

Hawaii For-Hire (Charter) Fishery Cost-Earnings Survey Responses to Supplemental Questions for PRA Clearance OMB Review of Individual Instruments

Project Title: Cost Earnings Study of Hawaii's For-Hire (Charter) Fishery

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

Commercial fisheries economic data collection programs implemented by 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), Executive Order 12866 (E.O. 12866) as well as a variety of state statutes.

This particular survey instrument very closely mirrors research efforts recently approved and fielded under generic clearance 0648-0052 (recreational fishing – 11/30/2013) for the Northeast for-hire (charter) sector. However, based on the unique conditions of the Hawaii for-hire (charter) industry – namely, extensive commercial fishing behavior - this application seeks approval under generic clearance 0648-0369 (commercial fisheries). Prior research has established that nearly 66% of pounds caught on charter fishing trips in Hawaii are sold by charter captains, thus confirming the ‘commercial’ nature of for-hire fishing in Hawaii (Hamilton, 1998). Likewise, all for-hire captains possess State of Hawaii Commercial Marine Licenses (CML). This request is for a one-time survey of the Hawaii for-hire (charter) fleet which has been developed based on previously approved question categories as outlined in the generic clearance (0648-0369) supporting statement

Objective: The charter fishing industry has a long and storied history in Hawaii, as residents, tourists, and big tournament fishermen have come to Hawaii to experience the “Blue Marlin Capital of the World”. Pelagic charter fishing is a notable component of tourism in Hawaii, with charter patrons generating sales impacts of approximately \$10.3 million and value-added impacts of \$5.7 million in 2008¹ (NOAA, 2011). Previous studies on Hawaii's charter fishing industry have mostly reported on the demographics, motivations, expenditures, and valuation of charter patrons² (Samples and Schug, 1985; O'Malley and Glazier, 2001; Gentner and Steinback, 2008).

¹ NOAA - National Marine Fisheries Service, Interactive Fisheries Economic Impacts Tool.
<http://www.st.nmf.noaa.gov> (visited 2/15/11)

² Samples KC and DM Schug. 1985. Charter Fishing in Hawaii: A study of their demographics, motivations, expenditures, and fishing values. National Marine Fisheries Service, Southwest Fisheries Science Center Administrative Report H-85-8c.

However, our understanding of the operational aspects of the Hawaii charter fleet, its financial performance, and its economic contribution to the state of Hawai'i are outdated, at best, as an extensive economic analysis (cost-earnings) of fishing operations has not been conducted since 1997³. Given the multitude of recent macroeconomic changes in the past 15 years coupled with regulatory changes including the establishment of Annual Catch Limits (ACLs) for all Federally-managed fisheries, and the potential for allocation decisions to be made in the future in the form of catch shares management⁴, it is imperative that economic and social data on this fleet are collected.

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 consists of 170⁵ active charter captains holding State of Hawaii commercial marine licenses (CML) to catch and sell fish, active in 2010. These captains took an estimated 8,900 trips during 2010⁶. Unlike many other states, Hawaii law allows the sales of fish caught during sportfishing charter boat trips provided that the seller (usually but not always the captain) possess a valid CML (Hamilton, 1998). Prior research has shown that nearly 66% of pounds caught on charter fishing trips are sold by charter captains, thus confirming the 'commercial' nature of for-hire fishing in Hawaii (Hamilton, 1998).

These commercial marine licenses must be renewed annually, and fishermen holding these permits must file monthly reports of fishing catch and effort. Active charter captains for our study are defined as those holding a valid State of Hawaii CML for fishing year 2010 who indicated 'charter' activities at some time during the year⁷. Survey respondents will be contacted via the list of active CML permit holders held by the State of Hawaii Division of Aquatic Resources (DAR). Contact information (mailing address and phone numbers) will be provided by the Hawaii DAR office through a cooperative data sharing agreement that is currently in place, although contact information is readily available through advertising and public records. As permits must be renewed annually we are confident that valid contact information is readily available for permit holders and provides us a distinct target population.

O'Malley, JM and EW Glazier. 2001. Motivations, Satisfaction and Expenditures of Recreational Pelagic Charter Fishing Patrons in Hawaii. Joint Institute for Marine and Atmospheric Research, University of Hawaii, JIMAR contribution 01-339. 56p.

Gentner, Brad and Scott Steinback. 2008. The Economic Contribution of Marine Angler Expenditures in the United States, 2006. NOAA Technical Memorandum NMFS-F/SPO-94.

³ Hamilton, Marcia. 1998. Cost-Earnings Study of the Hawaii Charter Fleet 1996-1997. Joint Institute for Marine and Atmospheric Research, University of Hawaii. JIMAR contribution 98-322. 105p.

⁴ National Oceanic and Atmospheric Administration (NOAA). 2010. NOAA Catch Share Policy. http://www.nmfs.noaa.gov/sfa/domes_fish/catchshare/docs/noaa_cs_policy.pdf

⁵ State of Hawaii, February 2011, Personal Communication.

⁶ State of Hawaii, February 2011, Personal Communication.

⁷ 'Charter' activities are denoted in the monthly State of Hawaii commercial catch reports whereby a captain is required to check a yes/no box labeled 'Charter' trip to indicate a for-hire fishing trip(s) was taken during the month.

Sampling and Other Respondent Selection Methods

The survey will be distributed to a census of Hawaii charter captains. While cost earnings surveys of the Hawaii small boat fishery⁸ (Hamilton and Huffman, 1997; Hospital, et al. 2011) have demonstrated the effectiveness of in-person interviews in collecting data and obtaining high response rates in Hawaii, the complexity of charter operations, spatial distribution across six islands, and relatively high cost of in-person data collection make the use of this mode of administration for all members of our population impractical. As a result, we propose a mixed-mode administration featuring an initial mail instrument followed by phone and in-person coordination where desired by the respondent or where necessary to account for any identified non-response bias.

The initial mailing will consist of a letter introducing the survey to the population. Within a week, respondents will receive a package including a cover letter and survey instrument designed to be filled out and returned in a self-addressed stamped envelope. Nonrespondents will receive a series of follow-up mailings which utilize the techniques developed by Dillman (2008)⁹ to increase survey response rates. In the third mailing, a postcard will be supplied allowing respondents to indicate whether they would prefer to conduct the survey over the phone or in-person. We can ensure the representativeness of our sample by comparing completed surveys to the survey population distribution (both spatial and effort-based distributions) by linking respondents to commercial fishing records available from the State of Hawaii Division of Aquatic Resources.

All survey recipients will be given the name, telephone number, and email of the principal investigator to contact with any questions or to schedule an interview with field staff, if desired. The same questionnaire will be used for all modes (mail, in-person, and telephone interviews – if desired).

Expected Response Rate

The expected response rate is approximately 70%, with a target sample size of 119 (170*70%) completed and usable surveys. As described above, this will be accomplished through a mixed-mode instrument designed in an effort to balance cost considerations and allow for an improved response rate. We will couple a mail instrument with in-person/telephone surveys where desired by respondents or where necessary to account for nonresponse bias. We expect that this flexibility of survey administration will greatly improve our response rates.

⁸ Hamilton, Marcia S., and Stephen W. Huffman. *Cost-Earnings Study of Hawaii's Small Boat Fishery, 1995-1996*, 104 pp, University of Hawaii, Joint Institute for Marine and Atmospheric Research, 1000 Pope Road, Honolulu, HI 96822, 1997

Hospital, Justin, Skaidra Scholey, and Minling Pan. 2011. *Economic and Social Characteristics of the Hawaii Small Boat Pelagic Fishery*. Pacific Islands Fisheries Science Center. Administrative Report H11-01. 78p.

⁹ Dillman, Don, Jolene D. Smyth, and Leah Melani Christian. 2008. *Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method*, John Wiley Publishing

Previous research on the Hawaii charter fleet applied an in-person mode of administration. Hamilton (1998) achieved a response rate of 95% (61 out of 64 active vessels contacted in 1996-1997), which suggests that this fleet is open to participating in research efforts. While we do not have any precedent of mail survey response rates for this specific fleet; recently completed research on the Hawaii bottomfish fishery¹⁰, using a Dillman (2008) mail survey methodology achieved a representative sample with a response rate of 62% of active fishermen after only two survey mailings. Therefore, it is safe to assume that we will achieve a similar, if not better response, due to the homogeneity¹¹ of the charter fleet relative to the bottomfish fleet, and previous research has established that any required in-person follow-ups to ensure a representative sample should not be problematic. Based on previous survey response rates, the relevance of the survey to these fishermen and the flexibility of survey methods, we envision a response rate of 70%.

Table 1
Expected Response Rates for Hawaii Charter Fleet

Number of Captains	Data Collection Method	Expected response rate	Expected number of responses
170	Mixed Mode*	70%	119

* All respondents will receive a mail instrument, but will be given the flexibility of making alternative arrangements to complete the survey by phone or to arrange for an in-person interview – where requested.

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

Data Collection Procedures, Sample Selection and Stratification

We intend to conduct a census of the Hawaii charter fleet using a mixed-mode survey design. Our initial mode of administration will consist of a mail instrument sent to all active State of Hawaii charter captains, holding a valid CML. Data collection and sample selection methods are detailed in Question 1 of this submission.

The most obvious stratification within the Hawaii charter fleet is at county level. The Main Hawaiian Islands consists of four counties encompassing seven populated islands across the

¹⁰ Hospital, Justin and Courtney Beavers. In Press – 2011. *Reflections on Management of the Hawaii Bottomfish Fishery: Fishers’ Attitudes, Perceptions, and Comments*. National Marine Fisheries Service - Pacific Islands Fisheries Science Center Administrative Report. 78p.

¹¹ While the scale of operations and avidity may differ across the Hawaii charter fleet – all individual captains are in the business of providing fishing opportunities and experiences for-hire. This differs from the bottomfish fleet in that the bottomfish fishery is comprised of a complex mix of commercial and noncommercial fishermen, with diverse fishing motivations including profit, recreation, cultural importance, and subsistence. Additionally, nearly 70% of the fleet catch less than 100 pounds of bottomfish creating a wide spectrum of incentive or disincentive to participate in the survey.

Hawaiian Archipelago. The degree of fishery conditions, participation, and market access vary spatially across counties (see Table 2). Initial stratification is not a concern as we will mail instruments to our entire population. However, stratification is a primary concern in the context of non-response bias (see Question 3). Initial non-respondents will receive a series of follow-up mailings which utilize the techniques developed by Dillman, et al. (2008) to increase survey response rates.

Table 2
Distribution Hawaii Charter Captains and Effort (# of trips) 2010, by County

County	Number Licensed	Percentage of Licenses	Percentage of total effort (# of trips)
Hawaii	82	48.2 %	43.1 %
Maui	28	16.5 %	22.0 %
Honolulu (Oahu)	32	18.8 %	22.9 %
Kauai	22	12.9 %	12.0 %
Total charter fleet*	164	96.4 %	100 %

* - Additionally there are 6 license holders (3.5%) that fished in multiple counties for a total active charter fleet size of 170.

Table 3
Minimum Sample Size, by County and Fleet

County	10% margin of error	5% margin of error
Hawaii	44	68
Maui	22	26
Honolulu (Oahu)	24	30
Kauai	18	21
Total Fleet	62	118

Degree of Accuracy Needed for Intended Purpose

The desired degree of accuracy, and corresponding desired response rate, depends upon the application for which the data are being used. A basic application of the survey data could be the inference of unobserved population mean values from the observed sample mean values. Given a population of 170 charter captains, a sample of 118 completed surveys would provide a sample mean within 5% of the population mean (see Table 3). This can be reached with a response rate of 70% from our survey instrument – which is in line with what we expect (given previous research in this and other fisheries in Hawaii).

Expected Dates of Survey Implementation

Preferred start date for initiating the mail treatment of the survey is September 15, 2011. Following established methodologies by Dillman, et al. (2008) we intend to allow respondents ample time (the contact regime from initial contact through the survey mailings will last

approximately 8 weeks) to complete the mail instrument or opt for an in-person/phone treatment. For non-respondents to the mail instrument or for captains preferring an in-person interview, field staff will initiate contact to arrange interviews at the convenience of the captain. This is an ideal time to engage this fishery as the summer months (through Labor Day weekend) is generally the peak season for charter fishing in Hawaii, and so an off-peak survey will make administration and participation easier for the fleet

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.

Strategy to Maximize Response Rates

There are a number of reasons why a response rate of approximately 70% is anticipated for this survey. For one, previous research has shown this fishery to be responsive to research efforts as Hamilton (1998) received a response rate of approximately 95%. In addition, numerous outlets are available to us for getting survey information directly to charter captains. Extensive outreach activities will help our response rate, and informing the fishermen about the purpose and need for the cost-earnings survey will be important to the success of the survey. Outreach will occur on a number of levels:

- Written materials: A summary of the research goals and methods will be provided directly to our target population through trade magazines such as *Hawaii Fishing News* and *Lawai'a*. In addition, fact sheets will be made available at harbors and marinas where charter vessels are moored. All disseminated written material will describe the purpose and need of the survey, how it will be administered, address confidentiality concerns, and provide principal investigator contact information.
- Informational web page on the Pacific Islands Fisheries Science Center, Pacific Islands Regional Office, and Western Pacific Regional Fishery Management Council web sites.
- Informational materials promoting/detailing the survey will be provided at upcoming Western Pacific Regional Fishery Management Council and public meetings.
- Variety of people, including Pacific Islands Fisheries Science Center and Western Pacific Regional Fishery Management Council staff, are available to assist in this research

Strategy to Address Non-Response

All fishers licensed under the State of Hawaii CML program must file monthly catch reports. Additionally, each sales transaction is monitored through a State of Hawaii dealer database. Using these resources, we are aware of the spatial distribution of licensed captains by county (and harbor) across the State of Hawaii, as well as the distribution of fishing effort and revenues. Based on the distribution of survey responses that we receive; these databases provide a direct link, both spatial and effort-based, to validate the representativeness of our sample. If non-response bias appears evident in our survey responses, efforts will be made to contact groups that are under-represented or weighting methods could be developed to account for non-response.

Accuracy of Data Collected

NMFS needs to measure the economic performance of Hawaii charter operations in order to meet legal and regulatory requirements, support fisheries management decision making, and pursue more detailed economic research. Currently, no cost earnings data are available to meet these needs. This study will collect data that is needed to construct key economic performance measures such as profitability, productivity, economic impacts, and social aspects of the fishery. 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 5% of the population mean.

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

The survey instrument closely mirrors an instrument successfully fielded by Hamilton (1998) and a survey recently approved for the Northeast For-Hire Sector under OMB generic clearance 0648-0052 , in keeping with approved questions under OMB generic clearance 0648-0369. The survey has been reviewed and pre-tested with Federal staff of the NMFS Pacific Islands Fisheries Science Center (PIFSC), State of Hawaii, and Western Pacific Regional Fishery Management Council, many of whom work very closely with charter 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

NMFS needs to measure the economic performance of Hawaii charter operations in order to meet legal and regulatory requirements, support fisheries management decision making, and pursue more detailed economic research. Currently, no cost earnings data are available to meet these needs. This study will collect data that is needed to construct key economic performance measures such as profitability, productivity, economic impacts, and social aspects of the fishery. 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 charter fleet.

Reporting of Survey Results

Survey results will be reported through a series of reports and project summaries prepared for the survey respondents, general fishing public, fisheries managers, and academics. Results will be

reported directly to survey respondents, as well as *Hawaii Fishing News*, a monthly publication targeted to the fishing community of Hawaii. It is anticipated that results will also be reported in the form of a technical memorandum of the Pacific Fisheries Science Center, academic publications, presentations at conferences, and public meetings. 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. As explained in the previous paragraphs, the information gathered has utility. 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 Act 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 meet 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 principal investigator.

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7. Estimated burden and number of respondents

Completing the survey is expected to take 45 minutes per respondent. As a result, the survey is expected to impose a total of 90 burden hours on the Hawaii For-Hire (Charter) Fleet.

Total Target Population	170
Expected survey response rate	70%
Expected # survey respondents	119
Average burden hours/survey	45 minutes
Total burden hours	89