**Cost-Earnings Survey of Hawaii Longline Fleet Based on 2011 Operation**
**Responses to Supplemental Questions for PRA Clearance**
**OMB Review of Individual Instruments**

Project Title: Cost-Earnings Survey of Hawaii Longline Fleet Based on 2011 Operation

Justification under OMB Generic Clearance:
(Economic Survey of US Commercial Fisheries, OMB Control No. 0648-0369)

*This request is for a one-time survey of the Hawaii longline fleet operated in 2011 which has been developed based on previously approved question categories as outlined in the generic clearance (OMB Control No. 0648-0369) supporting statement.*

Commercial fisheries economic data collection programs implemented by the National Marine Fisheries Service (NMFS) address statutory and regulatory mandates to determine the quantity and distribution of net benefits derived from living marine resources as well as predict the economic impacts from proposed management options on commercial harvesters, shore side industries, and fishing communities. In particular, these economic data collection programs contribute to legally mandated analyses required under the Magnuson-Stevens Fishery Conservation and Management Act (MFCMS), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), and Executive Order 12866 (E.O. 12866).

The NMFS Pacific Islands Fisheries Science Center proposes a fleet-wide cost-earnings survey of the Hawaii based longline fleet to assess the profit level of the 2011 operation. The Hawaii longline fishery is the largest fishery in the Pacific Island Region, landing 26.7 million pounds of pelagic fish valued at $73.8 million in 2009. The cost-earnings data are necessary to support comprehensive analysis of changes in producer surplus and changes in financial profit that are attributable to alternative regulatory actions taken/mandated by the Western Pacific Fishery Management Council. It is also a requirement of RIR, RFA, and EIS to collect basic economic data. Three cost-earnings assessments in previous years were conducted on the fishery based on the 1993, 2000, and 2005 operations. The data collected have been used in the RIR, RFA, and EIS associated with the Hawaii longline fisheries. Also, they were applied to the key economic studies that supported the decision making process associated with the management of Hawaii longline fisheries. It has been six years since the last cost-earnings study was conducted in 2006. This proposed study is to update the cost-earnings status and to assess the profit level of the 2011 operation of the Hawaii based longline fleet.

The Hawaii longline fishery faces many challenges in recent years. Some of these challenges include the interaction with protected species (sea turtles and seabirds), concerns on overfishing of main targeted tuna stock in the Pacific, and participation/cooperation with international entities in the management of highly migratory species. As the fishery expanded into international waters, the Hawaii longline fishery became subject to management under regional fisheries management organizations (RFMO). Bigeye tuna was the first species in the Hawaii longline fishery subject to the international management measures of the Western and Central Pacific Fisheries Commission (WCPFC) in the Western and Central Pacific Ocean (WCPO) and the Inter-American Tropical Tuna Commission (IATTC) in the Eastern Pacific Ocean (EPO). In 2010, the bigeye tuna quota was 3,763 metric tons (8.3 million pounds) in the Western Pacific

Ocean and 500 metric tons in the East Pacific Ocean for vessels larger than 24 meters (78.7 ft) in length.

Due to interaction with protected species such as the sea turtle and false killer whale, the fishery was required to adopt additional measures to ensure the reduction of interactions with protected species. The swordfish fishery was closed in 2000 and reopened in April 2004 with a series of measures to ensure the reduction of sea turtle interactions. These measures included an annual effort limit of 2,120 sets and sea turtle take caps of 16 leatherback sea turtles and 17 loggerhead sea turtles. During the period from 2005 to 2011, the fishery was closed twice because of reaching one of the sea turtle interaction caps. As a result, the economic performance of the Hawaii longline fishery was greatly affected. The fishery may be further impacted by the proposed False Killer Whale Take Reduction Plan to address the incidental mortality and serious injury of false killer whales in Hawaii's commercial longline fisheries. The proposed cost-earnings assessment will provide important data on the current status of this fishery.

**1. The potential respondent universe and any sampling or other respondent selection method to be used and the expected response rate.**

Potential Respondent Universe

The potential respondent universe for this survey is the owners or operators of all Hawaii-based longline vessels that were active during 2011. According to the mandatory federal logbooks submitted to National Marine Fisheries Service by captains after each fishing trip, 129 vessels were active in the Hawaii-based longline fleet during 2011[1]. The number of active vessels has remained nearly unchanged in the past eight years (ranges from 124 vessels to 129 vessels). In 2011, longline fishers made 1,388 longline trips, including 1,306 trips using deep-set gear to target tuna and 82 trips using shallow-set gear to target swordfish.

Sampling and Other Respondent Selection Methods

This survey will be performed on a census of the 129 vessels in the survey population. The three previous cost-earnings studies of the Hawaii longline fleet demonstrated high response rates and data quality through in-person interviews; therefore we propose to use the same approach to collect data through an in-person survey to ensure high response rate and high quality of data.

Expected Response Rate

The expected response rate is approximately 80%; with a census survey of 129 vessels, this implies103 survey responses (129*80%). This response rate is estimated based on a number of reasons. First, all three previous cost-earnings studies of the Hawaii longline fleet (1993, 2000, and 2005) obtained very high response rates (79% or above, from Table 1). Second, the number of active vessels has remained very stable in the past eight years. Given this steady participation, we anticipate the response rate will be very close to the 2005 rate, i.e. 79%. Third, the survey

[1] NOAA - Pacific Islands Fisheries Science Center. 2011. The Hawaii-based Longline Logbook Summary Report January-December 2011.
http://www.pifsc.noaa.gov/fmb/reports/hlreports/report_2011.php

form would be essentially the same as the one used in the previous cost-earnings study. Given the high participation in the past survey and the similarity of the survey instrument, we anticipate the response rate will remain high at 80%.

Table 1. Response Rate from Previous Cost-Earnings Studies of the Hawaii Longline Fleet

| | **1993** | **2000** | **2005** |
|---|---|---|---|
| **Population** | 122 | 74 | 124 |
| **Number Interviewed** | 101 | 62 | 98 |
| **Response Rate** | 83% | 84% | 79% |

**2. Data collection procedures, including the statistical methodology for stratification and sample selection, the estimation procedure, the degree of accuracy needed for the intended purpose, expected dates of survey implementation, and any unusual problems requiring specialized sampling procedures.**

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 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 was in 2005. Fishery 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 Hawaii based longline fishery based on 2011 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, and 2005) collected the costs data through an in-person survey, while revenue data were compiled from fishermen's logbook and dealer data.

Much of the data requested will be used to compute total and average cost, revenue, and profits. Cost-earnings information will be estimated at fleet-wide level and by target level (tuna or swordfish). Both raw data and the computation data on the cost-earnings status are useful to help understand the economic condition of the fishery and how it may have changed. Such data summaries are the type of information that fishery managers, participants, and the public commonly wish to have provided.

Desired Accuracy Needed for the Intended Purpose

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

mean values from the observed sample mean values. Table 2 shows the number of responses (and corresponding response rate) needed to get a response sample mean within 4%, 5%, and 10% of the population mean at the 95% confidence level. Given a population of 129 vessels and an expected response rate of 80%, a sample of 103 completed surveys would provide a sample mean within 4% of the population mean at the 95% confidence level. Even with a smaller number of responses of 92 (response rate=71%), the sample mean is within 5% of the population mean.

Table 2. Different Levels of Sampling Error at 95% Confidence Level

| Sampling Error | Number of Responses | Response Rate |
|---|---|---|
| 4% | 103 | 80% |
| 5% | 92 | 71% |
| 10% | 53 | 41% |

Expected Dates of Survey Implementation

The NMFS intends to field the survey during May and June 2012.

**3. The methods used to maximize response rates and address non-response. The accuracy and reliability of the information collected must be shown to be adequate for the intended uses.**

Methods Used To Maximize Response Rates

A number of methods were used to maximize survey response during the previous cost-earnings surveys of the Hawaii longline fleet, and will also be used during this survey. First, the survey is short, consisting of only five pages. Second, respondents are asked only to provide information about major cost categories, thus avoiding what may seem to survey respondents like unnecessary detail. 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 study in 1994 and 2005, with the additional refinement of questions concerning bigeye quota management and the potential catch share program. Fourth, translators will be used during interview 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.

Addressing Non-Response

Testing for non-response bias will be based on the considerable amount of data that is available for all members of the survey population. Data on vessel physical characteristics and target types (tuna or swordfish) is available for both survey respondents and non-respondents from the federal logbook, and will be used to test the representativeness of survey respondents. Based on the previous cost-earning studies on the same fleet, vessel size (vessel length) and target type were the two key factors that determinate the variation of the cost-earning status among vessels. Therefore, variables that will be used for non-response bias testing fall into the categories of vessel length and target types. Vessel length provide an indication of whether the data collected

through the survey on fixed cost items such as repair and maintenance is likely to differ for survey respondents and non-respondents. The Hawaii-based longline fleet usually was divided into three sub-groups (large, median, and small) based on their vessel length.

Tests for non-response bias will also include target level. Costs are likely to differ between tuna and swordfish targeted trips due to different gear types and so do revenues due to price difference between species. As a result, it is possible to compare respondents and non-respondents for costs and total dollar value landed with regard to target level.

If non-response bias appears evident in our survey responses, efforts will be made to contact groups that are under-represented to get a balance among different groups (different vessel sizes and different fishing target groups). If non-response bias still appears evident in our survey responses after such an effort, we will find weighted average and weighted sum based on the distribution of groups to adjust the bias.

Adequacy of Accuracy and Reliability of Information for Intended Uses

NMFS needs to measure the economic performance of Hawaii based longline 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, labor cost, 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 explained in the response to Question 2, our survey sample will allow us to estimate sample means within 4% of the population mean.

**4. How the survey instrument was developed, including the steps taken to validate the questionnaire design.**

The survey instrument is an updated version of the survey instrument used in the previous three cost-earnings study of Hawaii based longline fishery. The survey has been reviewed and pre-tested with federal staff of the NMFS Pacific Islands Fisheries Science Center (PIFSC) and Western Pacific Regional Fishery Management Council, 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 format.

**5. The reporting and use of the results of the survey.**

Use of Survey Results

The NMFS needs to measure the economic performance of Hawaii based longline 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, labor cost, revenue, and profit and to provide an updated baseline of cost-earnings analysis. In addition, the survey results will provide an overview of Hawaii longline fishermen's attitude and understanding toward the catch share program. The data gathered and performance measures constructed will be used to address a wide range of issues important to the Pacific Islands Regional Office, Western Pacific Regional Fishery Management Council, and the Hawaii longline fleet.

Reporting of Survey Results

Survey results will be reported in PIFSC's administrative report and published on the NMFS web site. This summary will include descriptive statistics (such as mean and standard deviation) of the various cost and earnings categories being collected.

Survey results will be reported over time through a series of studies prepared for fisheries management. It is anticipated that results will also be reported through presentations at conferences, public meetings, and technical guides. All reporting of survey results will conform to data confidentiality requirements. Qualified researchers with data access and confidentiality agreements will have access to raw data for performing future analyses, if requested.

Information Quality Guidelines and Confidentiality

It is anticipated that the information collected will be disseminated to the public or used to support publicly disseminated information. NMFS will retain control over the information and safeguard it from improper access, modification, and destruction, consistent with NOAA standards for confidentiality, privacy, and electronic information. In particular, the data collected will be kept confidential as required by section 402(b) of the Magnuson-Stevens and NOAA Administrative Order 216-100, Confidentiality of Fisheries Statistics, and will not be released for public use except in aggregate statistical form without identification as to its source.

The information collection is designed to yield data that meets all applicable information quality guidelines. Prior to dissemination, the information will be subjected to quality control measures and a pre-dissemination review pursuant to Section 515 of Public Law 106-554.

**6. Contact information for agency coordinator and principle investigator.**

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**7. Estimated burden and number of respondents.**

Completing the survey is expected to take 60 minutes per respondent. As a result, the survey is expected to impose a total of 103 burden hours on the Hawaii longline fleet.

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|---|---|
| Total Target Population | 129 |
| Expected survey response rate | 80% |
| Expected # of survey respondents | 103 |
| Average burden hours per survey | 60 minutes |
| Total annual burden hours | 103 |