

**SUPPORTING STATEMENT
 COST-EARNINGS SURVEYS OF HAWAII AND AMERICAN SAMOA SMALL BOAT-
 BASED FISHERIES
 OMB CONTROL NO.: 0648-XXXX**

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

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

Potential Respondent Universe

The potential respondent universe in Hawaii is about 1,850, according to the Hawaii Division of Aquatic Resources' record of CML holders in 2012 who are small-boat commercial fishers. The potential universal in American Samoa is about 93 fishers. These include 39 small boats' owners/ captains that use various fishing gears. The survey will be conducted among all the boat owners. In addition, among these 39 small boats, 9 are spearfishing boats. We will target the owners of these 9 spearfishing boats as well as the sub-segment of these 9 spearfishing boat at an individual level. Each spearfishing boat contains 6 individual spear fishers who share the boat and some fishing cost so this sub-segment contains 54 spear fishers. Table 2 below shows the estimated population in the two island areas. The combined survey population (boats) is 1,943.

Table 2. Potential Respondent Universe in Hawaii and American Samoa

	Hawaii	American Samoa**	Total
Total number of boats (population)	1850*	39	1889
Target spearfishing sub-segment in American Samoa (population)			
Number of spearfishing boats		9	
Average number of fishers per boat		6	
Population for sub-segment		54 (9 x 6)	54
Potential respondent universe (fishers)	1850	93	1943

*1850 CML holders in 2012, Hawaii Division of Aquatic Resources.

**Creel data from 2009-2013, NOAA PIFSC - the Western Pacific Fisheries Information Network (WPacFIN).

Sampling and Other Respondent Selection Methods

The whole population of small boat fishers will be targeted in Hawaii and American Samoa, so no sampling or other respondent selection method will be used.

Expected Response Rate

Prior research in fishery economic performance in the Pacific islands areas achieved relatively high response rates. Previous cost-earnings study of Hawaii small boat pelagic fishery conducted by Hospital, Bruce, and Pan in 2007 achieved 75% response rate by using in-person interviewing methodology.¹ 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% (both studies were approved under OMB Control No. 0648-0369).² Given the similar survey instruments, sample composition (bottomfish fishery is a subset of Hawaii small boat fishery), and survey methodology between this proposed new survey and the main Hawaiian Islands bottomfish cost-earnings survey, we assume a 50% response rate and the number of respondents is estimated to be 925.

For American Samoa, the past response rate from the boat-based creel survey interviews (American Samoa Department of Marine and Wildlife Resources) as 95%. We assume the same response rate of 95% for the small boat population and the sub-segment for spear fishery and the number of respondents is estimated to be 88.

The detailed response rate and target number of surveys are shown in Table 3.

Table 3. Response Rate and Target Number of Surveys in Hawaii and American Samoa

	Hawaii	American Samoa**	Total
Total number of boats (population)	1850	39	
Expected response rate	50%*	95%	
Target number of surveys	925	37	962
Target spearfishing sub-segment in American Samoa (population)			
Number of spearfishing boats		9	
Average number of fishers per boat		6	
Population for sub-segment		54	
Expected response rate		95%	
Target number of surveys for sub-segment		51	51
Target number of surveys (fishers)	925	88	1013

*Past response rates for mail methodology of economic surveys.

**Creel data from 2009-2013, NOAA PIFSC - the Western Pacific Fisheries Information Network (WPacFIN).

¹ Hospital, Justin, Skaidra Scholey Bruce, and Minling Pan. 2011. *Economic and Social Characteristics of the Hawaii Small Boat Pelagic Fishery*. Pacific Islands Fisheries Science Center. Administrative Report H-11-01.

² Hospital, Justin and Courtney Beavers. 2012. *Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands*. Pacific Islands Fisheries Science Center. Administrative Report H-12-01.

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

One time, voluntary surveys will be used to obtain costs and earnings information. The whole population of commercial small boat fishers will be targeted in Hawaii and American Samoa, so no stratification and sample selection will be employed.

Using the population and target number of surveys in the two island areas listed in Table 3, the sampling errors at the 95% confidence level are 2.3% for Hawaii and 2.4% for American Samoa. This level of accuracy will provide good estimation of fishing expenses, revenues, and profitability in general. The data collected will be used for descriptive and economic analyses. Detailed economic analyses can be found in Part A, Question 2.

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

One of the strategies to maximize response rate is to keep the survey short. This proposed cost-earnings survey is the shortest version compared with previous cost-earnings surveys conducted in the small boat fisheries. We try to focus on the main questions related to costs, earnings, and fishing characteristics and eliminate any unnecessary questions that appeared in the questionnaires used in previous surveys. In Hawaii, the survey will be conducted through mail methodology using a modified Dillman's Total Design Method to maximize response rates. The mail methodology will consist of four-wave mailings, including (a) an advance letter notifying the respondents a week before they receive the survey, (b) 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) second mailing of survey booklet with cover letter to non-respondents three weeks after the reminder postcard.

In American Samoa, several steps will be taken to maximize the response rates. First, we will try to hire 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 that is already familiar with surveying methodologies as well as with the fishers themselves. Second, the participation of the survey is completely voluntary, if the interviewer feels the fisher does not want to participate, he will immediately terminate the survey and thank the fisher for the time. Third, interviews will be conducted at times and places that are convenient to fishers. This will minimize any potential disruption to fishers' fishing practices. Fourth, the survey form will be translated into Samoan and a local speaking interviewer will be hired to conduct the in-person interviews to minimize the language barrier and burden on non-English speaking fishers and a PIFSC staff will be on site with the interviewer for quality control. Fifth, we will pre-test the survey with 5 fishers in American Samoa to make sure the question wording is easy to understand. Finally, we intend to conduct intercept interviews with the spear fishers while their

catch is measured by the biological sampling program by the local fishery management agency the American Samoa Department of Marine and Wildlife Resources under the technical support of PIFSC Fisheries Research and Monitoring Division (FRMD). This is a proper place to locate the spear fishers.

Addressing Non-Response

To deal with non-response in Hawaii, we will use reminder postcard and second mailing of survey booklet for the mail methodology. In addition, 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 market participation (% catch sold) and gear types (handline, troll, spear, etc.) are available for both survey respondents and non-respondents from Hawaii fishermen's report, and will be used to test the representativeness of survey respondents. Based on the previous cost-earnings studies on small-boat fisheries, market participation and gear types were the two key factors that determinate the variation of the cost-earnings status among boats. Therefore, variables that will be used for non-response bias testing fall into the categories of market participation and gear types. Market participation provides an indication of whether the data collected through the survey on variable cost items such as boat fuel and bait are likely to differ for survey respondents and non-respondents.

Tests for non-response bias will also include gear types. Costs are likely to differ among gear types due to different trip length and fishing method. In addition, different gear types usually target different species 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 gear types.

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 market participation and different fishing gear 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.

To deal with non-response in American Samoa, interviewers will make several attempts to conduct interviews, e.g. rotate between different time of day and different days of week. In addition, we will use the similar methodology as Hawaii to test for non-response bias. Although the data for market participation is not available in American Samoa, we will use gear types information from American Samoa logbook to test the representativeness of survey respondents.

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

We will pre-test the survey with 5 fishers in American Samoa to make the instrument easier to understand and complete.

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, employed by the NMFS, was consulted on the statistical design.³ A local fieldworker will be hired to collect the data under the supervision of NMFS economists. NMFS economists and WPRFMC staff will use the data for regulatory analysis.

³Dr. Minling Pan, Pacific Islands Fisheries Science Center, National Marine Fisheries Service and can be reached at 808-944-2190.