SUPPORTING STATEMENT
U.S. Department of Commerce
National Oceanic & Atmospheric Administration
U.S. Caribbean Commercial Fishermen Census
OMB CONTROL NO. 0648-0716

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.**

The proposed data collection intends to survey small-scale fishers in the jurisdictions of the Commonwealth of Puerto Rico and the U.S. Virgin Islands (U.S.V.I.) Territory. In total, we plan to complete 1,500 surveys with commercial fishers (Table 1).

Potential Respondent Universe:

The absence of federal fishing licenses in the U.S. Caribbean requires us to draw from local trip ticket databases. These trip ticket and/or local license databases indicate that there are 1,240 licensed fishers in Puerto Rico and 260 licensed fishers in U.S.V.I.

Sampling and Other respondent Selection Methods:

We intend to contact 1,500 small-scale fishers in the U.S. Caribbean, if we are able to secure full funding (Table 1). If partial funding is obtained, then we plan to use a (proportional) stratified random sample, where each stratum corresponds to a coastal region (i.e. North, South, East, and West) in Puerto Rico, or to an island in U.S.V.I. (i.e., St. Thomas, St. John and St. Croix). The sample size in each stratum will be proportionate to the population size of the stratum. Table 1 also shows the sampling strategy for the case where we receive 50% funding.

Expected Response Rate:

For U.S.V.I., we used an expected response rate of 82% based on the most recent in-person small-scale fisher census conducted by Kojis et al.'s (2017; Table 1).[1] For Puerto Rico, we used an expected response rate of 69% based on a recent phone survey about the 6-month impacts of COVD-19 on local fishers.

Table 1: Population size, sample size, expected response rate, and number of expected completed

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

surveys per strata for U.S. Caribbean survey.

Jurisdiction	Estimated population and sample Size (full funding)	Estimated population (and sample size - assuming 50% funding)	Expected Response Rate	Number of Expected Completed Surveys per Strata
Full Funding Case (100%)				
USVI	260		0.82	213
Puerto Rico	1,240		0.69	856
Total (full funding scenario)	1,500		-	1,069
Partial Funding Case (50%)				
USVI (St. Thomas)	-	113 (57)	0.82	46
USVI (St. John)	-	6 (3)	0.82	2
USVI (St. Croix)	-	141 (71)	0.82	58
USVI Sub-total	-	-	-	106
Puerto Rico (East coast)	-	251 (125)	0.69	87
Puerto Rico (North coast)	-	317 (159)	0.69	109
Puerto Rico (South coast)	-	242 (121)	0.69	83
Puerto Rico (West coast)	-	430 (215)	0.69	148
PR Sub-total	-	-	-	428
Total (partial, 50% funding scenario)				534

2. Describe the procedures for the collection of information including:

Stratification and Sample Selection:

We plan to use voluntary surveys to elicit information on demographics, fishing and marketing practices, vessel and fishing equipment, and miscellaneous attitudinal questions to support local fisheries management.

If full funds are secured, we plan to survey the entire population in both jurisdictions (U.S.V.I. and Puerto Rico). However, for a case of partial funding, we plan to conduct a ('sample') survey using (proportional) stratified random sampling. For the 'sample' survey, the population and sample size in each stratum are estimated assuming a 50% partial funding. In Puerto Rico, we plan to use coastal regions (East, West, South and North) as the strata and in the U.S.V.I. we plan to use the islands (St. Thomas, St. John and St. Croix) as the strata. The sample size in each stratum will be proportional to the population size of each stratum. Table 1 shows the number of planned interviews by jurisdiction (and stratum) under full and partial funding scenarios.

NMFS will obtain the most current list of licensed fishers from local fishery agencies, which in turn will be shared with the contractor(s) (to be determined). The list will contain the following information: fisher's name, address, and phone number.

We have made no changes in the procedures or statistical methodology of the collection; however, we added a few attitudinal questions since the last approval.

Estimation Procedures:

NMFS will use the data collected for descriptive statistics and analytical purposes based on the needs of the Caribbean Fisheries Management Council and the Southeast Regional Office. These data will be primarily used to describe fishery participants' socio-economic characteristics in fishery management plans and amendments. Currently, the Caribbean Fisheries Management Council manages fisheries on an island basis (Puerto Rico, St. Thomas/St. John and St. Croix separately) therefore it is important to understand how fishers and fishing practices change by island.

Descriptive (e.g., mean, median) and inferential statistics (e.g., chi square, ANOVA) will be used to characterize fisheries and to examine the impact of past policies and future policy proposals by user group/gear types, and by coastal region and/or island. The procedures for estimating various statistics (e.g., mean, median, coefficient of variation) and statistical analyses (e.g., t-tests, Mann-Whitney tests, Chi square, 1-way ANOVA, Kruskal-Wallis) will be based on the standard equations available in statistical texts.

Degree of Accuracy Needed for Intended Purposes:

Legislative mandates do not establish the degree of accuracy required for describing fishery participants in fishery management plans and amendments or for conducting socio-economic analyses. However, all else being equal, we prefer to provide sufficiently accurate data to support decision-makers.

Using the figures reported in Table 1, which are based on the response rates from Kojis et al 2017,[2] we could report the sample mean of the share of fishers' income derived from fishing with a margin of error of 2% of the population mean with a 95% confidence interval.

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2 With a finite population correction factor, the associated margin of error for a 95% confidence interval for the mean ratio cost is +/- 1.96 $⟦CV⟧\_X \sqrt{((N-n)/(n(N-1)))}$.

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 5 years to reduce burden. However, due to a variety of factors (including the increased incidence of climatic and non-climatic shocks) that affect the appropriate frequency for this survey, it is requesting approval to conduct this survey as frequently as once every three years.

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 taken and plan to take additional steps to maximize response rates and to deal with non-response. First, we have worked with local port agents, which have extensive experience with local fishing communities and practices. Earlier they reviewed the survey instrument and made several suggestions to improve its clarity, which we adopted. In addition, we will ask port agents to place signs at fishing centers alerting fishers about the impending data collection. Second, we plan to reach out Puerto Rico's Sea Grant and ask them to inform fishers about the census in their quarterly outreach publication 'Fuete y Verguilla'. In 2010, Fuete y Verguilla provided a summary of the key results of the 2008 Puerto Rican fisher census. Third, the contractor (to be determined) will be required to have considerable survey experience and familiarity with local fishing communities and practices. Fourth, in-person interviews will be conducted at times and places convenient to fishers. This will minimize any potential disruption to their fishing practices. Fifth, respondents will be asked to provide information about major gear and equipment categories only; thus; avoiding what respondents often perceive as unnecessary detail. Last, surveys will be available in English and Spanish to reduce the burden to non-English speaking fishers. NMFS will require the contractor to hire several interviewers that are fluent in both English and Spanish.

Strategy to Address Non-response

Besides the response maximizing strategies outlined above, we plan to ask port agents to reach out to presidents of fishing centers to underscore the importance of the census and increase rapport with local fisher populations. Our expectation is that fishing center presidents can keep reminding fishers about the importance of participating in the census. Personal contact has been shown to increase response rates. In addition, we plan to deal with non-response using callbacks and two-phase sampling procedures as described in several statistical textbooks such as Lohr's[3]

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3 Lohr, S., 1998. Sampling: design and analysis.

and many peer-reviewed publications. Two-phase sampling procedures minimize non-response bias by obtaining (through intensive callback efforts) a sample of the non-respondents, which is combined with the original sample of respondents. This approach is used to obtain weighted means and variances of the variables of interest.

<u>Adequacy of Accuracy and Reliability of Information for Intended Uses</u>.

As noted earlier, legislative mandates do not establish the degree of accuracy required for describing the fishery participants in fishery management plans and amendments and for conducting socio-economic analyses. The response to Question 2 describes the degree of accuracy and reliability needed for the purpose described in the response to Part A, Question 2. That response also describes the specific uses the agency plans for the data collected.

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 (see, Kojis et al., 2017). No tests are planned in this iteration.

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 Shivlani, Department of Marine Ecosystems and Society, University of Miami, Miami, Florida 33149. Dr. Shivalani can be reached at 305-968-7136.

Contractors/interviewers are yet to be determined.