Collect baseline data for future analyses of economic contribution of the commercial and consumptive recreational sector to the coastal economy
5. Integrate data into Oregon's Coastal Atlas

This kind of spatially explicit information on commercial and recreational fisheries and their value to fishermen has the potential to ensure representation of socioeconomic values in the design and implementation of a spatially explicit designation of special use areas, specifically for wave energy facility development within the Oregon Territorial Sea Plan (TSP).

The results of this project will considerably improve on what data are currently available. This is because Ecotrust has designed the methods and processes of this project to minimize the "garbage in, garbage out" problem that has plagued other marine planning processes. Fishermen have every incentive to tell the truth; any strategic reporting or misrepresenting the actual fishing grounds has the potential to do more harm than good. In addition, Ecotrust works very closely with fishermen throughout the entire project on validating and verifying the information collected.

Education and Outreach

Outreach and education efforts describing the purpose and intent of the project are crucial to obtain buy-in from the fishing community and to allay concerns around the handling, use, and analysis of data. Based on Ecotrust's previous experience, we believe that a proactive approach to addressing this sensitive issue will minimize misinterpretation of the project and products later in the process. This is best done by:

1. Meeting with key representatives from the fishing community (e.g., leaders of various fishing associations, members of the region stakeholder group, harbor masters) who have expressed interest in working together and who understand the value of the project.
2. Soliciting suggestions and ideas from these representatives for improving the project.
3. Identifying key individuals from the different fishing fleets of interest.
4. Holding meetings with fishing groups and partners to discuss and clarify what data is being collected, why it is being collected, and how it will be used in the marine planning process.
5. Distributing documents that clearly describe the purpose of the project, including the consent form each fisherman is asked to sign before his/her data can be used and Ecotrust's protocol for handling and aggregating data.
6. Continuing to work with the fishing community throughout the project.

Interview Process

Interviews will be conducted in person using one-on-one or small group formats by Ecotrust personnel. The bulk of the interview will focus on characterizing the fishing grounds and assessing the relative importance of each fishing ground to each fisherman. Using electronic and paper nautical charts of the area, fishermen will be asked to:

1. Identify the maximum extent north, south, east and west they would target a species or group of species.
2. Identify, within this maximum forage area, which areas are of critical economic importance.
3. Rank these areas using a weighted percentage: using 100 points to distribute over the fishing grounds.

Ecotrust personnel will capture this information using a computer interface called Open OceanMap that contains electronic nautical charts and a series of tools for entering information. Respondents will draw or describe areas directly on this electronic interface, allocate points, and enter other important information. Open OceanMap will capture the information in a geospatial, relational database that will form the basis for the subsequent analysis. In addition, other information about the fisherman and his/her personal experience will be captured.

Commercial Fishermen

Given the information sought, a random sampling approach is less useful. Instead, for the commercial fleet, we will target fishermen who comprise the majority of the catch ("highliners") in each fishery based on the assumption that they have better spatial knowledge of the fishing grounds than less successful or part-time fishermen. That said, our approach is in no way intended to exclude anyone from participating in the project. All fishermen who wish to participate are welcome and encouraged to do so.

Ecotrust will address concerns around how the study population is defined, how the fisheries are classified, and how over-sampling the "highliners" might influence the results. After that, we will devise a useful stratification scheme of the sample population. This process will proceed as follows:

1. Work with community-based fishery groups (e.g. SOORC, FINE, FACT), and regional experts to group the region's fisheries based on how they are managed.
 - a. Group the fishermen in terms of practices and/or species (group)-gear configurations (e.g., for the commercial fisheries: salmon-troll, groundfish-trawl, groundfish-hook & line, halibut-longline, sablefish-longline, sablefish-trap, tuna-jig, tuna-pole, shrimp-trawl, prawn-trap, hagfish-trap, and lingcod-hook & line).
 - b. Use geographic groups or subgroups as a means of classifying fishermen and supporting representative sampling.
 - c. Identify the proportions of in-region landings made by fishermen residing in-region, elsewhere in the state, and out of state.
2. Stratify the sample population of fishermen and evaluate them on their fishing effort in the region by linking the grounds they fish to their landing receipts. This will ensure that the sample is representative in terms of percentage of fishermen participating in a fishery.
3. Based on the sample population within the fishery groupings and the geographic groups or subgroups, use criteria that are consistent with representing:
 - a. At least 50% of the total landings and/or ex-vessel revenue
 - b. At least five fishermen, except in cases where the sample population is fewer than five

The above criteria, as stated, are valid if it is possible for us to reach that representation with the amount of money allocated to this project. If the criteria outlined above exceed the number of interviews possible within the constraints of the estimated budget, Ecotrust will make every attempt to reach a representative sample given these constraints (300-400 interviews total).

Recreational Fishermen

To address differing values of fishing grounds between different recreational user groups, we propose to stratify the recreational fishing fleet according to user type and geographical region or access areas. Our first step will be to

determine the recreational consumptive population and an appropriate classification scheme that will provide useful for stakeholders and decision makers. At minimum, we will assess the following primary user types:

- Charter boats (including “6-packs”)
- Motor powered private vessels (“sport boats”)
- Kayak fishing

A purposive sampling design similar to the one we implemented for the commercial fleet will be applied to the charter boat fleet. Ecotrust will work with this sector to ensure that all operations are included in the survey and will attempt to achieve 100% representation. The fisheries profiled and fishing grounds provided by this fleet in this region will be: groundfish, salmon, halibut, tuna, and Dungeness crab.

Due to the unknown size of the recreational private boat fishing community, the first phase of this research will be to accurately design a sampling scheme that is representative and at the same time feasible to conduct under possible time and budgetary constraints. (For example, a classification scheme that required 1000 interviews to be statistically representative would not be possible logistically.) Then, a representative sample from each stratum will be used to estimate relative levels of importance for each sub-user group. Ecotrust will also explore existing ancillary data sources to develop this information.

Once the data has been collected and reviewed by an Ecotrust analyst, interviewees will be able to verify the accuracy of the information they provided. After they review and verify the information, composite datasets will be created for the fishing grounds of each fishery.

Data Collection

After introductory meetings have been conducted with representatives of the fishing community, field staff will contact fishermen to set up interviews. Interviews will be conducted using one-on-one or small group formats. Field staff will use Open OceanMap to collect shapes representing the fishermen's fishing grounds and other non-spatial attributes, including demographics, basic operations (gear types, crew size/composition, operating costs and revenues), and other descriptive characteristics.

All interviews will follow a shared protocol:

1. Using electronic nautical charts of the area, fishermen will be asked to identify all areas of critical economic importance over their cumulative fishing experience and to rank these using a weighted percentage: which are represented using 100 points that they distribute over the fishing grounds.
2. All spatial information will be collected on a fixed spatial scale, ideally to correspond with those of other maps and GIS layers used to inform the Oregon Territorial Sea Plan process.
3. Non-spatial information pertaining to demographics, socio-economics attributes, and basic operations will also be collected.

Ecotrust analysts in our Portland, OR, office will standardize and compile all interview responses. The result will be a series of maps and datasets that show the total extent of the fishing grounds for each fishery and the areas of greater use or greater economic significance. Color gradation will indicate areas where more points were allocated (i.e., that are more frequently used and/or more important). Ecotrust will validate these intermediary products in a series of follow-up meetings with the fishing community to ensure that we captured the information correctly and that the information is depicted in a manner that addresses any concerns about confidential information being comprised.

Confidentiality

Ecotrust will take every measure possible to protect the confidentiality of sensitive information provided by fishermen during and after the interview process. These measures include functions in Open OceanMap, consent forms for individual participants, and collection and analysis protocols that mask all names and identifying characteristics of an individual's fishing grounds.

- Explicit consent will be obtained from all participants and will be recorded by Ecotrust personnel.

- All information on the individual level will remain anonymous and confidential. Only Ecotrust staff (operating under a strict confidentiality protocol) will handle the raw data collected during the interviews.
- Analyses and results will be presented in aggregate form for participating fishermen from each fishery to review before results are finalized.
- Open OceanMap has been customized to protect individual confidentiality. Participants will not be allowed to add existing or previously created data to Open OceanMap.

Quality Assurance/Quality Control

At each step of the process, fishermen from both commercial and recreational fleets will be given the opportunity to comment on and/or correct any erroneous data.

While Ecotrust field staff is conducting interviews, Ecotrust analysts will begin creating and editing "clean" datasets based on additional notes regarding the exact location of certain areas provided during the interview. After the information has been cleaned, fishermen will be contacted and given the opportunity to review their individual information at their convenience. Traditionally this is done through a secure, web-based application that Ecotrust developed to facilitate data verification. The application allows each participant to log in to verify that his/her shapes and information are accurate before they are combined with other participants' shapes and information. The application also allows participants to review the final characterization of the fishing grounds to which s/he contributed. That said, given the immediate scope and timeline of this project, the use of the web-based application for review purposes will be tabled for the time-being. Instead, fishermen will either be sent a hard copy map or can meet with Ecotrust staff to verify their individual information.

Once interviews have been completed, Ecotrust will hold follow-up meetings with participants and fishing community representatives in each of the ports. Each participant will be given access to the final data products of the fisheries in which s/he participated. After the participants review the final data products and verify their accuracy, Ecotrust will submit the products to fishermen organizations (SOORC, FINE, FACT, etc.), DLCD, and OPAC for use in their marine planning process.

Analysis and Evaluation of Commercial Fishing Grounds

One of the most novel features of this project is Ecotrust's creation of a weighted surface to represents the importance of each fishery. We do this by linking fishermen's fishing grounds to their landing receipts.

Our approach, which has been praised in several reviews, gives greater weight to successful, experienced fishermen with high landing receipts. We weigh fishermen's values (points) by the proportion of their in-sample ex-vessel landings (by landing port and by fishery). For example, if fisherman A has higher landing receipts than fisherman B, fisherman A's 100 points will be worth more than fisherman B's in determining the overall value of the fishery.

Our approach proceeds as follows:

1. Stratify the sample population based on the following individual criteria or a combination of:
 - a. Landings and/or ex-vessel revenues associated with the region (i.e., "highliners" vs. everybody else)
 - b. Vessel size
 - c. Home port vs. landing port
2. Process fishermen's raw shapefiles using Open OceanMap to generate datasets of the fishing grounds.
3. Weigh fishermen's responses by the proportion of their in-sample ex-vessel landings (by landing port and by fishery).
4. Evaluate how the sample population was stratified to determine if this may have influenced or biased the results.
5. Use additional information collected in the interviews to further define the importance of the participants' fishing grounds:
 - a. Demographics

- b. Basic operational costs
 - c. Vessel and gear type
 - d. Percentage of household income derived from fishing and proportion of income attributed to each fishery in which the fishermen participate
6. Summarize data in aggregate form and present results for review.
 7. Submit final results.

Analysis and Evaluation of Charter Boat and Private Sport Boat Fishing Grounds

We create the weighted surface of the recreational fishing grounds based on the importance values (points) collected in the interviews. Unlike the approach we use for commercial fishermen, we do not weigh charter/sport boat fishermen's values by the proportion of their in-sample ex-vessel landings because landing data do not exist for charter boat operations.

Project Timeline

Ecotrust is committed to getting the data into the planning process in a timely manner. Once fieldwork commences, we estimate that it will take 2-3 months to produce a complete set of draft datasets once we complete interviews in a particular port. Specifically, after the majority of the interviews have been completed, we estimate that it will take 3-4 weeks to get a set of draft maps for the fishermen to review. Time estimates may be adjusted as field work progresses to reflect the response rates we observe related to fishing season conflicts. Draft data products will be delivered by June 30, 2010. The data will be reviewed by the participants and state agency staff and final data products will be delivered to the OCZMA, SOORC and DLCD by September 30, 2010.

Customize Outputs to the Needs of the Oregon Territorial Sea Plan Process

In consultation with DLCD staff and the fishing community, Ecotrust will examine multiple ways in which the data generated from the study could be interpreted and used by the Coastal Management Program division of DLCD and OPAC on the development of future amendments to the Oregon TSP. This could result in multiple GIS formats (i.e. raster and vector) based on their desired needs to identify areas and values for each fishery. All GIS datasets will meet Federal Geographical Data Committee (FGDC) standards.

Ecotrust will deliver the data in a way that protects the confidentiality of individual participants and the fishing community and at the same time more than sufficiently supports the spatial analysis needed to develop the TSP.

All methods and final results pertaining to the project will be clearly documented and submitted to the DLCD and the fishing community. Additionally, multiple manuscripts may be prepared and submitted to peer-reviewed scientific journals

The primary deliverable of this project will be spatial datasets and maps depicting areas of relative importance for commercial and the primary fisheries associated with the charter boat operations located in Oregon's coast. Accompanying these geospatial products will be FGDC metadata describing the bounds of uncertainty and appropriateness of use. The geospatial products delivered will include aggregate maps of relative importance for each fishery and user group. These data will be aggregated from original source data so as to preserve confidentiality and the single interview scale. Aggregate maps with a spatial resolution of 250-100 meters will be the primary product deliverable.

The final GIS will consist solely of derivative data sets at a scale appropriate for the purpose of conducting marine spatial planning. It will be separate from (and will not include) the source survey data in order to protect the confidentiality of the survey participants. Geospatial data will be provided only to the DLCD and will not be made available to the general public.

The results will be documented in a report that discusses the methods and results of the research conducted, including the statistical sampling methodology used to estimate areas of relative importance. The methods and results will also be presented to the Oregon fishing community, DLCD staff, and OPAC.

Project Consent

The goal of the Marine Fisheries Uses and Values Pilot Project is to compile a comprehensive map of the commercial and recreational fishing use patterns along the Oregon coast from Brookings to Astoria using the expert knowledge of fishermen themselves. The main objectives of this project are:

1. Incorporate commercial fishermen's knowledge into deliberations by the Oregon Coastal Management Program and the Ocean Policy Advisory Council on the development of future amendments to the Oregon Territorial Sea Plan (TSP);
2. Use this information to improve the spatial resolution and the accuracy of landings and logbook data;
3. Develop accurate maps of the local fishing grounds and of their economic importance to local fishermen.

This kind of spatially explicit information on commercial and recreational fisheries and their value to fishermen has the potential to ensure representation of socioeconomic values in the design and implementation of a spatially explicit designation of special use areas, specifically for wave energy facility development for incorporation into the Oregon Territorial Sea Plan (TSP).

During the winter and spring of 2010, Ecotrust will interview commercial fishermen and commercial sport operators in all ports along the Oregon coast and use these data to produce GIS maps of the location and economic value of their fishing effort. Ecotrust will work with several fishermen organizations (SOORC, ODCC, FINE, NSAT, etc.) and/or Port Liaisons to define and interview an appropriate stratification of the fishing fleet in the study region. The interview approach is based on peer-reviewed, social science techniques for collecting local expert knowledge. The sample is designed to capture the majority of landings for the most significant regional fisheries as well as the depth of expertise of longtime and successful fishermen.

Ecotrust personnel will contact fishermen directly to arrange interviews, which will be conducted in person using one-on-one or small group formats. Due to the sensitive nature of commercial fishing information, only Ecotrust staff (operating under a strict confidentiality protocol) will handle the raw data collected during the interviews. All information will be kept anonymous and confidential on the individual level. Analyses and results will be presented in aggregate form, and will be reviewed in aggregate form by participating fishermen from each fishery. Every measure will be taken to protect the confidentiality of the information provided by fishermen.

The information will be used to create a comprehensive profile of the commercial fishing use patterns and values within the study region and the aggregated results may also be published. More specifically, aggregated results will be compiled so as to provide both an accurate portrayal of aggregated data to different audiences and protect any sensitive data or data of concern from any single or small sampling of involved participants.

Your willingness to participate and/or to refer other fishermen we should contact is not only appreciated, but indeed vital to the success of this project. If you have any questions or concerns, please contact Charles Steinback at charles@ecotrust.org or 971.404.5632.

If you agree to participate under the conditions described above, please print and sign your name.

Participant's name _____ Signature _____

Field Staff signature (agent of Ecotrust)

_____ Date _____

Confidentiality Agreement

This Confidentiality Agreement (“Agreement”) is entered into by and between “the Interviewee”
....., (together with all successors, affiliates and employees thereof, “the Interviewee”) and
..... (acting on behalf of Ecotrust, together with all successors, affiliates, contractors and
employees thereof, “Ecotrust”), collectively referred to as “the Parties.” The parties are currently considering sharing
information related to Marine Fisheries Uses and Values Pilot Project in Support of the Southern Oregon Ocean
Resources Coalition (“the Project”). This may entail proprietary information or information that is sensitive to the
outside industry. All such disclosures have been or will be made subject to the following terms and conditions:

1. Confidential Information. For purposes of this Agreement, “Confidential Information” shall mean and include all non-public maps, trade secrets, data, documents, spreadsheets, models, lists, plans, contracts, leases, processes, methods, designs, inventions, samples, prototypes, studies, know-how and other intellectual property or information disclosed or made available by “the Interviewee” to Ecotrust in connection with the Project. Confidential Information may be disclosed in documentary or other tangible form, electronically, orally or by visual inspection, pursuant to the restrictions described below. The disclosure of Confidential Information hereunder and its extent is at the complete discretion of “the Interviewee”.
2. Restrictions on Use of Confidential Information. Except as expressly provided to the contrary herein, Ecotrust shall maintain any and all Confidential Information in strict and complete confidence, and shall not publish, disclose, transfer, release or divulge, either directly or indirectly, any such Confidential Information to any third party or use any such Confidential Information for any purpose other than the Project, without the prior written permission of “the Interviewee”. Ecotrust may disseminate Confidential Information only to those of its employees, attorneys, financial advisors, and consultants who need to receive it for purposes of the Project and shall ensure that such persons are made aware of Ecotrust’s obligations under this Agreement and are bound to uphold them.
3. Exclusions. Ecotrust’s obligations under Paragraph 2 hereof shall not apply or shall cease to apply to any Confidential Information which:
 - (a) Ecotrust can demonstrate was known to it prior to disclosure hereunder other than as a result of previous confidential disclosure by “the Interviewee”;
 - (b) is in the public domain or becomes so through no fault of Ecotrust; or
 - (c) has been or becomes disclosed to “Ecotrust without restriction by a third party under no obligation of confidentiality to “the Interviewee”.

Specific information which is not itself within any of the exceptions specified in this paragraph 3 shall not be brought within any of such exceptions simply because it is embraced by general information which is within such exceptions. The fact that information may itself come within any of the above exceptions shall not prevent its combination with other information, or its adoption or use by “the Interviewee”, from constituting Confidential Information.

4. No Transfer or License. All Confidential Information shall be and remain the sole and exclusive property of “the Interviewee”. Neither this Agreement nor the disclosure of Confidential Information hereunder shall result in the grant to Ecotrust of any right to or license of any intellectual property or other proprietary property of “the Interviewee”.
5. Return of Documents and Other Tangible Material. All Confidential Information, together with all copies thereof and any products, documents, models, notes or other materials in Ecotrust’s possession which contain or embody any such Confidential Information, shall be promptly returned to “the Interviewee” upon the earlier to occur of (a) the conclusion or termination of the Project, or (b) in response to any written request by “the Interviewee”.
6. Legally Compelled Disclosure. In the event Ecotrust should be required by applicable law or legal process to disclose any Confidential Information, such disclosure shall not constitute a breach of this Agreement provided Ecotrust, prior to making any such disclosure: (a) provides “the Interviewee” with prompt notice of such requirement so that it may seek an appropriate protective order or other remedy; and (b) consults with “the Interviewee” with respect to taking steps to resist or narrow the scope of such required disclosure.

7. Injunctive Relief. The parties acknowledge and agree that with respect to any actual or threatened violation of this Agreement by or through Ecotrust, in addition to whatever remedies may be available under applicable law, “the

Interviewee” shall be entitled to specific performance of this Agreement and to injunctive relief to prevent the disclosure or unauthorized use of any Confidential Information.

8. **Governing Law.** This Agreement shall be governed by and interpreted in accordance with the laws of the State of Oregon, USA, without regard to the choice of law principles thereof.

9. **Binding Effect/No Assignment.** This Agreement shall be binding upon the parties, their respective successors and permitted assigns. Ecotrust may not assign this Agreement, in whole or in part, by operation of law or otherwise, without the prior written consent of “the Interviewee”.

10. **Contacts/Notice.** Ecotrust’s contact person for the purpose of receiving Confidential Information and/or any notice hereunder is Charles Steinback , 721 NW Ninth Ave. Portland, Oregon 97209, 503-467-0777, charles@ecotrust.org

“The Interviewee” contact person for the purpose of receiving any notice hereunder is
Any notice given to a party hereunder shall be in writing and sent by registered or certified mail or overnight delivery service, or by confirmed facsimile transmission. Any such notice shall be deemed given on the date of receipt. Either party may designate a different contact person or address by notice conforming to this Paragraph 10.

11. **Severability.** The unenforceability or invalidity of any provision of this Agreement shall not affect the validity or enforceability of the remaining provisions, but such remaining provisions shall be construed and interpreted in such a manner as to carry out fully the intent of the parties; provided, however, that should any judicial body interpreting this Agreement deem any provision to be unreasonably broad in time, scope or otherwise, the parties each acknowledge their intent and desire that such judicial body, to the greatest extent possible, reduce the breadth of such provision to the maximum legally allowable parameters rather than deeming such provision totally unenforceable or invalid.

12. **Entire Agreement.** This Agreement constitutes the entire agreement, and supersedes any previous agreement between the parties, relating to the Confidential Information. Any modification or amendment of this Agreement must be in writing and signed by both parties.

I, the undersigned, provide my individual fishing grounds information with the shared understanding with Ecotrust that my individual fishing grounds information shall remain undisclosed to the public and that only aggregated fishing grounds information, at a scale and level of detail sufficient for ocean planning purposes, shall be made available to the public. As such, I am voluntarily providing my individual fishing grounds information with the understanding my information constitutes a “Trade Secret” under ORS 192.501(2) and a “Confidential Submission” under ORS 192.502(4). As such, I provide this individual fishing grounds information with the understanding the information shall be shielded from information disclosure, including from any public records request, pursuant to Oregon’s Public Records Law (codified under ORS 192.410 et. seq.).

If you agree to participate under the conditions described above, please print and sign your name.

Participant's name _____ Signature _____

Field Staff signature (agent of Ecotrust)

_____ Date _____

Interview Questions: Commercial

Questions captured in hard copy printouts:

1. Date – *Date of interview*
2. Interviewer's Name(s) – *Names of all individuals (field staff) conducting interview*
3. Fisherman's Name – *Fisherman's first and last name*
4. Mailing address – *Address to which we can send the fisherman's maps for verification*
5. Phone – *Phone number where the fisherman can be reached*
6. Email – *Email address where the fisherman can be reached*
7. State Vessel ID – *5-7 character alphanumeric code*
8. Federal Vessel ID – *5-7 character alphanumeric code*
9. Number of Crew (not including themselves) – *Number of people working on the boat not including the fisherman responding?*
10. Percentage of gross economic revenue used for operation cost: fuel
11. Percentage of gross economic revenue used for operation cost: crew or labor
12. Percentage of gross economic revenue used for all other operations costs
13. Vessel engine's gallons per hour – *average gallons of fuel used per hour of vessel operation*
14. Fisheries in which they used to participate in – *What fisheries did the fisherman participate in but no longer does? Why did the fisherman stop fishing in those fisheries? Would the fisherman ever consider fishing in those fisheries again (under what change in circumstances)?*
15. Fisheries in which they currently participate – *All fisheries, including those that the fisherman didn't provide fishing grounds for. (Is this added)*
16. Bounding box/interacting with OceanMap – *To assist with the identification of fisheries boundaries drawn in OceanMap, hard copy notes are also taken as the fisherman describes these areas. Special attention is paid to landmarks, geophysical or bathymetric features.*

Additional socioeconomic questions will be asked in a separate survey

Questions captured electronically in OceanMap:

1. Fisherman's name – *Fisherman's first and last name*
2. Age – *Fisherman's age in years*
3. Gender – *Male or female*
4. City of residence – *Fisherman's primary city of residence*
5. Years of experience fishing – *Number of years the fisherman has fished*
6. Percentage of income from fishing – *Percentage of fisherman's total income that comes from fishing.*
7. Number of vessels own/operate – *1-2 character alphanumeric code*
8. Federal Vessel ID – *5-7 character alphanumeric code (Allow for up to 5 entries)*
9. State Vessel ID – *5-7 character alphanumeric code (Allow for up to 5 entries)*
10. Vessel length (feet) – *Length of the vessel in feet*
11. Vessel motor (horsepower) – *Motor specifications in horsepower*
12. Haul capacity (pounds) – *Maximum pounds of fish the vessel can hold*

13. Home port – *Location at which fisherman docks or moorages*
14. Landing port(s) – *Location at which fisherman's catch is primarily landed*

Fishery Specific Questions in OceanMap:

1. Fishery – *Select fishery from a drop-down list*
2. Percentage of income from this fishery – *The percentage of income the fisherman gets from each fishery*
3. Years they have participated in each fishery in which they currently participate- *For each fishery in which the fishermen currently participates, how many years have he/she participated in that fishery (Please check if added)*
4. Number of traps owned/hooks used per fishing day/average net tows a day
5. Months of fishing effort
6. Average number of days fishing per year
7. Draw a polygon around the fishery area as directed by the fisherman's specifications
8. Weight the fishery area polygon – *Rank the importance of each fishery area. This is done through the allocation of 100 points distributed over the fisherman's fishing grounds by the fisherman. (For example, the fisherman could have one shape with a value of 100 or 100 shapes with a value of one each.)*
9. Habitat types – *Select habitat type from a drop-down list*
10. If needed, draw additional shapes for the same fishery by repeating steps 7-10.

Interview Questions: Charter

Questions captured in hard copy printouts:

1. Date – *Date of interview*
2. Interviewer's Name(s) – *Names of all individuals (field staff) conducting interview*
3. Fisherman's Name – *Fisherman's first and last name*
4. Mailing address – *Address to which we can send the fisherman's maps for verification*
5. Phone – *Phone number where the fisherman can be reached*
6. Email – *Email address where the fisherman can be reached*

Additional socioeconomic questions will be asked in a separate survey

Questions captured electronically in OceanMap:

1. Date – *Date of interview*
2. Fisherman's name – *Fisherman's first and last name*
3. Age – *Fisherman's age in years*
4. Gender – *Male or Female*
5. Fishing Vessel's Home Port

If a Charter Boat Owner

6. Number of charter boats – *Number of charter boats the fisherman owns*
7. Years of ownership – *Number of years the fisherman has owned charter boats*

8. Annual gross revenue – *Fisherman’s annual gross revenue*
9. Percent GER goes to operating cost: crew/labor
10. Percent GER goes to operating cost: fuel
11. Percent GER goes to all other operating costs:

If a Charter Boat Owner or Operator

12. Percent income from charter boat operations – *The percentage of the fisherman’s total income that is derived from charter boat operation*
13. Type of trip – *Choose type of trip from a drop-down list*
14. Vessel document number – *5-7 character alphanumeric code*
15. Vessel Name – *Name of the vessel*
16. Vessel Length (feet) – *Length of the vessel in feet*
17. Home Port – *Where the fisherman docks or moorages*
18. Number of charter boats operated – *Number of charter boats the fisherman operates*
19. Years of operating charter boats – *Number of years the fisherman has operated charter boats*
20. Average number of days charter boat fishing per year – *Average number of days the fisherman spends charter boat fishing each year*
21. Average number of passengers on a boat per trip – *Average number of passengers on the charter boat during each fishing trip*
22. Percentage of passengers from out of state – *Percentage of charter boat passengers that are from out of state.*
23. Number of Crew (not including themselves) – *How many people does the fisherman have working on the boat when on a fishing trip?*

Fishery Specific Questions in OceanMap:

1. Targeted Species – *For each of the following species (Dungeness Crab, Groundfish/Bottom Fishing, Halibut, Salmon, Tuna), identify the percentage of annual trips that target each species, select the trip length from a drop-down list (1/2 day, ¾ day, 1 day, > 1 day), and identify the cost of these trips to the angler*
2. Draw a polygon around the fishery area as directed by the fisherman’s specifications
3. For each polygon, identify the percentage of these trips (annually) that are associated with each fishery.
4. Weight the fishery area polygon – *Rank the importance of each fishery area. This is done through an allocation of 100 points distributed over the fisherman’s fishing grounds by the fisherman. (For example, the fisherman could have one shape with a value of 100 or 100 shapes with a value of one each.)*
5. Habitat Types – *Select habitat type from a drop-down list*
6. If needed, draw additional shapes for the same fishery by repeating steps 2-6

Interview Questions: Recreational

Questions captured in hard copy printouts:

7. Date – *Date of interview*
8. Interviewer’s Name(s) – *Names of all individuals (field staff) conducting interview*
9. Fisherman’s Name – *Fisherman’s first and last name*

10. Mailing address – *Address to which we can send the fisherman's maps for verification*
11. Phone – *Phone number where the fisherman can be reached*
12. Email – *Email address where the fisherman can be reached*

Additional socioeconomic questions will be asked in a separate survey

Questions captured electronically in OceanMap:

All participants

1. Date – *Date of interview*
2. Fisherman's name – *Fisherman's first and last name*
3. Age – *Fisherman's age in years*
4. Gender – *Male or Female*
5. City of Residence – *Where the fisherman lives*

Private Vessel

1. Type of sport boat – *The type of sport boat the fisherman uses (Add drop down of: Aluminum, Fiberglass, or Inflatable)*
2. Fish and Game Boat Number – *5-7 character alphanumeric code*
3. Years operating a sport boat – *Number of years the fisherman has operated a sport boat*
4. Years of ownership – *Number of years the fisherman has owned a sport boat*
5. Vessel length (feet) – *Length of the vessel in feet*
6. Storage location – *Where the fisherman's sport boat is stored*
7. Home port – *Where the fisherman docks or moorages*
8. Launching port(s) – *Additional ports where the fisherman may launch from*
9. Years experience – *How many years of experience does the fisherman have fishing from a sport boat?*
10. Average number of individuals on a boat per trip – *On average, how many people are with the fisherman on the each trip?*
11. Average number of days fishing from boat per year – *Average number of days the fisherman spends fishing each year on a boat*

Kayak

1. Launching port(s)/site(s) – *Ports and sites where the fisherman may launch from*
2. Years experience – *How many years of experience does the fisherman have fishing from a kayak?*
3. Average number of days fishing from boat per year – *Average number of days the fisherman spends fishing each year on a kayak*

Dive

1. Average number of dives per trip

2. Primary access mode to dive locations – (e.g., shore, kayak, private boat)
3. Percentage of dives by type – (e.g., shore-based, island-based)
4. Primary dive method – (e.g., free dive, SCUBA dive)

All participants – for each fishery in which they participate

1. Fishery – Select fishery from a drop-down list
2. Draw a polygon around the fishery area as directed by the fisherman’s specifications
3. Weight the fishery area polygon – Rank the importance of each fishery area. This is done through an allocation of 100 points distributed over the fisherman’s fishing grounds by the fisherman. (For example, the fisherman could have one shape with a value of 100 or 100 shapes with a value of one each.)
4. Habitat types – Select habitat type from a drop-down list
5. If needed, draw additional shapes for the same fishery by repeating steps 1–5

Fisheries List of Interest

Commercial

LE = Limited Entry, OA = Open Access, RCA = Rockfish Conservation Area

1. Dungeness Crab – Trap
2. Salmon – Troll
3. Halibut – Longline
4. Albacore Tuna - Troll (Jig)
5. Pink Shrimp – Trawl
6. Hagfish – Trap
7. Sardine - Net (Seine)
8. Urchin - Dive
9. Groundfish - Midwater Trawl Pre RCA
10. Groundfish - Midwater Trawl Post RCA
11. Groundfish - Bottom Trawl Pre RCA
12. Groundfish - Bottom Trawl Post RCA
13. Groundfish - Longline Pre RCA (LE)
14. Groundfish - Longline Post RCA (LE)
15. Groundfish - Hook and Line Pre RCA (LE)
16. Groundfish - Hook and Line Post RCA (LE)
17. Groundfish - Trap Pre RCA (LE)
18. Groundfish - Trap Post RCA (LE)
19. Groundfish - Longline Pre RCA (OA)
20. Groundfish - Longline Post RCA (OA)
21. Groundfish - Hook and Line Pre RCA (OA)
22. Groundfish - Hook and Line Post RCA (OA)
23. Groundfish - Trap Pre RCA (OA)
24. Groundfish - Trap Post RCA (OA)
25. Other

Recreational and Charter

1. Albacore Tuna
2. Rockfish
3. Salmon
4. Dungeness Crab
5. Pacific Halibut