

SUPPORTING STATEMENT Part B
COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS
U.S. Department of Commerce
National Oceanic & Atmospheric Administration
Economic Surveys of Specific US Commercial Fisheries
OMB Control No. 0648-0773

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Introduction

This proposed revision to a standard collection of information, among other things, will expand it to include an additional 14 fisheries (there are currently approved information collections for four of those fisheries and discontinued information collections for the other ten fisheries). Because the five responses in Part B are specific to each of the 15 information collections included in this bundled information collection request, we provide a set of five responses one fishery at a time.

1. West Coast Limited Entry Groundfish Fixed Gear Fishery (0648-0773)

1.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

We made no changes in the procedures or statistical methodology of the collection since the last approval. 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 2019. The fixed gear endorsement is 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 2019. 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 Pacific Coast Fisheries Information Network (PacFIN) indicates that there are 164 vessels in the survey population.

Sampling and Other Respondent Selection Methods

This survey will be performed as a census of the 164 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.

Expected Response Rate

The NWFSC has conducted five 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 and fourth surveys were conducted in 2011 and 2014 and both obtained responses from 55% of vessel owners. The most recent survey of this population, which we conducted in 2019, achieved a response rate of 59%. Based on these prior efforts, we expect a 55% response rate for this survey. With a survey population of 164 vessels, this implies 90 survey respondents and responses. Results from some

of the previous surveys can be found in Lian (2010, 2012a).

Survey Population	Survey Sample	Expected Responses	Expected Response Rate
164	164	90	55%

1.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Fielding, stratification, and sample selection

The NWFSC and its subcontractor will field the survey. To field the survey, information on the vessel owner name, mailing address, and telephone number will be taken from federal permit and vessel registration files. The NWFSC will send an initial mailing with a cover letter, a copy of the questionnaire, and an explanation of how economists will use the data collected by the survey. This will provide survey recipients with an opportunity to see first-hand the data being collected by the survey. Survey recipients will receive a self-addressed stamped envelope for responding to the survey by mail, as well as instructions for responding via in-person or telephone.

About one week after the initial mailing, attempts to contact all non-respondents via telephone will begin (the federal limited entry permit information includes telephone numbers for all members of the survey population). We anticipate that at the time these calls begin, most survey recipients will not have responded to the survey. An expert recruiter who has performed nine previous cost earnings surveys on the West Coast will make these calls. The recruiter will contact survey recipient to encourage participation, answer questions about the survey, and help determine the most suitable response method (mail, telephone, or in-person interview). For those choosing an in-person interview, an interview time and location will be scheduled.

This fielding approach has been followed for the previous five times the survey has been conducted. The success for some of the previous efforts is documented in Lian (2010, 2012a). Because of the success of these previous efforts using the same methods, changes to the procedures or statistical methodology seemed inappropriate.

Estimation Procedure

NMFS will use much of the data requested to estimate total (or average) revenue, cost, variable cost net revenue (revenue minus variable costs), and total cost net revenue (revenue minus fixed and variable costs). Such estimates are useful in understanding the economic conditions of the fishery and how they have changed. Fishery managers, fishery participants and the public

commonly want this type of information. Additionally, NMFS and the Council can use these estimates and the data on which they are based in predicting the effects on those conditions of changes in regulatory, market and environmental conditions. These estimates will also be used in the IO-PAC model (Leonard, 2011) 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 PFMC to report on the economic contribution and impacts of the fishery to regional economies.

Degree of Accuracy Needed for Intended Purpose

We will use the data collected through this survey for statistical inference of population values from sample respondents and for estimation of econometric models used for fisheries management. Neither economic theory nor legislative mandates establish the degree of accuracy needed for these intended uses. All else being equal, we prefer more accurate data; however, we expect this survey will provide sufficiently accurate and useful data for these intended uses and we believe the correct choices have been made with respect to the tradeoff between data accuracy and data collection costs. Assuming a response rate of 55%, we expect to obtain 90 complete and usable surveys from a population of 164. This would, for example, allow us to report the critical sample mean of the proportion of total vessel revenues that is paid to crew with a margin of error of 9.4% of the population mean with a 95% confidence interval for the entire fishery¹.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey. It will be the sixth survey of this population.

Periodic Data Collection Cycle to Reduce Burden

With regard to reducing the time cost of reporting, as well as the financial cost to the federal government, we intend to collect similar data no more than every three years.

¹ An important metric for utilizing these data to estimate economic impacts is the proportion of total vessel revenues that is paid to crew. In the most recent collection for this population, we had a mean of 0.279 with std. error of 0.0390. With a finite population correction factor, the associated margin of error for a 95% confidence interval for the mean ratio cost is $\pm 1.96 CV_x \sqrt{\frac{N-n}{n(N-1)}}$. With an expected 90 complete responses from a population of 164 and assuming we obtain similar values for the mean and std. error, the margin of error would be 9.4%.

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

Methods Used To Maximize Response Rates

Over the five times a cost earnings survey was administered for this population, the NWFSC has developed a set of principles that are expected to help maximize survey response during this data collection.

- 1) Respondents are asked only to provide information about relatively major cost and earnings categories, thus avoiding what may seem to survey respondents like unnecessary detail.
- 2) Survey recipients will not only have the option of responding through in-person interviews, but will also have the option of responding via telephone or mail.
- 3) Discussions have been held with members of the limited entry fleet over the last five iterations of this collection 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.

Strategy to Address Non-Response

We will base testing for non-response bias on the considerable amount of data available for all members of the survey population. The variables we will use 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 are 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. 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 by quantity landed, and location of landings. If we detect non-response bias, we will use procedures to reweight the data or the estimated model to correct for any known bias. The tests that will be performed are detailed from a prior collection effort of this population in Lian (2010, 2012a).

Adequacy of Accuracy and Reliability of Information for Intended Uses

Among other things, the response to the previous question (Question 1.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

1.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

This will be the sixth iteration of this collection. Prior to the first collection in 2005, the NWFSC performed extensive outreach to industry for the purposes of testing the survey instrument for clarity and feasibility of completing the survey. The survey instrument has been refined over time in response to feedback received from respondents. As a result, no specific testing was performed for this collection.

1.5 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.

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2 West Coast Open Access Groundfish, Non-tribal Salmon, Crab, and Shrimp Fisheries

2.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

We made no changes in the procedures or statistical methodology of the collection since the last approval. The population of interest for this survey is all non-tribal commercial fishing vessels with (1) at least \$1,000 of West Coast landings during 2019, (2) no limited entry groundfish permit during 2019, and (3) at least one trip targeting open access groundfish, salmon, crab or shrimp, which is determined by a majority (>50%) of revenue from one of the four species groups. There were 2,311 vessels in the survey population in 2019.

Sampling and Other Respondent Selection Methods

The NWFSC has conducted three previous economic cost earnings surveys of the open access fleet. A survey fielded during 2007 obtained a 32% response rate. A second survey fielded during 2010 obtained a 45% rate. The most recent survey of this population was conducted in 2014 and achieved a response rate of 44%. Based on these prior efforts, we expect a 45% overall response rate for this information collection. From the population of 2,311 vessels, we expect to sample 1,009 vessels as discussed below. With a survey response rate of 45%, this implies 450 survey responses, or an average annual amount of 150 over the three-year period.

Vessels will be identified for inclusion in the survey population using fish-ticket landings data contained in PacFIN. Based on the landings criteria in 2019, there are 2,311 vessels in the survey population. Of this population, we will select 1,009 vessels via stratified random sampling on four different geographic areas: Washington, Oregon, Northern CA, and Southern CA. To achieve the full sample, the vessel population in each geographic region will be sampled proportionately with a probability of 0.437. We will have owner address information for vessels in the sample from PacFIN. Telephone information of those sampled is not contained in PacFIN. To acquire telephone numbers, we will utilize a telephone number matching service to match the names and addresses of those sampled with telephone numbers.

Expected Response Rate

Previous cost and earnings surveys of the open access fleet provide insight into how vessels will be contacted and expected response rates for each method. Based on the last iteration of this collection, we expect to obtain telephone numbers for 59% of the sample, or 605 vessel owners. The remaining 404 owners will follow the mail only protocol. The response rate is expected to be higher among those with a matching telephone number. Prior efforts indicate a 59% response

rate for the telephone sample and 23% for the non-telephone sample. Overall, taking the weighted average of these response rates, the expected response rate is approximately 45%.

Survey Population	Sample	Sample Size	Expected Response Rate	Expected Responses
2,311	All	1,009	45%	450
	Telephone	605	59%	357
	No Telephone	404	23%	93

2.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Fielding, stratification, and sample selection

The NWFSC and its subcontractors will field the survey. For the 605 members of the telephone sample, the NWFSC will send an initial mailing with a cover letter, a copy of the questionnaire, and an explanation of how economists will use the data collected by the survey. This will provide survey recipients with an opportunity to see first-hand the data being collected by the survey prior to in-person interviews and collect the requested data prior to an interview. About one week after the initial mailing, attempts to contact all non-respondents via telephone will begin. An expert recruiter who has performed nine previous cost earnings surveys on the West Coast will make these calls. The recruiter will contact survey recipients to encourage participation, answer questions about the survey, and help determine the most suitable response method (mail, telephone, or in-person interview). For those choosing an in-person interview, an interview time and location will be scheduled.

The 404 members of the non-telephone sample will receive an initial mailing that includes a letter describing the survey and its purpose. The initial mailing will also include a copy of the questionnaire and a self-addressed stamped envelope for returning the questionnaire. The cover letter will provide contact information for those wishing to complete the survey in-person or by phone or to speak with personnel regarding questions about the survey. About two weeks after the mailing, we will send a reminder letter to all non-respondents. A second reminder letter will be sent about four weeks after the initial mailing to non-respondents. A copy of the questionnaire will be included in each reminder letter.

Because of the management need for data at the state level, the collection utilizing stratified random sampling where the strata are the state of homeport for vessels in the population. The IO-PAC model (Leonard, 2011), which utilizes these data to produce economic impacts of changes in Federal fishing regulations, requires accurate data at the state level. There is heterogeneity in species targeted in commercial fishing operations in this population from Washington to California. This heterogeneity in species targeted could affect the costs of operating. Stratified random sampling was chosen over simple random sampling to: 1) increase precision of the population (Cochran, 1977), 2) increase precision for the subgroups (Lohr 1999), 3) lower sampling errors and improve coverage of the population (Daniel 2011, McLennan 1999), and 4) allow comparisons across strata and inferences within strata (Daniel 2011, McLennan 1999). This fielding approach has been followed for the previous three times the survey has been conducted. The success of a previous effort is documented in Lian (2012b). Because of the success of these previous efforts using the same methods, changes to procedures or statistical methodology seemed inappropriate.

Estimation Procedure

The corresponding section of the response to Question 1.2 applies to this fishery too.

Degree of Accuracy Needed for Intended Purpose

With the exception of the following text, the corresponding section of the response to Question 1.2 applies to this fishery too.

Assuming a response rate of almost 45%, we expect to obtain 450 complete and usable surveys from a population of 2,311. This would, for example, allow us to report the critical sample mean of the proportion of total vessel revenues that is paid to crew with a margin of error of 6.7% of the population mean with a 95% confidence interval for the entire fishery².

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey. It will be the fourth survey of this population.

Periodic Data Collection Cycle to Reduce Burden

With regard to reducing the time cost of reporting, as well as the financial cost to the federal government, we intend to collect similar data no more than every three years.

² An important metric for utilizing these data to estimate economic impacts is the proportion of total vessel revenues that are paid to crew. In the most recent collection of this population the mean of 0.280 with std. error of 0.0211. With a finite population correction factor, the associated margin of error for a 95% confidence interval for the mean ratio cost is $\pm 1.96 CV_x \sqrt{\frac{N-n}{n(N-1)}}$. With an expected 450 complete responses from a population of 2,311 and assuming we obtain similar values for the mean and std. error, the margin of error would be 6.7%.

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

Methods Used To Maximize Response Rates

Over the three times a cost earnings survey was administered for this population, the NWFSC has developed a set of principles that are expected to help maximize survey response during this data collection.

- 1) Respondents are asked only to provide information about relatively major cost and earnings categories, thus avoiding what may seem to survey respondents like unnecessary detail.
- 2) Survey recipients will not only have the option of responding through in-person interviews, but will also have the option of responding via telephone or mail.
- 3) Discussions have been held with members of the open access fleet over the last three iterations of this collection 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.

Strategy to Address Non-Response

With the exception of the following text, the corresponding section response under Part B, Question 1.3 applies to this fishery too.

If we detect non-response bias, we will use procedures to reweight the data or the estimated model to correct for any known bias. The tests that will be performed are detailed from a prior collection effort of this population in Lian (2012b).

Adequacy of Accuracy and Reliability of Information for Intended Uses

Among other things, the response to the previous question (Question 2.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

2.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

This will be the fourth iteration of this collection. The first collection was performed in 2007 and utilized the same survey instrument utilized in the survey of the limited entry fleet. The survey instrument has been refined over time in response to feedback received from respondents. As a result, no specific testing was performed for this collection.

2.5 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.

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3 American Samoa Longline Fishery

3.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The potential respondent universe for this survey includes the owners or operators of all the active American Samoa longline vessels. According to the mandatory federal logbooks submitted to the National Marine Fisheries Service, 17 vessels were active in the American Samoa longline fleet during 2019.

Sampling and Other Respondent Selection Methods

The whole population of longline fishermen in American Samoa will be included in this survey, so no sampling or other respondent selection method will be used.

Expected Response Rate

Previous cost data surveys and the associated cost-earnings studies on the American Samoa longline fishery using in-person interviews all received high response rates. Pan (2019)³ achieved a 77% response rate, Arita and Pan (2009)⁴ achieved an 88% response rate, and O'Malley and Pooley (2002)⁵ achieved an 82% response rate. Given the similar survey instruments, sample composition, and survey methodology among this proposed survey and the previous cost-earnings surveys, we expect an 80% response rate and the total number of respondents is estimated to be 14 (17*80%).

³ Pan M. 2019. Cost-earnings study and economic performance analysis of the American Samoa longline pelagic fishery—2016 operation and recent trends. NOAA Tech Memo. NMFS-PIFSC85, 35 p. doi:10.25923/jemx-6804.

⁴ Arita S and Pan M. 2013. Cost-earnings study of the American Samoa longline fishery based on vessel operations in 2009. PIFSC Working Paper WP-13-009.

⁵ O'Malley J and Pooley S. 2002. A description and economic analysis of large American Samoa longline vessels. Joint Institute for Marine and Atmospheric Research, SOEST Publication 02-02, JIMAR Contribution 02-345. University of Hawaii at Manoa. Honolulu.

Table 3.1 Response Rate from Previous Cost-Earnings Studies of the American Samoa Longline Fleet.

	2002	2009	2016	Expected
Population	22	26	13	17
Number Interviewed	18	23	10	14
Response Rate	82%	88%	77%	80%

3.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

We made no changes in the procedures or statistical methodology of the collection since the last approval.

Stratification and Sample Selection

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

Estimation Procedures

NMFS needs to measure the economic performance of the American Samoa longline fleet in order to meet legal and regulatory requirements, support fisheries management decision-making, and undertake economic research. The last available cost-earnings data are for 2016. Fishery and economic conditions and regulations have changed since then. This survey will collect data needed (but not currently available from other sources) to provide an updated baseline of cost-earnings relationships at the vessel level for the American Samoa longline fishery based on 2021 operation and to construct key economic performance measures such as operating costs, fixed costs, labor cost, revenue, and profit. The previous cost-earnings studies (2002, 2009, and 2016) collected the costs data through in-person interviews, while revenue data were compiled from fishermen’s logbooks, cannery prices and market prices monitored by the American Samoa Department of Marine & Wildlife Resources (DMWR) Boat-based Creel Survey Program.

NMFS will use much of the data requested to estimate total and average cost, revenue, and profits of individual vessels and the fishing fleet. Such estimates are useful in understanding the economic conditions of the fishery and how they have changed. Fishery managers, fishery participants and the public commonly want this type of information. Additionally, NMFS and the Council can use these estimates and the data on which they are based in predicting the effects on those conditions of changes in regulatory, market and environmental conditions.

Desired Accuracy Needed for the Intended Purpose

The desired degree of precision, and corresponding desired response rate, depend upon the application for which the data are being used. Some applications may use data from all survey respondents, while others applications will only use data from vessels that target specific species. A basic application of the survey data could be the inference of the population mean values from the observed sample mean values.

Using the data from the 2016 cost-earnings study of the American Samoa longline fleet, the margin of error for estimation of the population mean of fishing expenses (the sum of annual variable costs, annual labor costs and annual fixed costs) at the 95% confidence level is 9%⁶. This level of precision will provide good estimation of fishing expenses, revenues, and profitability in general. NMFS will use the data collected for descriptive statistics and economic analyses purposes.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey.

Periodic Data Collection Cycle to Reduce Burden

NMFS intends to field the survey for this fishery once every 5 to 7 years to reduce the time burden and cost. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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

Methods Used To Maximize Response Rates

We used a number of methods to maximize survey response during the previous cost-earnings surveys of the American Samoa longline fleet, which we will use during this survey. First, NMFS economist Minling Pan will do outreach before the data collection when she visits American Samoa to conduct the field survey for the American Samoa longline fishing trip cost expenditure survey. Second, the survey is short, consisting of only seven pages. Third, the questions and format of the proposed survey are similar to the previous cost-earnings surveys of the American Samoa longline fisheries. The interview form was tested and implemented successfully in the previous studies and their high response rates indicate that the previous surveys were well received. Fourth, respondents are asked only to provide information about major cost categories, thus avoiding what may seem to survey respondents like unnecessary

⁶We used the following formula to estimate the margin of error: $e = 1.96 s/\sqrt{n}$, where: e=margin of error, s=sample standard deviation, n= sample size, and 1.96 denotes the critical value for 95% significance level.

detail. Fifth, we will contract with a local field worker in American Samoa to conduct interviews. Ideally, we will collaborate with the existing local fishery field staff who are already familiar with surveying methodologies as well as with the fishermen. Sixth, the participation of the survey is voluntary and the interviewer is trained to request permission to conduct the interview. If the interviewer feels the fisherman does not want to participate, the interviewer will immediately terminate the interview and thank the fisherman for his/her time. This approach respects island customs and cultural etiquette across the Pacific Islands Region and will ensure the agency maintains a good relationship with the local fishing communities. Given the small, tight-knit, island fishing communities in American Samoa, this will avoid any negative impact to survey participation by other fishermen and negative impacts on future survey participation. Seventh, interviews will be conducted at times and places that are convenient for fishermen. This will minimize any potential disruption to fishermen's fishing practices.

Addressing Non-Response

The expected response rate is about 80% and we expect the responses will be representative. In an initial effort to deal with non-response in American Samoa, the interviewer will attempt several times to conduct interviews, e.g. rotate between different time of day and different days of week. In addition, we will base testing for non-response bias on the considerable amount of data available for all members of the survey population.

The variables used for non-response bias testing fall into the categories of vessel physical characteristics and landings (location, timing, gear, species, target types (tuna or swordfish), and CPUE (number caught per 1000 hooks)). 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 are likely to differ for survey respondents and 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 also include target types. Costs are likely to differ between tuna and swordfish targeted trips due to different gear types and so do revenues due to price difference among species. As a result, it is possible to compare respondents and non-respondents for costs and total dollar value landed with regard to target types. If we detect non-response bias, we will make an effort to contact under-represented groups and use procedures to reweight the data or the estimated model to correct for any known bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

NMFS needs to measure the economic performance of the American Samoa longline fishery in order to meet legal and regulatory requirements, support fisheries management decision-making, and undertake economic research. Currently, cost-earnings data are outdated and cannot meet these needs. This study will collect data needed to: 1) construct key economic performance measures such as operating costs, fixed costs, labor cost, revenue, and profit; 2) provide an updated baseline for cost-earnings analysis; and 3) support comprehensive analysis of changes in producer surplus and financial profit attributable to alternative regulatory actions taken/ by the Western Pacific Regional Fishery Management Council (WPRFMC). NMFS will use the data gathered and performance measures constructed with those data to address a wide range of

issues.

While the data will be used to comply with legal and regulatory requirements, these requirements do not specify a level of data accuracy. As discussed in the response to Question 3.2, our survey sample will allow us to estimate the sample mean of fishing expenses within a 9% margin of error for the population mean at the 95% confidence level.

For a description of the specific uses the agency plans for the data collected, see the response to Part A, Question 1.2.

3.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The survey instrument is an updated version of the one used in the previous three cost-earnings studies of the American Samoa longline fishery. The survey has been reviewed and pre-tested with federal staff of the PIFSC and WPRFMC, many of whom work very closely with longline fishermen in our target population and are aware of concerns they may have. All comments were considered in the design of the final survey instrument.

3.5 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.

Dr. Minling Pan, a PIFSC economist and project lead, was consulted on the statistical design. Dr. Minling Pan can be reached at 808-725-5349. Researchers at PIFSC will collect, enter and analyze the data under the supervision of NMFS economists. NMFS economists and WPRFMC staff will use the data for regulatory analysis.

4 Hawaii Longline Fishery

4.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The potential respondent universe for this survey includes the owners or operators of all Hawaii-based longline vessels that were active during 2019. According to the mandatory federal logbooks submitted to NMFS by captains after each fishing trip, 150 vessels were active in the Hawaii-based longline fleet during 2019. The number of active vessels has remained nearly unchanged in the past five years (ranges from 140 vessels to 150 vessels).

Sampling and Other Respondent Selection Methods

This survey will be performed on a census of the 150 vessels in the survey population. The four previous cost data surveys and the associated cost-earnings studies of the Hawaii longline fleet demonstrated high response rates and data quality through in-person interviews; therefore, we will use the same approach to collect data to ensure a high response rate and high quality of data.

Expected Response Rate

The expected response rate is 84%; with a census survey of 150 vessels, this implies 126 survey responses (150*84%). We expect this response rate for several reasons. First, all four previous cost data surveys and the associated cost-earnings studies of the Hawaii longline fleet (1993, 2000, 2005, and 2012) obtained high response rates (79% or above, Table 4.1 below). Second, the number of active vessels has remained stable in the past five years. Given the similar population, we anticipate the response rate will be very close to the average of the past response rates. Third, the survey form will be essentially the same as the one used in the previous cost-earnings studies. Given the high participation in the past surveys and the similarity of the survey instrument, we anticipate the response rate will equal the average of the past response rates, which is 84%.

Table 4.1 Response Rate from Previous Cost-Earnings Studies of the Hawaii Longline Fleet.

	1993	2000	2005	2012	Expected
Population	122	74	124	129	150
Number Interviewed	101	62	98	115	126
Response Rate	83%	84%	79%	89%	84%

4.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

We made no changes in the procedures or statistical methodology of the collection since the last approval.

Stratification and Sample Selection

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

Estimation Procedures

With the exception of the additional information provided below, the corresponding section of the response to Question 3.2 applies to this fishery too.

NMFS needs to measure the economic performance of Hawaii based longline fleet in order to meet legal and regulatory requirements, support fisheries management decision-making, and undertake economic research. The last available cost-earnings data are for 2012. Fishery and economic conditions and regulations have changed since then. This survey will collect data needed to provide an updated baseline of cost-earnings relationships at the vessel level for the Hawaii longline fishery based on 2019 operation and to construct key economic performance measures such as operating costs, fixed costs, labor cost, revenue, and profit. The previous cost-earnings studies (1993, 2000, 2005, and 2012) collected the costs data through in-person interviews, while revenue data were compiled from fishermen’s logbook and dealer data.

Desired Accuracy Needed for the Intended Purpose

With the exception of the additional information provided below, the corresponding section of the response to Question 3.2 applies to this fishery too.

Using the data from the 2012 cost-earnings study of the Hawaii longline fleet, the margin of errors for estimation of the population means of annual variable costs and annual fixed costs at the 95% confidence level are 5% and 7%, respectively⁷.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey.

Periodic Data Collection Cycle to Reduce Burden

NMFS intends to field the survey for this fishery once every 5 to 7 years to reduce the time burden and cost. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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

Methods Used To Maximize Response Rates

We used a number of methods to maximize survey response during the previous cost-earnings surveys of the Hawaii longline fleet, which we will use during this survey. First, outreach will be done before the data collection to inform vessel permit holders about the upcoming survey. Second, the survey is short, consisting of only five pages. Third, the interview form was tested and implemented successfully in the previous studies. The interview form is essentially the same as the form used in the previous cost-earnings studies in 1994, 2005, and 2012. The high response rates indicate that the previous surveys were well received. Fourth, respondents are asked only to provide information about major cost categories, thus avoiding what may seem to survey respondents like unnecessary detail. Fourth, translators will be used during interviews for non-English speaking respondents, as the Hawaii longline fishermen are composed of three ethnic groups, including American, Vietnamese-American, and Korean-American. A Vietnamese-English and a Korean-English translator will be hired to ensure successful in-person interviews. Sixth, the participation of the survey is voluntary and the interviewer is trained to request permission to conduct the interview. If the interviewer feels the fisherman does not want to participate, the interviewer will immediately terminate the interview and thank the fisherman for his/her time. This approach respects island customs and cultural etiquette across the Pacific

⁷ We used the following formula to estimate the margin of error: $e = 1.96 s/\sqrt{n}$, where e =margin of error, s =sample standard deviation, n = sample size, and 1.96 denotes the critical value for 95% significance level.

Islands Region and will ensure the agency maintains a good relationship with the local fishing communities. Given the small, tight-knit, island fishing communities in Hawaii, this will avoid any negative impact to survey participation by other fishermen and negative impacts on future survey participation. Seventh, interviews will be conducted at times and places that are convenient for fishermen. This will minimize any potential disruption to fishermen's fishing practices.

Addressing Non-Response

The corresponding section of the response to Question 3.3 applies to this fishery too

Adequacy of Accuracy and Reliability of Information for Intended Uses

With the exception of the additional information provided below, the corresponding section of the response to Question 3.3 applies to this fishery too.

As discussed in the response to Part B, Question 4.2, our survey sample will allow us to estimate sample means within a 5% and 7% margin of error for the population means of annual variable costs and annual fixed costs at the 95% confidence level, respectively.

4.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The survey instrument is an updated version of the survey instruments used in the previous four cost-earnings studies of the Hawaii longline fishery. The survey has been reviewed and pre-tested with federal staff of the PIFSC and WPRFMC, many of whom work very closely with longline fishermen in our target population and are aware of concerns they may have. All comments were considered in the design of the final survey instrument.

4.5 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.

Dr. Minling Pan, a PIFSC economist and project lead, was consulted on the statistical design. Dr. Minling Pan can be reached at 808-725-5349. Vietnamese and Korean speaking translators will be hired to collect the data under the supervision of NMFS economists. Researchers at PIFSC will enter and analyze the data under the supervision of NMFS economists. NMFS economists and WPRFMC staff will use the data for regulatory analysis.

5 Hawaii Small Boat Fishery

5.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The potential respondent universe in Hawaii is 1,318 small boat commercial fishermen, according to the Hawaii Division of Aquatic Resources' record of Commercial Marine License (CML) holders in 2019.

Fishermen who catch fish for commercial purposes are required to apply for a Hawaii Commercial Marine License (CML) from the State of Hawaii. The list of CML holders provides a population of commercial fishermen in the State of Hawaii. The State of Hawaii Division of Aquatic Resources (HDAR) provided the population for this study. It included 1,318 fishermen who held a State of Hawaii CML and with the following criteria that we considered comprising the small boat fishery: fishermen who caught, landed, and sold at least one marine life using small vessels during 2019 and with valid mailing address; but excluded charter, longline, aquarium, and precious coral fisheries.

Sampling and Other Respondent Selection Methods

We will sample 1,000 of the population, using stratified random sampling based on small boat commercial fishermen's primary gear usage, which is documented in the Hawaii CML records. See response 5.2 for more details on stratification and sample selection.

Expected Response Rate

The last cost-earning survey of the Hawaii small boat fishery in 2014 (Chan and Pan 2017) achieved a 47% response rate.⁸ Another cost-earnings survey of the main Hawaiian Islands bottomfish fishery conducted by Hospital and Beavers in 2010 using mail methodology and CML database as the mailing list achieved a response rate of 51%.⁹ Given the similar survey instruments, sample composition (bottomfish fishery is a subset of the Hawaii small boat fishery), and survey methodology, we expect a 50% response rate and the number of respondents is estimated to be 500 (1,000*50%).

⁸ Chan HL, Pan M. 2017. Economic and social characteristics of the Hawaii small boat fishery 2014. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-63, 97 p. <https://doi.org/10.7289/V5/TM-PIFSC-63>.

⁹ Hospital J and Beavers C. 2012. Economic and social characteristics of bottomfish fishing in the Main Hawaiian Islands. Pacific Islands Fisheries Science Center. Administrative Report H-12-01.

Table 5.1.1 Response Rate from Previous Cost-Earnings Studies of the Hawaii Small Boat Fishery

	2010	2014
Population	1,009	1,763
Number of responses by mail	519	733
Number of responses by online survey	-	91
Response Rate	51%	47%

Table 5.1.2 Expected Population and Sample Sizes, Number of Respondents, and Response Rate for the Hawaii Small Boat Fishery

	Expected
Population	1,318
Sample Size	1,000
Number of Respondents	500
Response Rate	50%

5.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

We will change the data collection from a census of the population (active small boat Commercial Marine License holders) to using a disproportionate stratified random sampling based on the small boat commercial fishermen’s primary gear usage. Stratified sampling can be done because the population can be classified into strata based on fishermen’s major gear type, which is available in the Hawaii CML records. We will use stratified random sampling rather than a census of contacting the population to save survey costs without losing statistical inferences. We use disproportionate stratified sampling rather than simple random sampling to make sure we have enough representation for different gear types so that statistical analyses can be done by the sub-fisheries within the Hawaii small boat fishery, e.g. pelagic fishery, bottomfish fishery, and reef fish fishery. There are several advantages using disproportionate stratified sampling over simple random sampling including: 1) increased precision of the population (Cochran, 1977),¹⁰ 2) increased precision for the subgroups (Lohr 1999),¹¹ 3) lower sampling

10 Cochran W. 1977. Sampling Techniques. New York: Wiley.

11 Lohr S. 1999. Sampling: Design and Analysis. Duxbury Press.
https://drive.uqu.edu.sa/_/maatia/files/Sampling.pdf

errors and better coverage of the population (Daniel 2011, McLennan 1999),^{12 13} and 4) the ability to make comparisons across strata and inferences within strata (Daniel 2011, McLennan 1999).

Stratification and Sample Selection

We will draw a sample of 1,000 from the population, using disproportionate stratified sampling based on small boat commercial fishermen’s primary gear usage, with the goal to minimize the margin of error for each gear type. For the gear category with fewer than 250 in the population, we will include all the fishermen in this gear type in the sample. For the top two gear types (trolling and deepsea handline), we will draw a random sample within each gear type. Table 5.2 shows the distribution of the population and sample by gear type.

Table 5.2 Population, sample size and expected responses for the Hawaii Small Boat Fishery.

Gear type	Population	Sample	Expected responses (at 50% response rate)
Trolling	498	262	131
Deepsea handline	312	230	115
Dead bait/live bait for pelagic species	201	201	101
Rod & Reel	142	142	71
Inshore handline	75	75	38
Spearfishing	51	51	26
Other	39	39	20
Total	1,318	1,000	500

Estimation Procedures

With the exception of the additional information provided below, the corresponding section of the response to Question 3.2 applies to this fishery too.

NMFS needs to measure the economic performance of the Hawaii small boat fishery in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. The last available cost-earnings data are for 2013. Fishery and economic conditions and regulations have changed since then. This survey will collect data needed to provide an updated baseline of cost-earnings relationships at the vessel level for the Hawaii small boat fishery based on 2019 operation and to construct key economic performance measures such as operating costs, fixed costs, revenue, and profit.

¹² Daniel J. 2011. Sampling Essentials: Practical Guidelines for Making Sampling Choices. SAGE Publications, Inc. <https://dx.doi.org/10.4135/9781452272047>

¹³ McLennan W. 1999. An Introduction to Sample Surveys. A.B.S. Publications, Canberra.

Much of the data requested will be used to compute total and average cost, revenue, and profits, and to evaluate the economic and social characteristics of the small boat fishery for different segments (e.g. sub-fishery, county, primary gear type, self-identified fisherman type, etc.). Those estimates and socioeconomic characteristics are useful in understanding the socioeconomic conditions of the fishery and how they have changed.

Desired Accuracy Needed for the Intended Purpose

With the exception of the additional information provided below, the corresponding section of the response to Question 3.2 applies to this fishery too.

Using data from the 2014 cost-earnings study of the Hawaii small boat fishery, the margin of errors for estimates of the population means of annual variable costs and annual fixed costs at the 95% confidence level are 2% and 3%, respectively¹⁴.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey.

Periodic Data Collection Cycle to Reduce Burden

NMFS intends to field the survey for this fishery once every 5 to 7 years to reduce the time burden and cost. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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

Methods Used To Maximize Response Rates

To maximize response rates, the survey will be conducted through mixed methodology including a mail component using a modified Dillman's Total Design Method and an online survey component. The mail methodology will consist of four-wave mailings, including: (a) a personalized letter inviting the potential respondents to participate the online survey, (b) the first mailing of survey booklet with personalized cover letter and pre-addressed stamped return envelope, (c) a reminder postcard of the mail survey mailed a week after the first survey mailing, and (d) the second mailing of survey booklet with cover letter to non-respondents three weeks after the reminder postcard. Besides filling out the survey in hard copy, the respondents have an option to fill out the survey online, and respondents will have their own password to login to the

¹⁴ We used the following formula to estimate the margin of error: $e = 1.96 s/\sqrt{n}$, where e =margin of error, s =sample standard deviation, n = sample size, and 1.96 denotes the critical value for 95% significance level.

survey. A toll free number to NMFS economists will be provided to respondents for technical support or questions about the survey.

Addressing Non-Response

To deal with non-response, we will use a reminder postcard and a second mailing of survey booklet for the mail methodology. In addition, we will base testing for non-response bias on the considerable amount of data available for all members of the survey population. To test the representativeness of survey respondents, we will use data on primary gear usage (handline, troll, spear, etc.), which are available in the Hawaii CML records) for both survey respondents and non-respondents. Based on the previous cost-earnings studies on the Hawaii small-boat fisheries, gear type is one of the key factors that determines the variations of the costs and earnings among boats. Costs are likely to differ among gear types due to different trip length and fishing method. Different gear types usually target different species and revenues are likely to differ due to price difference among species. As a result, it is possible to compare respondents and non-respondents for costs and total dollar value landed with regard to gear types. If we detect non-response bias, we will make an effort to contact under-represented groups and use procedures to reweight the data or the estimated model to correct for any known bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

With the exception of the additional information provided below, the corresponding section of the response to Question 3.3 applies to this fishery too.

As discussed in the response to Part B, Question 5.2, our survey sample will allow us to estimate sample means within a 2% and a 3% margin of error for the population means of annual variable costs and annual fixed costs at the 95% confidence level, respectively.

6.2

Justification if Data Collection Based on Sampling will not Yield Reliable Data

Because the data collection will be based on sampling a large portion of population (1,000 sample out of 1,318 population, or 75% of population) with an expected response rate of 50%, we expect the data collection to yield reliable data. We address the methods of testing for and, if necessary, correcting for non-response bias in response to Question 5.2.

5.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The survey instrument is an updated version of the survey instrument used in the last cost-earnings study of the Hawaii small boat fishery. The survey instrument has been reviewed and pre-tested with federal staff of the PIFSC. All comments were considered in the design of the final survey instrument.

5.5 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.

Justin Hospital, the PIFSC Supervisory Economist, was consulted on the statistical design and analysis. He can be reached at 808-725-5399. An outside contractor will be used to implement the data collection. Researchers at PIFSC will enter and analyze the data under the supervision of NMFS economists. NMFS economists and WPRFMC staff will use the data for regulatory analyses.

6 American Samoa Small Boat Fishery

6.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The potential universe in the American Samoa small-boat fishery is about 60 fishermen. This is based on the average number of small boats (20 boats) from the boat-based creel survey in 2001-2018 and the average number of fishermen per boat (3 fishermen).

Sampling and Other Respondent Selection Methods

The whole population of small boat fishermen will be targeted, so no sampling or other respondent selection method will be used.

Expected Response Rate

The past response rate for the economic trip cost survey from the boat-based creel survey interviews in American Samoa in 2011-2018 was 84%. We expect the same response rate for the small boat population and the number of respondents is estimated to be 50 (60*84%).

Table 6.1 Response Rate for the Previous Economic Trip Cost Survey Add-on to the Creel Survey (2011-2018)

Creel survey: number of trips intercepted	60
Response rate	84%
Expected responses	50

6.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

We made no changes in the procedures or statistical methodology of the collection since the last approval.

Stratification and Sample Selection

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

Estimation Procedures

With the exception of the additional information provided below, the corresponding section of the response to Question 3.2 applies to this fishery too.

NMFS needs to measure the economic performance of the American Samoa small boat fishery in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. The last available cost-earnings data are for 2013. Fishery and economic conditions and regulations have changed since then. This survey will collect data needed to provide an updated baseline of cost-earnings relationships at the vessel level for the American Samoa small boat fishery based on 2020 operation and to construct key economic performance measures such as operating costs, fixed costs, revenue, and profit.

Desired Accuracy Needed for the Intended Purpose

With the exception of the additional information provided below, the corresponding section of the response to Question 3.2 applies to this fishery too.

Using trip cost data collected from the economic trip cost survey add-on to the creel survey between 2011 and 2019 in American Samoa, the annual average margin of error for the estimation of the population mean of variable cost at the 95% confidence level is 8%¹⁵. This level of precision will provide good estimation of fishing expenses, revenues, and profitability in general. NMFS will use the data collected for descriptive statistics and economic analyses purposes.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey.

Periodic Data Collection Cycle to Reduce Burden

NMFS intends to field the survey for this fishery once every 5 to 7 years to reduce the time burden and cost. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

¹⁵ We used the following formula to estimate the margin of error: $e = 1.96 s/\sqrt{n}$, where e =margin of error, s =sample standard deviation, n = sample size, and 1.96 denotes the critical value for 95% significance level.

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

Methods Used To Maximize Response Rates

We will take several steps to maximize the response rates. First, we will contract with local field worker in American Samoa to conduct interviews. Ideally, we will collaborate with the existing boat-based data collection program in American Samoa to hire local field staff who are already familiar with surveying methodologies as well as with the fishermen. Second, the participation of the survey is voluntary and interviewers are trained to request permission to conduct the survey. If the interviewer feels the fisherman does not want to participate, the interviewer will immediately terminate the interview and thank the fisherman for his/her time. This approach respects island customs and cultural etiquette across the Pacific Islands Region and will ensure the agency maintains a good relationship with the local fishing communities. Given the small, tight-knit, island fishing communities in American Samoa, this will avoid any negative impact to survey participation by other fishermen and negative impacts on future survey participation. Third, interviews will be conducted at times and places that are convenient for fishermen. This will minimize any potential disruption to fishermen's fishing practices. Fourth, a local speaking interviewer will be contracted to conduct the in-person interviews to minimize the language barrier and burden on non-English speaking fishermen. Fifth, we will pre-test the survey with five fishermen in American Samoa to make sure the question wording is easy to understand.

Addressing Non-Response

To deal with non-response in American Samoa, interviewers will attempt several times to conduct interviews, e.g. rotate between different time of day and different days of week. In addition, we will base testing for non-response bias on the considerable amount of data available for all members of the survey population. Data on gear usage (handline, troll, spear, etc.) are available for both survey respondents and non-respondents from the boat-based creel survey, and these data will be used to test the representativeness of survey respondents. Based on the previous cost-earnings studies on small-boat fisheries in the Pacific islands, gear type is one of the key factors that determines the variations of the costs and earnings among boats. Costs are likely to differ among gear types due to different trip length and fishing method. Different gear types usually target different species and revenues are likely to differ due to price difference among species. As a result, it is possible to compare respondents and non-respondents for costs and total dollar value landed with regard to gear types. If non-response bias appears evident in our survey responses, we will make an effort to contact groups that are under-represented to get a balance among different groups. In addition, we will use procedures to reweight the data or the estimated model to correct for any known bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

With the exception of the additional information provided below, the corresponding section of the response to 3.3 applies to this fishery too.

NMFS needs to measure the economic performance of the American Samoa small boat fishery in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. Currently, cost-earnings data are outdated and cannot meet these needs.

As discussed in the response to Question 6.2, our survey sample will allow us to estimate the sample mean of variable cost within an 8% margin of error for the population mean at the 95% confidence level.

6.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

We will pre-test the survey with five fishermen in American Samoa to make the survey easier to understand and complete.

6.5 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.

Justin Hospital, the PIFSC Supervisory Economist, was consulted on the statistical design and analysis. He can be reached at 808-725-5399. An outside contractor will be used to implement the data collection. Researchers at PIFSC will enter and analyze the data under the supervision of NMFS economists. NMFS economists and WPRFMC staff will use the data for regulatory analyses.

7 American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands Small Boat-Based Fisheries

7.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The potential respondent universe in terms of number of active small boats is difficult to estimate because there are no definitive measures of small boat fishing participation in the three island areas. The most relevant estimation of the active vessels was done by Western Pacific Fisheries Information Network (WPacFIN) based on the creel survey programs administered by American Samoa Department of Marine and Wildlife Resources (DMWR), Guam Department of Agriculture's Division of Aquatic and Wildlife Resources (DAWR), and CNMI government Department of Lands and Natural Resources' Division of Fish & Wildlife (DFW). The potential universe in American Samoa small boat fishery is about 20 boats, this is based on the average number of small boats from the boat-based creel survey in 2001-2018. WPacFIN estimated the number of active vessels were 398 in Guam and 75 in CNMI in 2018. However, WPacFIN's estimates for CNMI only include the island of Saipan; there are also small boat fishing in Tinian and Rota. It is estimated that there are 15 small boats in the island of Tinian and 20 small boats in the island of Rota. Therefore, the total number of small boats in the CNMI is estimated to be 110 in 2018.

Sampling and Other Respondent Selection Methods

Since the trip-level economic surveys are add-on to the existing creel survey data collection program, the statistical methods related to sampling for the trip-level economic surveys follow the creel survey data collection program design (<https://inport.nmfs.noaa.gov/inport/item/5612>). Details of the creel survey sampling methodologies are documented in Oram et al. (2011a, 2011b, 2011c)¹⁶. The sampling frame of the Boat-based Interview in the creel survey was developed by WPacFIN and the three local fisheries agencies as described in Part A, Question

16 Oram R, Tuisamoa N, Tomanogi J, Sabater M, Quach MMC, Hamm DC, and Graham C. 2011a. American Samoa boat-based creel survey documentation. Online at http://www.wpcouncil.org/wp-content/uploads/2015/08/American-Samoa-boat-based_Final_3_7_11_KB.pdf [accessed 27 November 2017].

Oram R, Flores T Jr, Tibbatts B, Gutierrez J, Gesner JP, Wusstig S, Quach MMC, Hamm DC, and Tao P. 2011b. Guam boat-based creel survey documentation. Online at http://www.wpcouncil.org/wp-content/uploads/2015/08/Guam_boat_based_Final_3_4_11_KB.pdf [accessed 27 November 2017].

Oram R, Roberto R, Trianni M, Quach MMC, Hamm DC, and Tao P. 2011c. Saipan boat-based creel survey documentation. Online at http://www.wpcouncil.org/wp-content/uploads/2015/08/CNMI_boat_based_Final_3_16_11_KB.pdf [accessed 27 November 2017].

7.4. Interviews are conducted several times a month (4 to 10 times) using a systematic random sampling protocol at sites (ramps/docks) that are actively used for launching fishing boats. Sample dates are drawn for monthly sampling, which continues throughout the year. Each selected sample date contains two shifts: AM and PM. In addition, opportunistic interviews are conducted one to two times per month when there is not enough interview data for a particular fishing method. Opportunistic data are collected on non-scheduled survey dates at sample ports and sometimes other areas. These opportunistic surveys adjust the possible sampling bias resulting from "the scheduled creel surveys". The data collection efforts are organized and carried by the local fisheries agencies. An interview is conducted during the shift time by well-trained fisheries staff at the scheduled site when fishermen return from their fishing trip.

Expected Response Rate

The detailed sampling design and response rate for the economic survey are shown in Table 7.1. The creel survey intercept sample sizes and expected response rate of economic survey are calculated based on the average number of creel surveys completed and the average responses of economic surveys among the creel surveys in CNMI (2011-2018), American Samoa (2011-2018), and Guam (2013-2018), respectively.

The actual response rate of the economic survey from the creel survey in terms of boat coverage was 90% in American Samoa, 85% in CNMI, and 57% in Guam. In addition, the actual response rate of the economic survey from the creel survey in terms of fishing trip was 84% in American Samoa, 79% in CNMI, and 32% in Guam. Based on these response rates, we are confident that we can expect relatively high response rates for the future.

Table 7.1 Sampling Design & Response Rate for the Economic Add-on to the Creel Survey

Add-on (economic forms) to creel survey	Guam	CNMI	American Samoa
Estimated number of respondent universe (boats)	398	110	20
Creel survey intercept sample (boats)	222	65	20
Expected response rate	57%	85%	90%
Target number of economic surveys (boats)	127	55	18
Creel survey intercept sample (trips)	585	140	215
Expected response rate	32%	79%	84%
Target number of economic surveys (trips)	190	110	180

7.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection

The sampling methodology of the proposed survey will follow that used for the Boat-based Interview, as our survey is an ‘add-on’ portion to the creel survey. The Boat-based Creel Survey programs in the three island areas have been running for over 30 years. The creel survey is conducted several times a month, based on random sampling by type of day (weekday/weekend/holiday) at sites that are actively used for launching fishing boats, throughout the year on an ongoing basis. Details of the survey locations, minimum survey days and shift times are shown in Appendix B. An interview is conducted by well-trained fisheries staff at the scheduled site and time when fishermen return from their fishing trip. If possible, all boats returning to the ramps/docks during the sample shift time will be interviewed, in the order of arriving time. When too many boats return at the same time and cannot all be interviewed, staff prioritize interviews so that boats fishing with the least-encountered fishing methods for the past month are interviewed first.

Estimation Procedures

The NMFS needs to measure the trip-level economic performance of American Samoa, Guam, and the CNMI small boat fisheries in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. This survey collects the data that is needed (but not currently available from other sources) to continue updating our knowledge of fishing expenses in these three island areas, so that the trends of fishing expenses in each island areas can be maintained and the regional comparisons of fishing expenses can be supported.

The data collected will be used to generate statistical description of fishing trip costs in the three island areas in general and by major fishing method. The estimated trip costs are useful to help understand the economic conditions of the fishery and how they may have changed. Such data summaries are the type of information that fishery managers, participants, and the public commonly wish to have provided. The data summaries on trip cost structure and trends were included in Council’s Annual Stock Assessment and Fishery Evaluation Reports by the Western Pacific Fishery Management Council.

Desired Accuracy Needed for the Intended Purpose

Using the trip cost data collected between 2011 and 2018 for each island area, the annual average margin of errors for estimation of the population mean of trip cost at the 95% confidence level are 10% for Guam, 8% for American Samoa, and 8% for CNMI¹⁷. This level of accuracy will provide good estimation of fishing expenses in general. The data collected will be used for economic analyses. Detailed economic analyses are described in Part A, Question 1.2.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey.

Periodic Data Collection Cycle to Reduce Burden

NMFS intends to field the survey for this fishery once every 5 to 7 years to reduce the time burden and cost. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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

Methods Used to Maximize Response Rates

Several steps will be taken to maximize the response rates. First, all staff members are trained in in-person interviewing techniques to make sure the survey is administered properly. This includes requesting permission to do the interview. Second, the participation is voluntary. If the interviewers feel the fisherman does not want to participate, they immediately terminate the survey and thank the fisherman for the time. This approach is respectful of island customs and cultural etiquette across the Pacific Islands Region and will ensure the agency maintains a good relationship with the local fishing communities. Given the small, tight-knit, island fishing communities in the three island areas, this will avoid any negative impact to survey participation by other fishermen and negative impacts on future survey participation. Third, the survey is short in length, only five major trip cost item questions and one question about engine type will be asked; the estimated time to complete the questions is 5 to 10 minutes. Fourth, because of the long history of the creel survey with the economic data having been collected in the past few years, the interviewers have already established good relationships with small boat fishermen and fishermen are familiar with the questions being asked. Finally, we are planning to produce a

¹⁷ The margin of error for each island area is estimated using the trip cost data for 2011-2019 in the formula $e = 1.96 \times s/\sqrt{n}$. Each year's trip cost data were used to calculate the sample standard deviation "s", the number of responses "n", and the margin of error "e" at 95% confidence level for each year. Then, an average of the margin of errors across 2011-2019 was calculated for each island area.

brochure summarizing the economic data from previous years and distribute it to the fishermen during their community meetings as one of the outreach activities so fishermen may have better understand how the data are presented and used in publications. We feel that sharing the information can build trust within the community and encourage fishermen to participate in data collection and provide additional incentive to fishermen for survey participation. The response rate in Guam was the lowest across the three island areas, we contacted the offshore biologist in DAWR, Thomas Flores, Jr., who is managing the offshore boat based creel survey program about the issue and he confirmed that he will remind his staff to encourage fishermen to respond to the economic questions.

Addressing Non-Response

Based on the previous years' data collection, the trip-level economic surveys received high response rates. The trips with economic data compared to the total creel survey responses in terms of fishing trip was 84% in American Samoa, 79% in CNMI, and 32% in Guam. In addition, we collected a large number of economic surveys in all years (110-190 surveys per year on average in each island area). In addition, opportunistic creel surveys are conducted if not enough interview data are available for a particular fishing method. This helps to supplement data for the less common fishing methods. Since the add-on economic surveys are voluntary, there are non-responses. Trip costs are likely to differ among fishing methods due to different trip length and target. Therefore, it is possible to compare respondents and non-respondents with regard to fishing method. If there is a significant difference in the fishing method between the two groups, weights can be applied when estimating the average fishing expenses for the less representative groups.

Adequacy of Accuracy and Reliability of the Information for Intended Uses

Because the fishing expense data will be collected right after the fishing trip is completed, it is expected that the fisherman will have good recall and can provide accurate data of the fishing expenses. From the interviews with the creel data survey managers (Part A, Question 7.8), they all agreed fishermen are able to provide accurate answers.

In addition, to ensure the quality of the collected data, all staff in the creel survey programs undergo quality assurance and quality control training for data handling, backing up the database, and archiving the raw data.

Based on the actual economic survey response rates, we should have an adequate sample size for reliable estimates of fishing expenses. As mentioned in Part B, Question.7.2, the margin of errors for estimation of the population mean of trip cost at the 95% confidence level are 10% for Guam, 8% for American Samoa, and 8% for CNMI.

For a description of the specific uses the agency plans for the data collected, see the response to Question 1.2 in Part A.

7.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

This economic survey has been conducted in the three island areas for nine years; there is no need to pre-test the survey.

7.5 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.

Dr. Minling Pan, economist and project lead, employed by the NMFS, was consulted on the statistical design. Dr. Minling Pan can be reached at 808-725-5349. The creel survey fieldworkers/crew in the three local agencies are collecting the data (as listed in Part A, Question 7.4). NMFS economists will oversee the data collection program, and NMFS economists, WPRFMC staff, and the local agencies will use the data for regulatory analysis.

8 Mariana Archipelago Small Boat Fishery (0648-0755)

8.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The potential respondent universe is defined in terms of the estimated number of active small fishing boats fishing in 2018 in Guam and CNMI. Table 8.1.1 shows the estimated number of small fishing boats in the two island areas. The combined survey population (boats) is 508.

Table 8.1.1 Estimated Number of Small Fishing Boats.

	Estimated Number of Active Vessels
Guam (2018)	398 ^a
CNMI (2018)	110 ^b
Total	508

^a WPRFMC. 2019. *2018 Annual stock assessment and fishery evaluation report for the Pacific Island pelagic fishery ecosystem plan 2017*. Remington, T., Fitchett, M., Ishizaki, A., (Eds.) Western Pacific Regional Fishery Management Council. Honolulu, Hawaii 96813 USA.
<http://www.wpcouncil.org/wp-content/uploads/2019/07/Pelagic-FEP-SAFE-Report-2018-Optimized-v4.pdf>.

^b WPacFIN estimated the number of active vessels were 75 in CNMI in 2018. However, WPacFIN's estimates for CNMI only include the island of Saipan; there are also small boat fishing in Tinian and Rota. It is estimated that there are 15 small boats in the island of Tinian and 20 small boats in the island of Rota. Therefore, the total number of small boats in the CNMI is estimated to be 110 in 2018.

Sampling and Other Respondent Selection Methods

For the data collection, we plan to use the same methodology as the last two cost-earnings studies and a contractor to administer the survey. The majority of the surveys in the last two cost-earnings studies were completed in-person by fishermen who attended the community meetings, with additional surveys distributed and collected by the contractor for fishermen who were unable to attend the community meetings but willing to fill out the survey voluntarily (Table 8.1.2). This may include intercept fishermen at fishing ports, fishermen's cooperative association, fishing clubs, roadside vendor, etc. The community meetings were well attended by fishers representing the diversity of the small boat fishing population, and nearly all fishermen who attended the community meetings completed the survey, so sampling through the community meetings is not expected to generate too much sampling bias and non-response bias. Multiple meetings were scheduled at convenient evening times in central locations to maximize accessibility for all fishermen. In addition, the survey will be administered by a contractor with a good understanding of and strong connections with the local fishing communities. The data collection in 2024 will last several months, allowing ample time for us to collect a representative

sample of fishers in Guam and CNMI. These are small, tight-knit, island fishing communities. From the feedback of knowledgeable members of these communities, we have received assurances and support that our samples from the past data collections were representative of active members of Guam and CNMI fishing communities. We will also consult with the knowledgeable members of local fishing communities during the data collection process in 2024 to ensure the data we collected are representative.

Anyone who has fished in the past year is eligible to participate the survey and no sampling or other respondent selection methods will be used, as there is no viable sampling frame to draw from because no existing contact information or permitting systems are available for most of the active small boat fishers in Guam and the CNMI.

Table 8.1.2 Number of Respondents from Past Studies.

Survey implemented in 2011 ^{c, d}	Guam	CNMI
Completed Surveys from Community Meetings	111	100
Completed Surveys from In-Person Volunteer Participants	36	12
Total Completed Surveys	147	112
Estimated Number of Active Vessels in 2010-2011	454	157
Percent of Estimated Number of Active Vessels Responded	32%	71%
Survey implemented in 2018/2019		
Total Completed Surveys	118	68
Estimated Number of Active Vessels in 2018	398	110
Percent of Estimated Number of Active Vessels Responded	30%	62%

^c Hospital and Beavers (2012).

^d Hospital and Beavers (2014).

Expected Response Rate

The data for the previous cost-earnings studies of CNMI and Guam small boat fisheries (Hospital and Beavers, 2012, 2014) were successfully collected by a contractor and it achieved exceptional responses: 147 and 118 surveys were collected in Guam in 2011 and 2018/2019 respectively, and 112 surveys and 68 surveys were collected in the CNMI in 2011 and 2018/2019, respectively. Nearly all fishermen who attended the community meetings completed the surveys in 2011. Although we do not have an exact response rate, we contacted the previous contractor and they agreed 95% is a reasonable estimation of response rate for those attending meetings.

Regarding non-respondents, it is difficult to estimate the coverage of the survey sample because there are no definitive measures of small boat fishing participation in the Marianas. The most relevant estimation of the active vessels was done by WPacFIN based on the creel survey programs administered by the Guam Division of Aquatic and Wildlife Resources (DAWR) and the CNMI Division of Fish and Wildlife (DFW), and the number of boats landing pelagic species by trolling in Guam in 2018 documented in WPRFMC (2019). WPacFIN estimated the number of active vessels were 454 in Guam and 122 in CNMI in 2010-2011 and 75 in CNMI in 2018, and WPRFMC documented 398 active vessels in Guam in 2018. However, WPacFIN's estimates for CNMI only include the island of Saipan; there are also small boat fishing in Tinian

and Rota. It is estimated that there are 15 small boats in the island of Tinian and 20 small boats in the island of Rota. Therefore, the total number of small boats in the CNMI is estimated to be 157 in 2010-2011 and 110 in 2018. That converted to a 32% and 30% of estimated active vessels responded in Guam in 2011 and 2018/2019, respectively, and 71% and 62% of estimated active vessels responded in the CNMI in 2011 and 2018/2019, respectively (Table 8.1.2).

8.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection

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

Estimation Procedures

The NMFS needs to measure the economic performance of Marianas Archipelago small boat fisheries in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. The last available cost-earnings data was in 2017. Fisheries and economic conditions and regulations have changed since then. This survey collects the data that is needed (but not currently available from other sources) to provide an updated baseline of cost-earnings relationships at the vessel level for Marianas Archipelago small boat fisheries based on 2023 operation and to construct key economic performance measures such as operating costs, fixed costs, revenue, and profit.

Much of the data requested will be used to compute total and average cost, revenue, and profits, and to evaluate the economic and social characteristics of the small boat fisheries in different segments (e.g. primary fish target, highliner vs. non-highliner, etc.). The estimated cost-earnings information and socioeconomic characteristics are useful to help understand the socioeconomic conditions of the fisheries and how they may have changed. Such data summaries are the type of information that fishery managers, participants, and the public commonly wish to have provided.

Desired Accuracy Needed for the Intended Purpose

Using the Marianas cost-earnings survey data collected in 2011, the margin of errors for estimation of the population means of annual variable costs and annual fixed costs at the 95% confidence level are 4% and 3%, respectively. This level of precision will provide good estimation of fishing expenses, revenues, and profitability in general. NMFS will use the data

collected for descriptive statistics and economic analyses¹⁸. This level of accuracy will provide good estimation of fishing expenses, revenues, and profitability in general. The data collected will be used for descriptive statistics and economic analyses. Detailed economic analyses can be found in Part A, Question 1.2.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey.

Periodic Data Collection Cycle to Reduce Burden

The NMFS intends to field the survey once every 5 to 8 years to reduce burden. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

8.3 Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that 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 Marianas cost-earnings surveys, and will be used during this survey. First, before the administration of the survey, outreach will be conducted during the fishery management council meetings and other public meetings for fishing community members to introduce the upcoming survey to encourage survey participation. Second, we keep the survey short. This proposed cost-earnings survey is similar to the previous cost-earnings survey of Marianas small-boat fisheries but we have shortened it slightly. We tried to focus on the main questions related to costs, earnings, and fishing characteristics and eliminate any unnecessary questions that appeared in the previous survey. The interview form was tested and implemented successfully in the previous studies and it was shown that the previous surveys were feasible given their high response rates. Third, we will use the same methodology that was implemented successfully in the last cost-earnings survey in the Marianas to use a contractor who has strong connections with the fishing communities and is familiar with the logistics and culture in doing fieldwork in the Marianas to administer the survey. Fourth, given the timely feedback of results in 2012 through research summary brochures and the distribution of survey reports to all fishermen that completed the survey, as well as providing additional copies of results to local fishery agencies, we feel that we have built a trust within the community. Fifth, participation in the survey effort is voluntary, and the interviewer is trained to request permission to do the survey. If the interviewer feels the fisher does not want to participate, he will immediately terminate the survey and thank the fisher for the time. This approach is respectful of island customs and cultural etiquette across the Pacific Islands Region and will ensure the agency maintains a good relationship with the local

¹⁸ We used the following formula to estimate the margin of error: $e = 1.96 s/\sqrt{n}$, where e =margin of error, s =sample standard deviation, n = sample size, and 1.96 denotes the critical value for 95% significance level.

fishing communities. Given the small, tight-knit, island fishing communities in the Marianas, this will avoid any negative impact to survey participation by other fishers and impacts to future survey participation. Sixth, interviews will be conducted at times and places that are convenient to fishers. This will minimize any potential disruption to fishers' fishing practices. Seventh, in-person interviews will be conducted in first languages to accommodate literacy and language barriers.

Addressing Non-Response

In the past, community meetings were well attended by fishers that represented the small boat fishing population very well, and nearly all fishermen who attended the community meetings completed the survey. If for some reason the participation and responses from the community meetings are low compared with the previous cost-earnings studies and the estimated number of active vessels, the contractor will reach out to non-respondents to encourage survey participation. Since the contractor has strong connections with the local fishing communities and experience in doing fieldwork in the Marianas, the contractor will be able to reach out to non-respondents via individually scheduled interviews, at times and places that are convenient to fishers. These places include fishing ports, fishermen's cooperative association, fishing clubs, roadside vendor, etc.

Adequacy of Accuracy and Reliability of Information for Intended Uses

NMFS needs to measure the economic performance of Mariana Archipelago small boat fisheries in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. Currently, cost-earnings data are outdated to meet these needs. This study will collect data that is needed to construct key economic performance measures such as operating costs, fixed costs, revenue, and profit and to provide an updated baseline of cost-earnings analysis and to support comprehensive analysis of changes in producer surplus and financial profit that are attributable to alternative regulatory actions taken/mandated by the Western Pacific Fishery Management Council. The data gathered and performance measures constructed will be used to address a wide range of issues.

While the data will be used to comply with legal and regulatory requirements, these requirements do not specify a level of data accuracy. As discussed in the response to Question 8.2, our survey sample will allow us to estimate sample mean within 4% and 3% margin of error for the population means of annual variable costs and annual fixed costs at the 95% confidence level, respectively.

8.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

Because this survey is a renewal of a previously approved survey, survey testing is not necessary. Nevertheless, we have pretested the survey through expert review, with PIFSC staff

in the Marianas and WPRFMC staff, and pilot tested the survey with 2-3 fishers in Guam and the CNMI to make sure the instrument is easy to understand and complete.

8.5 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.

Justin Hospital, Supervisory Economist, employed by the NMFS, was consulted on the statistical design and analysis. He can be reached at 808-725-5399. A contractor will be used to implement the data collection. Researchers at PIFSC will enter and analyze the data under the supervision of NMFS economists. NMFS economists and WPRFMC staff will use the data for regulatory analyses.

9 USVI Small-Scale Fisheries

9.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The absence of federal fishing licenses in the U.S. Caribbean required us to draw on the list of licensed fishermen from the USVI Division of Fish and Wildlife to build the sampling frames, which should include all commercial saltwater fishermen. In 2014, that list included 274 licensed fishermen. In 2021, we will get a similar list of licensed fishermen for 2020 in order to estimate the population size.

Sampling and Other Respondent Selection Methods

The list neither did nor will include contact information. However, no contact information is necessary to intercept fishermen during the annual in-person license renewal process. NMFS has used this intercept method in the USVI, primarily for outreach or follow up studies of hurricane impacts. It has proven to be the most efficient way to reach fishermen and complete a data collection quickly, though it is somewhat labor intensive for staff¹⁹. The last time this method was used, it produced a random sample of 240 fishermen. We plan to randomly sample approximately the same number in 2021 (Table 9.1).

Expected Response Rate

We estimate a response rate/willingness to participate of 68% based on the rate obtained during the previous costs and earnings survey following the same methodology (i.e., completing a short in-person interview as fishermen arrive and depart registration).

¹⁹ See Crosson, S. and L. Hibbert. 2017. "Integrating Commercial Fisheries Registration, Education, and Social Science in the U.S. Virgin Islands." *North American Journal of Fisheries Management*. 37(2): 349–352.

Table 9.1 Population size, sample size, expected response rate, and number of expected completed surveys per strata for the USVI survey.

Strata	Population Size (2014)	Survey Sample	Expected Response Rate	Expected Number of Completed Surveys per Strata
St. Thomas/St. John	140	120	0.68	82
St. Croix	134	120	0.68	82
Total	274	240	0.68	163

9.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection

We will ensure the random element by selecting random periods during the license renewal process when we will be at the USVI Division of Fish and Wildlife offices. During these times, we will attempt to survey every fisherman coming in for license renewal. The sample will not be stratified. We have made no changes in the procedures or statistical methodology of the collection nor changed the variables collected since the last approval. We have tried mail surveys (impractical since there is not residential mail delivery in the USVI), phone calls (most use cellphones and screen calls), and tracking down in person (very inefficient and not productive). Therefore, we will continue to intercept fishermen during their annual in-person fishing license renewal process by the USVI Division of Fish and Wildlife.

Estimation Procedures

A survey will be used to elicit costs, earnings and related information. We will attempt to intercept all fishermen renewing their annual fishing license in the USVI. We will use the data collected through this survey for statistical inference of population values from sample respondents and for estimation of econometric models used for fisheries management. The data collections are inherently stratified across the two groups of islands of the USVI, but no further. Due to the size and regional variation of the USVI, we plan a post survey stratification by the two coastal regions that are separately regulated (St Thomas/St John and St Croix). We will weight each coastal region by the number of fishermen in the area to make estimates for the USVI as a whole. In addition, NMFS will assign a value to each missing case based on the

closest existing case.

Degree of Accuracy Needed for Intended Purpose

Neither economic theory nor legislative mandates establish the degree of accuracy needed for these intended uses. All else being equal, we prefer more accurate data; however, we expect this survey will provide sufficiently accurate and useful data for these intended uses and we believe the correct choices have been made with respect to the tradeoff between data accuracy and data collection costs. We expect a response rate of 68% based on our previous results, which is more than half the active fishing population and should be a sufficient share of the active population (>50%) to generate roughly accurate results.

Unusual Problems Requiring Specialized Sampling Techniques.

We do not anticipate unusual problems that necessitate specialized sampling techniques based on our experience surveying in the region.

Periodic Data Collection Cycles to Reduce Burden.

The NMFS intends to field the survey once every 6 years to reduce burden. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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

Methods Used To Maximize Response Rates

We have and will take several steps to maximize response rates and to deal with non-response. First, the interviewers must have considerable survey experience and familiarity with local fishing communities and practices. Second, the in-person interviews will be conducted at a time and place very convenient for the fishermen. This will minimize any potential disruption to their fishing practices. Third, respondents will be asked to provide information about major gear and cost categories only, thus avoiding what respondents often perceive as unnecessary detail. Last, surveys will be available in English and Spanish to further reduce any burden to non-English speaking fishermen.

Strategy to Address Non-Response

In addition to the response maximizing strategies outlined above, NMFS will test for non-response bias by considering the response rates by region and weight the survey responses to reflect the underlying population when conducting its analysis for the USVI as a whole.

Adequacy of Accuracy and Reliability of Information for Intended Uses

Among other things, the response to the previous question (Question 9.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

9.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

We successfully conducted a similar data collection. Therefore, no tests are being planned in this iteration.

9.5 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.

Dr. Scott Crosson will collect the data and do the analysis. Dr. Crosson can be reached at 305-361-4468.

Dr. Juan Agar was consulted on the statistical aspects of the study design. Dr. Juan Agar can be reached at 305-361-4218.

10 Puerto Rico Small-Scale Fisheries

10.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe:

The absence of federal fishing licenses in the U.S. Caribbean required us to draw from the local trip ticket and commercial fishermen census databases to build the sampling frames for Puerto Rico, which should include all commercial saltwater fishermen. The trip ticket database provided us with a list of active fishermen (i.e., actively landing fish) and the censuses supplied us with their most current addresses. In 2016, the Puerto Rico trip ticket databases recorded 1,013 active fishermen, but the Puerto Rico Department of Natural and Environmental Resources (DNER) estimates there are additional 300-500 fishermen that fish part-time and do not report fishery statistics.

Sampling and Other respondent Selection Methods:

We plan to contact all (approximately 1,500) commercial fishermen in Puerto Rico in the survey year (Table 10.1), if we receive sufficient funds. If partial funding is received, then we plan to use a stratified random sample, where each stratum corresponds to a coastal region (i.e. North, South, East, and West). The sample size of each stratum will be proportionate to the population size of the stratum.

Expected Response Rate:

We estimate a response rate of 82% based on Kojis et al.'s (2017) work with a similar methodology in the U.S. Caribbean.²⁰ Due to the size and regional variation of the Commonwealth of Puerto Rico, we plan to stratify the population by coastal region (i.e., North, South, East and West). To produce fishery-wide estimates, we will weight each coastal region by the number of fishermen in the area to adjust for any differences in response rates by region that could introduce non-response bias for those estimates.

²⁰ Kojis, B., N. Quinn, and J. Agar 2017. Census of licensed fishermen of the U.S. Virgin Islands (2016). NOAA Technical Memorandum NMFS-SEFSC-715, 160 p. doi:10.7289/V5/TM-SEFSC-715

Table 10.1 Population size, sample size, expected response rate, and number of expected completed surveys per strata for the Puerto Rico survey.

	Strata	Estimated Population and Sample Sizes (funds permitting)	Expected Response Rate	Number of Expected Completed Surveys per Strata
Costs & Earnings	North coast	285	0.82	234
	West coast	450	0.82	369
	South coast	375	0.82	307
	East coast	390	0.82	320
Total	Total	1,500	0.82	1,230

10.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection:

We will use voluntary surveys to elicit costs and earnings and related information, and we will stratify the population by coastal region in Puerto Rico. The post-survey-stratification for Puerto Rico is needed because of the relative large size of this island and also to better capture the economic performance of the small-scale fleet which varies geographically due to the spatial (and temporal) availability of various finfish and shellfishes species.

A list containing contact information for commercial fishermen will be provided to the contractor. The list will contain the following information: fisherman’s name, address, and phone number.

We have made no changes in the procedures or statistical methodology of the collection nor changed the variables collected since the last approval.

Estimation Procedures:

NMFS will use the data collected for descriptive statistics and analytical purposes. The data collected will be primarily used to describe fishery participants' socio-economic characteristics in fishery management plans. Descriptive (mean, median) and inferential statistics (chi square, ANOVA) will be used to examine the impact of past policies and future policy proposals by user group and coastal region. The procedures for estimating harvesting costs for the fishery as a whole and for various subcomponents will be based on the standard equations available in various statistical texts. To reduce the time cost of reporting, as well as the financial cost to the federal government, we intend to collect similar data no more than every three years.

Degree of Accuracy Needed for Intended Purposes:

As noted above, neither economic theory nor legislative mandates establish the degree of accuracy required for describing the fishery and its participants in fishery management plans and amendments and for conducting socio-economic analyses. All else being equal, we prefer more accurate data; however, we expect this survey will provide sufficiently accurate and useful data for these intended purposes. Using the figures reported in Table 10.1, which are based on the response rates from Kojis et al 2017²¹, we could report the sample mean of the share of fishermen's income derived from fishing with a margin of error of 2% of the population mean with a 95% confidence interval for the entire fishery.

Unusual Problems Requiring Specialized Sampling Techniques.

We do not anticipate unusual problems that necessitate specialized sampling techniques based on our experience surveying in the region.

Periodic Data Collection Cycles to Reduce Burden.

The NMFS intends to field the survey once every 6 years to reduce burden. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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

Methods Used To Maximize Response Rates:

We have and will take several steps to maximize response rates and to deal with non-response. First, the contractor to be hired must have considerable survey experience and familiarity with local fishing communities and practices. Second, the in-person interviews will be conducted at

²¹ With a finite population correction factor, the associated margin of error for a 95% confidence interval for the mean ratio cost is $\pm 1.96 \left[\frac{CV}{\sqrt{X}} \sqrt{\frac{(N-n)}{(n(N-1))}} \right]$.

times and places convenient for fishermen. This will minimize any potential disruption to their fishing practices. Third, respondents will be asked to provide information about major gear and cost categories only, thus avoiding what respondents often perceive as unnecessary detail. Last, surveys will be available in English and Spanish to further reduce any burden to non-English speaking fishermen. The contractor will be fluent in both English and Spanish.

Strategy to Address Non-response

In addition to the response maximizing strategies outlined above, we plan to deal with non-response using callbacks and two-phase sampling procedures as described in textbooks such as Lohr's (see, Lohr's, S., 1998. Sampling: design and analysis).

Adequacy of Accuracy and Reliability of Information for Intended Uses.

As noted earlier neither economic theory nor legislative mandates establish the degree of accuracy required for describing the fishery and its participants in fishery management plans and amendments and for conducting socio-economic analyses. The response to Question 10.2 describes the degree of accuracy and reliability needed for the purpose described in the response to Part A, Question 1.2. That response also describes the specific uses the agency plans for the data collected.

10.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

We have successfully conducted this data collection before. No tests are planned in this iteration.

10.5 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.

Dr. Juan Agar was consulted on the statistical aspects of the study design. NMFS social scientists and CFMC staff will use the data collected for regulatory analysis. Dr. Juan Agar can be reached at 305-361-4218.

Dr. Manoj Shivalani, Department of Marine Ecosystems and Society, University of Miami, Miami, Florida 33149. Dr. Shivalani can be reached at 305-968-7136. The field contractors/interviewers are yet to be determined.

11 Gulf of Mexico Inshore Shrimp Fishery

11.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The population of interest is all vessels fishing for penaeid and rock shrimp in the State and inshore waters of the Gulf of Mexico, i.e., Florida, Alabama, Mississippi, Louisiana, and Texas, during one calendar year, which do not have a federal shrimp permit. No sampling frame exists for this population. Instead, the frame must be tediously assembled in collaboration with the state fish and wildlife departments. Licenses that grant the right to harvest shrimp commercially in state waters are issued to individuals for specific vessels in Alabama, Florida, Mississippi, and Texas and to individuals for use on any vessel in Louisiana. To define a consistent population of commercial shrimpers in state waters, the survey effort will begin in 2022 by identifying all commercial fishermen who landed shrimp commercially in 2021 using state trip ticket records in the four states where records are available: Texas, Louisiana, Alabama, and West Florida. In Mississippi, where trip ticket landing records for shrimp are not available, potential survey participants will be identified as those individuals holding a Mississippi resident commercial shrimp vessel license. We will remove all license holders whose names and addresses appeared on the list of federal shrimp vessel permit holders to create a sampling frame consisting only of state inshore shrimpers. Due to many known issues across the five states, the resulting sampling frame provides a rough approximation of the true population, and includes a substantial amount of non-active participants/vessels. However, a better approximation has not been identified. As of 2012 (see also Table 11.1), the last time this sampling frame was assembled, the sampling frame contained 4,042 unique vessels.

Sampling and Other Respondent Selection Methods

Due to the management and political importance attributed to delineation by state, and the unequal sizes of the states' inshore shrimp fleets, we will stratify the total population by state and sample with different inclusion probabilities. Vessels from Louisiana receive a substantially lower probability as Louisiana accounts for over two thirds of all vessels, i.e., we intend to oversample all the other states. In total, funding-permitting, we plan to randomly sample 1,500 vessels in five state strata.

Expected Response Rate

We expect a response rate of 31% based on the response rate obtained in previous costs and earnings survey following a similar methodology²². For that survey, they had "A total of 437

22 Miller, Alexander, and Jack Isaacs. 2014. An Economic Survey of the US Gulf of Mexico Inshore Shrimp

questionnaires were returned for a raw response rate of 30.9 percent.” While this seems low, the inshore commercial shrimp fisheries in the Gulf are very fluid with ill-defined participants and the sampling frame is a rough approximation. The state-level license lists are quite patchy and contact information often is out of date by the time we receive it. In previous effort, we received a substantial number of responses from respondents who we deemed ineligible, often because their shrimp fishing was for subsistence or recreational purposes only. A small non-response survey indicated that many non-respondents considered themselves commercial shrimp fishermen and averaged a similar number of annual shrimp trips as the respondents. They simply chose not to participate, especially in Louisiana.

Table 11.1 Population size, sample size, expected response rate, and number of expected completed surveys per strata for the inshore shrimp survey.

Strata	Population Size (in 2012)	Sample Size/Sub-population Size	Survey Sample	Expected Response Rate	Number of Expected Completed Surveys per Strata
Florida	166	0.6667	111	0.31	34
Alabama	114	0.6667	76	0.31	24
Mississippi	610	0.6667	407	0.31	126
Louisiana	2,829	0.2443	691	0.31	214
Texas	323	0.6667	215	0.31	67
Total	4,042		1,500	0.31	465

11.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection

For sampling, we will stratify the population by state and then randomly sample in each strata as described earlier, undersampling Louisiana in order to oversample the other four states, which have substantially smaller inshore shrimp fleets.

Estimation Procedures

NMFS will use the data collected for descriptive statistics and analytical purposes. Descriptive uses include the estimation of average harvesting costs per trip and total harvesting costs for the

Fishery: Descriptive Results for 2021. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi.

fleet. The particular sampling design will require some adjustments to ensure consistent estimation of population means and other aggregate statistics. These methods will also correct for the bias if non-response is significant and skewed across the strata.

Degree of Accuracy Needed for Intended Purpose

With a 31% response rate, the procedure of randomly selecting 1500 vessels from the list of 4042 is expected to yield a sample of size 465. The formula for the standard error of the sample mean computed from a sample of size n randomly selected from a finite population of size N is

$\sigma \sqrt{\frac{N-n}{n(N-1)}}$. With $n = 465$ and $N = 4042$, the percentage reduction from the population standard

deviation σ to the standard error of the sample mean is approximately²³ $1 - \sqrt{\frac{4042 - 465}{465(4041)}} =$

95.6%. In general, the accuracy for the population level totals and means of the important variables should exceed the standard +/- 10% confidence interval at a 90% significance level for the larger groups. Given the overall uncertainty inherent to policy assessments of economic conditions in fisheries and given the quality and accuracy of other data used, the standard accuracy should suffice.

Unusual problems requiring specialized sampling procedures

We expect none, except for the previously mentioned weighted sampling of vessels by state.

Periodic Data Collection Cycle to Reduce Burden

The Gulf inshore shrimp survey is complementary to the Annual Economic Survey of Federal Gulf and South Atlantic Shrimp Permit Holders (OMB CONTROL NO. 0648-0591) which is conducted each year. The inshore survey is difficult to administer and produces rough results, hence it is only conducted infrequently to provide a rough overview of the economics of the quarter to a third of the overall Gulf shrimp fishery that is not covered by the federal shrimp survey. The inshore survey was previously conducted in 2008 and 2012. To reduce the time cost of reporting, as well as the financial cost to the federal government, we intend to collect similar data no more than every three years.

NMFS intends to field the survey once every 6 years to reduce burden. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

²³ This calculation assumes the same variance within strata. It is approximate in case variances across strata are different.

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

Methods Used To Maximize Response Rates

The central approach to maximizing the response rate is to make completing the survey a very quick and simple process. Most questions allow for quick recall information, such as an estimated percentage rather than an exact number. We will take every action available to us to facilitate completing and returning the survey by the fishermen. General survey design techniques (Dillman method) and experience from the previous surveys will guide us. Noteworthy actions include, a) timing of the survey during the slow shrimp fishing season (winter and spring) and coinciding with tax time, when business records are being consulted and financial concerns are “top of mind,” and b) using plain language and translating the survey into “language” spoken by southeast shrimp fishermen.

With the help of a contractor, the owner of each vessel selected will be contacted by mail in late February/early March 2022. That first mailing will contain a cover letter, the survey instrument and a return envelope. They will be asked to return the completed survey instrument to us in the enclosed, pre-paid envelope. If no response is received by April 30, up to two further letters will be sent (including additional survey instruments). We will also attempt to contact the non-responders by phone and urge them to return the survey. Information will not be collected during the phone call, and a further survey instrument will be sent – by mail, fax, or email – if requested

Strategy to Address Non-Response

We will conduct a small non-response survey to calibrate our results. We will conduct the non-response survey by phone only. We will ask if the survey was received and clarify that it was and is voluntary. If the survey was received, up to three further questions will be asked, depending on the level of cooperation with the phone respondent. First, we wish to ascertain if the vessel fished for shrimp commercially. Second, and only if yes to commercial shrimping, a rough indicator of fishing intensity in 2021 (rough count of days at sea), and, finally, the reason the survey was not returned. Table 11.3 includes the expected sample size, response rate, number of respondents, and burden hours for this small non-response survey.

Table 11.3 Expected Sample Size, Response Rate, and Number of Responses Per Strata for the Small Non-Response Survey.

Strata	Main Survey Sample Size	Number of Non-Respondents to Main Survey	Percent To Be Sampled	Number of Non-Respondents To the Main Survey To Be Sampled	Expected Response Rate	Number of Expected Completed Non-Respondent Surveys per Strata	Burden Hours (based on 5 minutes/response)
Florida	111	77	0.1	8	0.31	3	0.3
Alabama	76	52	0.1	5	0.31	2	0.2
Mississippi	407	281	0.1	28	0.31	9	0.8
Louisiana	691	477	0.1	48	0.31	15	1.3
Texas	215	148	0.1	15	0.31	5	0.4
Total	1,500	1,035		104		34	2.8

If any major bias is noted in our non-response results, we will evaluate post-stratification methods.

Adequacy of Accuracy and Reliability of Information for Intended Uses

The statistical design and size of this sample survey will allow for valid, if rough, generalizations of the results to the population. We will use the trip ticket data, which are available for four of the five states, to test and adjust for non-response bias for the responses from those states. In addition, we will weight the survey responses to reflect the underlying population when conducting its analysis.

Among other things, the response to the previous question (Question 11.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

11.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The Gulf States Marine Fisheries Commission in collaboration with the Louisiana Department of Wildlife and Fisheries have successfully conducted this data collection in 2008 and 2012. No further tests are being planned in this iteration.

11.5 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.

Individual consulted on the statistical aspects of the design:

Jack Isaacs
Louisiana Dept. of Wildlife and Fisheries
Office of Fisheries
Socioeconomic Research and Development Section
PO Box 98000
Baton Rouge, LA 70898
jisaacs@wlf.la.gov

Persons who will actually have oversight and analyze the information:

Christopher Liese, Ph.D.
National Marine Fisheries Service
Southeast Fisheries Science Center
Social Science Research Group
(305) 365-4109
christopher.liese@noaa.gov

The mail and data entry contractor(s) are yet to be determined.

12. Golden Crab Fisheries in the U.S. South Atlantic Region (0648-0631)

12.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

There are only eleven golden crab permits in existence, and they are currently owned by six individuals in conjunction with their spouses or their corporations. No more than five permit have been active in any of the past five years. Because of this small population, all six permit owners will be contacted. All of the owners responded to the previous implementation of the survey.

12.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

The survey is of the entire population of active permit owners. Because of the small size of this population, we will take several steps to ensure all active permit holder participate in the survey to ensure the resulting information will not be biased. To make the survey as palatable as possible, we will ask for only expenditure data and cost estimates and the survey is very short.

We will use the data collected through this survey for statistical inference of population values from sample respondents and for estimation of econometric models used for fisheries management. Neither economic theory nor legislative mandates establish the degree of accuracy needed for these intended uses. All else being equal, we prefer more accurate data; however, we expect this survey will provide sufficiently accurate and useful data for these intended uses and we believe the correct choices have been made with respect to the tradeoff between data accuracy and data collection costs.

The NMFS intends to field the survey once every 6 years to reduce burden. However, due to a variety of factors that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years. We have made no changes in the procedures or statistical methodology of the collection since the last approval.

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

Following Dillman (2007)²⁴, we will use the following plan to achieve a high response rate.

First, we developed a respondent-friendly questionnaire. The permit owners can easily fill in the expenditure forms by looking at the annual tax records for their businesses.

Second, we plan to make multiple contacts (if necessary) by first class mail. These contacts will include: a) a 'pre-notice letter' to alert the respondent about the impending questionnaire; b) a letter with the survey, c) a 'thank you postcard' sent to the respondent a few days after mailing the survey expressing appreciation for taking the time to respond to the survey and indicating that the completed instrument was not received; d) a letter and replacement questionnaire will be mailed to the respondents urging them to collaborate with the data collection, if the completed survey instrument was not received within a few weeks of the earlier mailing.

Third, respondents will be provided first class pre-paid envelopes so that they can easily return their completed questionnaires. In addition, the contractor will personalize the correspondence. Dillman (2007) notes that personalized mailings increase responses rates by 5-11% in multiple-contact general public surveys.

Last, permit owners will be contacted by telephone to remind them of the need for complete and accurate data. If permit owners cannot be reached by phone, the economist in charge of the project may drive to their business location, but this is unlikely to be necessary. The expenses of any respondents who do not respond will modeled using data from the rest of the fleet.

The last time NMFS conducted this information collection, these methods produced a 100% response. They are expected to do the same for the current information collection. Therefore, nonresponse will not be an issue.

Among other things, the response to the previous question (Question 12.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

²⁴ Dillman, D. A., 2007. *Mail and Internet Surveys: The Tailored Design Method 2007 Update with New Internet, Visual, and Mixed-Mode Guide*. 2nd Edition. John Wiley & Sons, Inc. Hoboken, NJ.

12.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

All of the fleet's active crabbers completed the original implementation of this survey, and the implementation has not changed.

12.5 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.

Dr. Scott Crosson, a social scientist employed by NMFS, can be reached at 305-361-4468, scott.crosson@noaa.gov.

13 West Coast Coastal Pelagic Species Fishery

13.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

We will send this survey to each owner of a commercial fishing vessel that during 2014 or 2019:

- a) operated with a federal West Coast Coastal Pelagic Species (CPS) limited entry (LE) permit, or
- b) participated in a West Coast live-bait fishery, or had landings of Coastal Pelagic Species fish on the West Coast (California, Oregon, and Washington), which accounted for the majority of its landings revenue, but did not operate with a limited entry permit for either West Coast groundfish or highly migratory species.

We will use CPS LE permit registrations and PacFIN landings records to identify eligible vessels.

Fish-ticket data from PacFIN indicates that there are 190 vessels in the survey population. These vessels are stratified as follows: 55 vessels in the CPS LE fishery; 7 vessels in the West Coast live bait fishery; and 128 vessels in the CPS open access (OA) fishery.

Vessels participating in the CPS OA fishery, which operated with a limited entry permit for either the West Coast groundfish or highly migratory species fisheries, will be included in the sample population for survey efforts focused on those fisheries. We exclude them from the CPS survey to prevent a vessel and its owner from being included in multiple West Coast surveys even if they participated in multiple West Coast fisheries. This will reduce the burden and cost of the West Coast surveys and increase response rates by decreasing survey fatigue.

Sampling and Other Respondent Selection Methods

This survey will be performed as a census of the 190 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.

Telephone numbers are available in the federal permit files for vessel owners in the CPS fishery with LE permits, but not for the other vessel owners in the CPS fishery. In an attempt to obtain telephone numbers for the latter owners, we will utilize a telephone number matching service to match their names and addresses with their telephone numbers.

Expected Response Rate

Based on the experience of the NMFSC with a matching service, we expect to obtain telephone numbers for 59% of those other vessel owners. For the other 41% of these vessel owners, mail is the only available contact method. Given the distribution of vessel owners between the LE and other CPS fisheries and the experience of the NWFSC, the expected overall response rate is 48%. That experience refers to their ability to find telephone numbers for those without LE permits, as well as their observed response rates by available contact method and type of fishery (LE vs. OA). With a survey population of 190 vessels, this implies approximately 91 survey responses.

Table 13.1 Population, sample size and response estimates for the West Coast Coastal Pelagic Species Fishery (2014 and 2018)

CPS Fishery Sector	Year	Vessel Population	Expected Response Rate	Expected Respondents
CPS LE	2014	50	55%	28
Live Bait	2014	6	45%	3
CPS OA	2014	85	45%	38
2014 Total		141	49%	68
CPS LE	2018	47	55%	26
Live Bait	2018	7	45%	3
CPS OA	2018	65	45%	29
2018 Total		119	49%	58
CPS LE	Combined	55	55%	30
Live Bait	Combined	7	45%	3
CPS OA	Combined	128	45%	58
Combined Total		190	48%	91

13.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Fielding, stratification, and sample selection

The SWFSC and its subcontractor will field the survey. To field the survey, information on the vessel owner name, mailing address, and telephone number will be taken from federal permit, state permit, and / or vessel registration files. In cases where telephone numbers are not available in the record, a telephone number matching service will be utilized. The SWFSC will send an initial advance letter mailing. We will follow that with a mailing that includes a cover letter providing an explanation of how data collected by the survey will be used by economists, a copy of the questionnaire, a reply postage pre-paid envelope for responding to the survey by mail, and instructions for responding via telephone interview or with a video call interview. This will provide survey recipients with an opportunity to see first-hand the data being collected by the survey.

About one week after the initial mailing, attempts to contact all non-respondents via telephone will begin, for the part of the population with known telephone numbers. These calls will be made by an expert recruiter with the objective of getting the survey recipient to agree to participate in the survey and determining the best response method (telephone or video call interview or mail) for a potential respondent. For those choosing a telephone or video call interview, an interview time will be scheduled. For the non-respondents without a known telephone number, we will send a reminder letter about two weeks after the initial mailing. A second reminder letter will be sent about four weeks after the initial mailing to non-respondents without a known telephone number. A copy of the questionnaire will be included in each reminder letter.

Estimation Procedure

NMFS will use much of the data requested to estimate total (or average) revenue, cost, variable cost net revenue (revenue minus variable costs), and total cost net revenue (revenue minus fixed and variable costs). Such estimates are useful in understanding the economic conditions of the fishery and how they have changed. Fishery managers, fishery participants and the public commonly want this type of information. Additionally, NMFS and the Council can use these estimates and the data on which they are based in predicting the effects on those conditions of changes in regulatory, market and environmental conditions. These estimates will also be used in the IO-PAC model (Leonard, 2011) 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 PFMC to report on the economic contribution and impacts of the fishery to regional economies.

Degree of Accuracy Needed for Intended Purpose

We will use the data collected through this survey for statistical inference of population values from respondents and for estimation of econometric models used for fisheries management. Neither economic theory nor legislative mandates establish the degree of accuracy needed for these intended uses. All else being equal, we prefer more accurate data; however, we expect this survey will provide sufficiently accurate and useful data for these intended uses and we believe the correct choices have been made with respect to the tradeoff between data accuracy and data collection costs. Assuming a response rate of 48%, we expect to obtain 91 complete and usable surveys. With a 48.3% response rate and a population of vessels, we expect a sample of size 92. The formula for the standard error of the sample mean computed from a sample of size n randomly selected from a finite population of size N is $\sigma \sqrt{\frac{N-n}{n(N-1)}}$. With $n = 92$ and $N = 190$, the percentage reduction from the population standard deviation σ to the standard error of the sample mean is approximately²⁵ $1 - \sqrt{\frac{190-92}{92(190-1)}} = 92.5\%$.

Unusual problems requiring specialized sampling procedures

We do not expect unusual problems in this survey. It is based on several successful survey efforts run by the NWFSC on a similar target population.

Periodic Data Collection Cycle to Reduce Burden

With regard to reducing the time cost of reporting, as well as the financial cost to the federal government, we intend to collect similar data no more than once every three years.

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

Methods Used To Maximize Response Rates

Over previous cost and earning survey fieldings by the NWFSC, they developed a set of principles to help maximize survey response during this data collection.

- 1) Respondents are asked only to provide information about relatively major cost and earnings categories, thus avoiding what may seem to survey respondents like unnecessary detail.
- 2) Survey recipients will have the options of responding, such as via telephone or video

²⁵ This calculation assumes the same variance within strata. It is approximate in case variances across strata are different.

call interviews or by mail.

3) Discussions were held with members of the limited entry, live-bait, and open access fleets in an effort to clarify questions. Revenue and cost categories on the questionnaire correspond to the financial records maintained by vessel owners as much as possible.

Strategy to Address Non-Response

The corresponding section of the response to Question 1.3 applies to this fishery too.

Adequacy of Accuracy and Reliability of Information for Intended Uses

Among other things, the response to the previous question (Question 13.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

13.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The survey cover letter and questionnaire are based on a similar cost and earnings data collection administered by the NWFSC. The NWFSC has successfully administered nine surveys. Prior to the first collection in 2005, the NWFSC performed extensive outreach to industry for the purposes of testing the survey instrument for clarity and ease of completion. The NWFSC survey instrument has been refined over time in response to feedback received from respondents. The SWFSC CPS survey has been reviewed by members of the PFMC's Coastal Pelagic Species Advisory Subpanel (CPSAS) and survey contractors from prior survey efforts and NMFS colleagues with experience in similar survey efforts.

13.5 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.

A contract to administer this information collection has been awarded.

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14. West Coast Swordfish Fishery (0648-0751)

14.1. 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

The survey population includes fishing vessel owner/operators, processors, and aircraft owner/operators who participated in the commercial West Coast Swordfish Fishery during the 2018-19 and 2019-20 seasons, plus recent swordfish fishery participants who are currently inactive. In the 2017-18 season, 55 swordfish permits were issued and approximately 18 deep gillnet (DGN) and 21 harpoon (HPN) vessels actually fished. In the 2018-19 season, 56 swordfish permits were issued and approximately 21 DGN and 14 HPN vessels fished. In the 2019-20 season, 60 swordfish permits were issued and approximately 15 DGN and 16 HPN vessels fished²⁶. In addition, a small number of fishermen made deep-set buoy gear or longline landings to the West Coast in recent years.

As of 2000, there were 69 drift gillnet (DGN) vessels and 26 harpoon (HPN) vessels participating in the west coast swordfish fishery, for a total of about 95 vessels (HMS SAFE Report), compared to 15 DGN and 16 HPN vessels reported fishing in 2019. Due to aging of west coast swordfish fishery participants, the majority of current participants were active as of 2000. We thus estimate the number of potential former participants as the difference between the total number of DGN and HPN participants in 2000 less the total for 2019, or 64 vessels.

Sampling and Other Respondent Selection Methods

The current survey will target the active DGN, HPN, longline, and deep set buoy gear vessels for 2018-19 and 2019-20. We will also attempt to contact any previous permittees who had DGN or HPN permits during the 2011 survey but are no longer participating in the fishery.

Expected Response Rate

The Southwest Fisheries Science Center (SWFSC) has conducted three previous economic cost earnings surveys of the fleet, under OMB Control No. 0648-0369. A survey fielded during 1999 obtained a 43% response rate. A second survey fielded during 2004 obtained responses from 54% of vessel owner/operators and the third survey conducted in 2010 obtained responses from 36% of DGN and HPN vessel owner/operators.

²⁶ Additional 2019-20 data from HMS SAFE Report is available at: <https://www.pcouncil.org/hms-commercial-fisheries-descriptions>

The targeted survey fielding protocol for this survey would suggest a slightly higher response rate than the last survey. Factors that will generate a higher response rate include very close collaboration with industry leaders to ensure their on-going support, attendance at industry events where surveys can be discussed, and a survey method that includes phone and email follow-up to schedule telephone or video call interviews to administer the survey.

After eliminating double counting due to vessels that participated with multiple gear types, we estimate there are 26 active operators/owners. Based on the response rates for the 2004 and 2011 surveys, the two most recent surveys (see Table 14.1), a 50% vessel response rate is expected for the cost and earnings survey. This would yield approximately 13 completed vessel operator/owner surveys. We expect a 100% response rate from two fish spotters and two processors. Finally, we expect 50% or 32 of the 64 past participants will respond. This results in 49 completed surveys from current and past fishery participants. We anticipate an overall response rate of 51%²⁷.

Table 14.1 Population, response rate and burden estimates for the West Coast Swordfish Fishery.

Survey Group	Total Target Population	<u>Expected Survey Response Rate</u>	Expected Number of Survey Respondents	Average Burden Hours per Response (Hours)	Total Burden Hours
Current DGN + HPN + Other	26	50% ²⁸	13	1	13
Fish Spotters and Processors	4	100%	4	1	4
Past Participants	64	50% ²⁹	32	0.25	8
Total	94	52% ³⁰	49	0.51 ³¹	25

²⁷ (50% of 26 + 4) / (26 + 4) = 17/30 = 57%

²⁸ Approximated based on response rates from ICRs in 2004 and 2011.

²⁹ This estimate is based on the estimate for current participants.

³⁰ Calculated using the total numbers of respondents and the total population.

³¹ Calculated using the total burden hours and the total number of respondents.

14.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection

Given the small universe of potential respondents, this survey will be conducted as an attempted census. The desired degree of precision, and corresponding desired response rate, depend upon the application for which the data are being used. Some applications may use data from all survey respondents, while other applications will use data only from vessels that used a specific gear type or operate in a certain geographic location. A basic application of the survey data could be the inference of unobserved population mean values from the observed sample mean values.

Estimation Procedures

The completed responses for vessels will be stratified by vessel size, landings by weight, fishing method and port of registration. A statistical summary of the cost variables collected for each group of survey respondents will be compiled, using the respondent-level mean and variance of each variable to characterize these costs for different groups of industry constituents. We will use these values to characterize the fleet's cost structure for second-stage analysis in productivity or regional economic impact studies.

Degree of Accuracy Needed for Intended Purpose

For an example of anticipated precision of estimates, we consider the case of average variable costs. Results from the 2011 DGN-HPN fishery survey showed a coefficient of variation for reported category: variable costs of $CV_x = \frac{s}{\bar{X}} = 1.06$ for HPN vessels, and 0.3 for DGN vessels where X denotes respondent-level variable costs, s is the sample standard deviation and \bar{X} is the sample mean. The formula for the coefficient of variation of mean variable costs estimated from survey results is $CV_x = \frac{s_x}{\bar{X}} \sqrt{\frac{N-n}{N-1}} = CV_x \sqrt{\frac{N-n}{n(N-1)}}$, where the standard error for the sample mean is $s_x = \frac{s}{\sqrt{n}}$, N is the survey target population size, and n is the survey sample size. The associated margin of error for a 95% confidence interval for the mean variable cost is $\pm 1.96 CV_x \sqrt{\frac{N-n}{n(N-1)}}$, where 1.96 is the 97.5th percentile of a standard normal random variable. With target population sizes of 40 and 20 survey respondents for each

kind of vessel³² (HPN or DGN), estimated mean variable costs would thus achieve an approximate margin of error of +/- 33% for HPN vessels and +/- 13% for DGN vessels with 95% confidence.

The example above is one of many potential examples for the various sample data categories, and the CVs will vary for different sample statistics and may not be the same for this new survey as for the previous one. It is likely that different levels of precision will be obtained for other statistics calculated from survey results.

Unusual problems requiring specialized sampling procedures

We anticipate no unusual problems requiring specialized sampling procedures.

Periodic Data Collection Cycle to Reduce Burden

This is a survey specifically designed to reduce the burden to the respondents. For example, NMFS intends to field the survey no more frequently than once every three years to reduce burden.

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

Methods Used To Maximize Response Rates

We will use a number of methods to maximize survey response rates: First, the survey team will work with industry group representatives to encourage survey participation. Second, respondents are asked to provide only information necessary to perform intended analysis and questions are structured in the most logical fashion to prevent repetition or unnecessary detail. Third, the interview form has been tested and will be implemented based on methods found most effective in those tests. Those methods include: taking advantage of opportunities to test interviews in person at industry events (such as NMFS captain orientation meetings); following up with non-respondents to conduct surveys by phone or email; and Dr. Hanan leveraging close relationships, personal and professional, with industry leaders and individual fishermen forged over 30 years working with the fleet. Fourth, the potential respondents will have three options for providing the requested information. They can provide it by a telephone or video call interview or by mail. Fifth, we will send intended participants a notification letter several weeks in advance of fielding the survey. Sixth, different versions of the survey instrument will be prepared to tailor the survey to different groups of participants, thereby reducing the form to the minimum length necessary to collect the requested information.

³² This example assumes data collection will occur once every three years from target populations of these sizes.

Strategy to Address Non-Response

We will base testing for non-response bias on the considerable amount of data available for all members of the survey population. Data on vessel physical characteristics and landings, which are available for both survey respondents and non-respondents from the federal and PacFIN databases, will be used to test the representativeness of survey respondents. No personally identifiable information will be provided to NMFS; the fishermen are aware of this and trust Dr. Hanan to follow through with this stipulation as he has done in previous surveys.

If non-response bias appears evident in our survey results, we will make efforts to contact groups that are under-represented to achieve a balance among different groups (different vessel sizes, fishing methods and levels of participation). If non-response bias still appears evident in our survey responses after such an effort, we will use weighted averages and weighted sums based on the distribution of groups to adjust for the bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

Among other things, the response to the previous question (Question 14.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

14.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The survey has been reviewed and edited extensively by representatives of the SWFSC with extensive experience in administering surveys in the West Coast commercial fishing industry.

DGN-HPN industry leaders provided a review of the survey and the survey was pretested by commercial swordfish participants. Testing included nine (9) individuals, which therefore did not require prior approval from OMB.

14.5 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.

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15. West Coast North Pacific Albacore Fishery

15.1 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 government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Potential Respondent Universe

A similar survey was last conducted for the West Coast North Pacific Albacore Fishery in 1999, with an approximate 50% response rate. The survey population includes fishing vessel owner/operators in the West Coast North Pacific Albacore Fishery during the 2019 and 2020 seasons. In the 2019 season, the fishery included 637 vessels, including 106 in California, 329 in Oregon, and 202 in Washington³³. The 2020 fishing season is currently underway, and statistics regarding numbers of participating vessels will not be available until spring of 2021 at the earliest. The last survey conducted for this fishery was done in 1999, with an approximate 50% response rate.

Sampling and Other Respondent Selection Methods

A stratified sampling approach will be utilized, based on known sources of variation among vessels that participate in the fishery. Details are provided in response 15.2.

Expected Response Rate

Based on the response rates achieved in similar voluntary surveys that NMFS has conducted, we expect a 50% response rate for the information collection.

Table 15.1-Estimated Population, Response Rate and Number of Respondents by Strata.

Strata	Estimated Population	Estimated Sample Size	Expected Response Rate	Expected Number of Respondents
California	106	20	50%	10
Oregon	329	62	50%	31
Washington	202	38	50%	19
Total	637	120	50%	60

³³ Data source: Pacific Fishery Management Council's Highly Migratory Species SAFE Report

15.2 Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,
- Estimation procedure,
- Degree of accuracy needed for the purpose described in the justification,
- Unusual problems requiring specialized sampling procedures, and
- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Stratification and Sample Selection

We will use a stratified random sample approach to identify vessels for inclusion in the survey, using vessel size and homeport state as strata. The use of stratification addresses the known large range of variation in vessel size for this fleet, which is known to affect fishing behavior and related costs. A target list of 120 vessels will be randomly selected from the complete list of vessel IDs for harvesters in the fishery, which is expected to yield a sample of 60 completed surveys based on a 50% response rate.

With a 50% response rate, the procedure of randomly selecting 120 vessels from the list of 637 is expected to yield a sample of size 60. The formula for the standard error of the sample mean computed from a sample of size n randomly selected from a finite population of size N is $\sigma \sqrt{\frac{N-n}{n(N-1)}}$. With $n = 60$ and $N = 637$, the percentage reduction from the population standard deviation σ to the standard error of the sample mean is approximately³⁴ $1 - \sqrt{\frac{637-60}{60(637-1)}} = 87.7\%$.

We will create the stratified random sample using the following steps:

1. The data will be subdivided by a range of vessel size classes (e.g. < 40 ft., 40-65 ft., and > 65 ft.) and homeport state (CA, OR and WA).
2. The PacFIN database will be queried to assess the number of albacore fishing vessels in each of the nine size/state strata.
3. Using the annual amounts of albacore landed over the past five years to proxy the cost data items included in this information collection, sample sizes from each of the nine strata will be selected to minimize the variance of total landings for the number of vessels included in the sample frame.
4. A one-time simulated random selection procedure will be used to choose the vessels to include in the survey sample for the sample sizes identified in step 3. This random selection procedure will be conducted with the R statistical package, using lists of vessel IDs within each stratum obtained from PacFIN, and the 'sample' procedure with 'replace = FALSE' to simulate a random selection without replacement. The advantage of this approach is to obtain a random selection of intended participants within strata, thereby eliminating the bias that could result from using a nonrandom selection procedure.

Alternatives that we considered include conducting a full census of harvesters in the fishery and

³⁴ This calculation assumes the same variance within strata. It is approximate in case variances across strata are different.

selecting a simple random sample from all harvesters of record in recent years. With over 600 participating vessels, a full census would be unnecessarily expensive to conduct and burdensome on the fleet to meet the purposes for this information collection. Given a high degree of homogeneity within strata with respect to vessel size, fishing methods and related costs, a sample size of 60 is expected to be large enough to adequately characterize the cost structure across strata, while avoiding the unnecessary cost burden of an attempted census.

A simple random sample could result with problems of non-response bias, in case the response by some strata are strong and others are weak. Stratifying the sample provides an implicit control for non-response bias by obtaining subsamples within strata, which are expected to be more homogeneous with respect to the data items in this information collection than the fleet as a whole.

Estimation Procedures

Initial estimation procedures will consist of producing summary statistics (e.g. mean and standard deviation) within strata for the cost items collected.

We will use these values to characterize the fleet's cost structure for second-stage analysis in productivity or regional economic impact studies.

Degree of Accuracy Needed for Intended Purpose

No specific degree of accuracy is required for the planned analysis, although a smaller sample variance is desirable, other things equal. Stratifying the data by state and vessel size is expected to result in smaller variance within size class, increasing the efficiency of the collection. We expect Step 3 to further increase the efficiency of the collection.

Unusual problems requiring specialized sampling procedures

We do not anticipate any unusual problems requiring specialized sampling procedures

Periodic Data Collection Cycle to Reduce Burden

To reduce the time cost of reporting and the financial cost to the federal government, we intend to collect similar data no more often than once every three years.

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

Methods Used To Maximize Response Rates

We will use a number of methods to maximize survey response rates: First, the survey team will

work with industry group representatives to encourage survey participation. Second, respondents are asked to provide only information necessary to perform intended analysis and questions are structured in the most logical fashion to prevent repetition or unnecessary detail. Third, the interview form has been tested and will be implemented based on methods found most effective in those tests. Those methods include: 1) taking advantage of opportunities to test interviews in person at industry events (such as NMFS captain orientation meetings) and 2) following up with non-respondents by phone or email to encourage them to participate in the survey. Fourth, the potential respondents will have three options for providing the requested information; they can provide it by a telephone or video call interview or by mail. Fifth, we will send intended participants a notification letter several weeks in advance of fielding the survey. Sixth, we will contract representatives from the two major industry groups representing the fishery, the American Albacore Fishing Association and the Western Fishboat Owners Association, and ask them to assist with fielding the survey and sending follow-up correspondence to non-responders.

Strategy to Address Non-Response

Due to a random relationship between survey response and the information requested in this information collection, we do not anticipate any non-response bias. However, we will base testing for non-response bias on the considerable amount of data available for all members of the survey population. The variables we will use for non-response bias testing fall into the categories of vessel physical characteristics and vessel landings. We will use procedures to reweight the data or the estimated model to correct for any known bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

Among other things, the response to the previous question (Question 15.2) describes the degree of accuracy needed for the purpose described in the response to Part A, Question 1.2. That response describes the specific uses the agency plans for the data collected.

15.4 Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The statistical procedure used to select the sample is simulation based (details are provided above in response 15.2). The survey questions: 1) reflect input from constituents on what information is relevant to the fishery and available; 2) are based on standard survey methodology used throughout NMFS; and 3) represent a minimal set of questions necessary to meet the requirements of the intended analysis.

15.5 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.

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As the proposed survey has not been approved, no contract has yet been awarded for its administration

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