

WEST COAST LIMITED ENTRY GROUND FISH FIXED GEAR ECONOMIC DATA COLLECTION

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

- 1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g. establishments, State and local governmental units, households, or persons) in the universe and the corresponding sample are to be provided in tabular form. The tabulation must also include expected response rates for the collection as a whole. If the collection has been conducted before, provide the actual response rate achieved.**

The population of interest for this survey is the owners of all active commercial fishing vessels holding a West Coast (Washington, Oregon, and California) limited entry groundfish permit with a fixed gear endorsement, that were active during 2012. The fixed gear endorsement may be for the use of longline gear and/or pots. Active fishing vessels are defined as having at least \$1,000 of West Coast landings (over all species and gear types) during 2012. Vessels with less than \$1,000 landings are considered to have too low a level of activity to provide useful cost earnings data. Fish ticket data obtained through the PacFIN (Pacific Coast Fisheries Information Network) system indicates that there are 169 vessels in the survey population.

While vessels associated with a limited entry groundfish fixed gear permit are covered by the survey described in this document, vessels associated with a limited entry groundfish trawl permit are covered by a mandatory data collection as part of the West Coast trawl rationalization catch shares program. Because the trawl and fixed gear components of the West Coast groundfish species target many of the same species of groundfish, management measures in one fishery can affect the economic performance of the other fishery. As a result, it is desirable to coordinate economic data collection in the trawl and fixed gear components of the West Coast limited entry groundfish fishery. The data collection described in this document covers the same period (2011 and 2012) as the mandatory base year economic data collection already approved by OMB for the West Coast limited entry trawl groundfish fishery.¹

This survey will be performed on a census of the 169 vessels in the survey population. That is, there will be no sampling to determine which vessel owners in the population of interest receive the survey. The survey sample and the survey population are identical.

The NWFSC (Northwest Fisheries Science Center) has conducted three previous economic cost earnings surveys of the limited entry fixed gear fleet. A survey fielded during 2006 obtained a 58% response rate. A second survey fielded during 2009 obtained responses from 50% of vessel owners. The third survey conducted in 2011 obtained responses from 55% of vessel owners. Since the survey fielding protocol for this survey is similar to the protocol used during the 2011 survey, a 55% response rate is expected for this survey. With a survey sample of 169 vessels, this implies 93 survey responses.

¹ The mandatory groundfish trawl catcher vessel survey was approved under OMB control 0648-0618.

Survey Population	Survey Sample	Expected Responses	Expected Response Rate
169	169	93	55%

2. Describe the procedures for the collection, including: the statistical methodology for stratification and sample selection; the estimation procedure; the degree of accuracy needed for the purpose described in the justification; any unusual problems requiring specialized sampling procedures; and any use of periodic (less frequent than annual) data collection cycles to reduce burden

There is no stratification and sample selection in the survey design. All members of the survey population are included in the survey sample.

NMFS needs to measure the economic performance of catcher vessels in the West Coast limited entry groundfish fixed gear fishery, and undertake economic research. Currently available cost earnings data from non-survey sources is very limited and does not meet these needs. This survey collects the data that is needed (but not currently available from other sources) to construct key economic performance measures such as costs, profitability, and quasi-rents,

The data gathered and performance measures constructed will be used to address a wide range of issues; these issues include (but are not limited to) the economic effects of catch share management in the trawl sablefish fishery on the fixed gear sablefish fishery, the economic performance of the catch shares program in the primary sablefish fishery (all participants in the primary sablefish fishery are members of the survey population for the information collection described in this document), regional economies, and net benefits to the nation, as well as how the distribution of those measure may have changed.

Much of the data requested will be used to compute total (or average) revenue, cost, variable cost net revenue (revenue minus variable costs), and total cost net revenue (revenue minus fixed and variable costs).² This information is useful in and of itself to help understand the economic condition of the fishery and how it may have changed. Such data summaries are the type of information that fishery managers, participants and the public commonly wish to have provided. These data summaries will also be used in a regional economic impact model that has been developed by the NWFSC. A basic input to this model is the average expenditure (by cost category) as a percentage of revenue. The output of the regional economic impact model is used by NMFS and the Pacific Fisheries Management Council (PFMC) to report on the economic contribution of the fishery to regional economies.

Important objectives of survey design include data accuracy and data precision. Data precision is discussed in the response to this question. Measuring and minimizing non-response bias (an important aspect of assuring accurate data) is addressed under Question 3. It is not possible to state a level of accuracy that is required for all uses and applications of data collected by this survey.

² See Lian, West Coast Limited Entry Groundfish Cost Earnings Survey: Protocol and Results for 2008, 2012. This tech memo is available at: http://www.nwfsc.noaa.gov/assets/25/8778_01232013_114027_LESurvey2008TM121WebFinal~Std.pdf for an example of how economic performance measures were calculated with the 2008 limited entry groundfish cost earnings survey.

As discussed in the response to Question 3, data on vessel physical characteristics and landings (location, timing, gear, species, weight, and revenue) is available for both survey respondents and non-respondents, and will be used to test the representativeness of survey respondents. This data will also be used to adjust the models and/or data for any non-response bias that is detected.

The desired degree of precision, and corresponding desired response rate, depends upon the application for which the data is being used.

A basic application of the survey data will be the inference of population mean values from the observed sample mean values. The following table shows the number of responses (and corresponding response rate) needed to get a response sample mean within 10%, 15%, and 25% of the population mean at the 95% confidence level. In this calculation, revenues associated with West Coast landings (which are known for all vessels) are used as a proxy for revenues from other sources and for expenditures (which are not known and are the focus of this survey).

N Population	N 10%	N 15%	N 25%	Response Rate 10%	Response Rate 15%	Response Rate 25%
169	103	69	34	61%	41%	20%

As shown in the accompanying table, having a sample mean within 15% of the population mean at the 95% confidence level requires a response rate of 41%. The expected 55% response rate allows calculation of a sample mean within 15% of the population mean. At least two reasons can be identified for desiring higher response rates than those needed to support inference of population means from sample means:

- 1) Data from this survey will be used to develop a variety of economic models covering applications such as fleet efficiency and fishery participation. In these applications, error will arise not only from the representativeness of data used for model development, but also from model specification and estimation. Since it is not possible to completely avoid specification and estimation error in model development, there is good reason to desire a higher response rate and higher degree of accuracy in the data collection process.
- 2) Future applications of the data may require further disaggregating the population into smaller groups according to factors such as state of operation or species targeted. Identification of all such future disaggregated data needs is not possible at the present time. A higher response rate and higher degree of accuracy in the current data collection process will facilitate such future population disaggregation.

This data collection will yield data used for the construction of economic performance measures and in the estimation of the Input Output Model for Pacific Coast Fisheries (IO-PAC).

Constructing economic performance measures for individual fisheries requires cost data at the fishery level. Since most cost data is available only at the vessel level, it is necessary to allocate costs to individual fisheries when vessels participate in multiple fisheries (most commercial fishing

vessels operating on the West Coast participate in multiple fisheries). A supplementary document titled “Cost Allocation for Commercial Catcher Vessels Operating in Multiple Fisheries” presents work done with the most recent limited entry fixed gear survey comparing methods of cost allocation. This presentation was accepted for the 2013 North American Association of Fisheries Economists meeting, but was not presented due to travel budget restrictions.

Data from this data collection will be used in the estimation of the Input Output Model for West Coast Fisheries (IO-PAC), which is used to provide statutorily required estimates of economic impacts to the PFMC for fisheries management plans administered in the Northwest and Southwest regions. Data from cost earnings surveys is used to create production functions for commercial fishing vessels. The operation of the IO-PAC model is discussed in Leonard and Watson (2011).³ A more recent document titled “Input-Output Model for West Coast Fisheries: 2013 Revisions and Extensions” presented to the Scientific and Statistical Committee of the PFMC discusses expected use of cost earnings survey data.⁴

3. Describe the methods used to maximize response rates and to deal with nonresponse. The accuracy and reliability of the information collected must be shown to be adequate for the intended uses. For collections based on sampling, a special justification must be provided if they will not yield "reliable" data that can be generalized to the universe studied.

Methods Used To Maximize Response Rates

A number of methods were used to maximize survey response during the previous survey of the limited entry groundfish fixed gear fleet, and will be used during this data collection.

1)The survey is short, consisting of only seven pages.

2)Respondents are asked only to provide information about major cost and earnings categories, thus avoiding what may seem to survey respondents like unnecessary detail.

3)Survey recipients will not only have the option of responding through in-person interviews, but will also have the option of responding via mail or an on-line questionnaire.

4)Extensive discussions have been held with members of the limited entry fleet in an on-going effort to clarify questions. Revenue and cost categories on the questionnaire correspond to the financial records maintained by vessel owners as much as possible.

5)Initial telephone contact will be made by an expert recruiter, and there will be extensive follow-up telephone calls and mailings for non-respondents. Previous surveys of the limited entry fleet have demonstrated the value of using an expert recruiter to make the first telephone contact and schedule the interview time and location. Follow-up telephone calls will be distributed among weekend/weekday and

³ See Leonard and Watson, Description of the Input-Output Model for West Coast Fisheries, NMFS-NWFSC-011, 2011. This tech memo is available at

http://www.nwfsc.noaa.gov/assets/25/7785_08012011_142237_InputOutputModelTM111WebFinal.pdf

⁴ See Leonard, Input-Output Model for West Coast Fisheries: Revisions and Extensions”, 2013. This document is available at http://www.pcouncil.org/wp-content/uploads/IOPAC_SSC_Econ_Review_April_NWC.pdf

day/evening time periods to maximize the likelihood of reaching the contact person. Up to six attempts to contact survey recipients will be made for each member of the survey population. When contacted, survey recipients will be offered the choice of responding through an in-person interview, on-line survey, or mail survey.

Addressing Non-Response

Testing for non-response bias will be based on the considerable amount of data that is available for all members of the survey population. Variables that will be used for non-response bias testing fall into the categories of vessel physical characteristics and vessel landings. Vessel physical characteristics such as length provide an indication of whether the data collected through the survey on fixed cost items such as repair and maintenance is likely to differ for survey respondents and survey non-respondents. Other vessel characteristics such as engine horsepower indicate whether variable costs such as fuel vary between survey respondents and non-respondents.

Tests for non-response bias will be based not only on vessel physical characteristics, but also on West Coast (Washington, Oregon, and California) landings. PacFIN provides vessel level information on West Coast landings (weight and dollar value) by date, species, gear type, and port for all vessels in the survey population. As a result, it is possible to compare respondents and non-respondents with regard to seasonal patterns, species landed, and location of landings.

Data on vessel landings makes possible a comparison between respondents and non-respondents of species landed, port of landings, and gear type. Available landings data will allow testing for differences between respondents and non-respondents for total dollar value and weight of total landings, dollar value and weight of groundfish landings, dollar value and weight of crab landings, dollar value and weight of shrimp landings, dollar value and weight of salmon landings, and dollar value and weight of highly migratory species (primarily tuna) landings.

While PacFIN provides information on West Coast landings, information on landings in Alaska is provided by the Alaska Fisheries Information Network (AKFIN). NWFSC employees do not have full access to AKFIN data, and as a result it is not possible to compare respondents and non-respondents Alaska landings by revenue, weight, species, gear type, time of year, and port. While NWFSC employees do not have full access to AKFIN data, it is possible for NWFSC employees to obtain information on which members of the limited entry groundfish fixed gear fleet landed fish in Alaska during 2011 and 2012. As a result, it is possible to compare the percentage of respondents and non-respondents participating in Alaska fisheries (although it is not possible to compare the pounds landed, revenue earned, species harvested, or gear used in Alaska by respondents and non-respondents due to the limited access to AKFIN data).

If non-response bias is detected, procedures will be used to reweight the data or the estimated model to correct for any known bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

1NMFS needs to measure the economic performance of West Coast commercial fisheries in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. Currently available limited entry fixed gear fleet cost earnings data for 2011 and 2012 from non-survey sources is very limited and does not meet these needs. The NWFSC's Cost Earnings Program will collect the additional data that is needed to construct key economic performance measures such as profitability (as measured by variable cost net revenue and total cost net revenue), capacity utilization, efficiency, productivity, and economic impacts. The data gathered and performance measures constructed will be used to address a wide range of issues; these issues include (but are not limited to) the effect of alternative catch share programs and predicting fishery participation under alternative regulatory regimes. While the data will be used to comply with legal and regulatory requirements, these requirements do not specify a level of data accuracy.

4. Describe any tests of procedures or methods to be undertaken. Tests are encouraged as effective means to refine collections, but if ten or more test respondents are involved OMB must give prior approval.

This data collection will be the fourth collection of cost earnings data from this survey population. Because this questionnaire and survey fielding methods are very similar to those used in the previous data collection, the NWFSC does not believe that tests of procedures and methodology are needed. All of the survey questions found of the questionnaire for this data collection are also used on the questionnaire for the mandatory economic data collection program in the West Coast limited entry groundfish trawl fleet (although the trawl survey collects all data through mail responses). Because of the prior success of the survey methodology and survey questionnaire proposed for this survey, the NWFSC does not believe a pre-test is necessary.

5. Provide the name and telephone number of individuals consulted on the statistical aspects of the design, and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

As noted above, the proposed data collection is the fourth data collection from the West Coast groundfish limited entry fixed gear fleet. Survey fielding protocol is the same as the previous survey, and only minor changes have been made in language on the questionnaire. Individuals reviewing the questionnaire and suggesting language changes to improve clarity include:

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Erin Steiner	NWFSC	206-860-3202
Jerry Leonard	NWFSC	206-302-1742

Carl Lian, NWFSC, 206-302-2414, will analyze the data.