SUPPORTING STATEMENT
SOCIAL AND ECONOMIC IMPACTS OF HURRICANE SANDY ON THE COMMERCIAL AND RECREATIONAL FISHING INDUSTRIES OF NEW YORK AND NEW JERSEY
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 (i.e., 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.

Target population

The respondent universe for this study includes a variety of sectors from the fishing industries in New Jersey and New York that were impacted by Hurricane Sandy. Types of respondents expected are commercial and recreational (for-hire) fishing vessel owners, bait and tackle shop owners and/or managers, seafood dealers, marina owners and/or managers and owners and/or managers of aquaculture facilities. The different sectors targeted in this study were grouped into four categories identified in table 4.

Table 4. Target population in each of the sector categories to be surveyed

Sector categories	Target Population
Fishermen	• Individuals that own fishing vessels operating commercial or recreational (for-hire) businesses
Aquaculture Facilities	• Individuals that own or manage facilities operating aquaculture businesses
Seafood Dealers	• Individuals that own or manage facilities dealing seafood
Bait & Tackle Stores and Marinas	• Individuals that own or manage bait & tackle stores and/or marinas

Target population universe and sample sizes

In the context of this research, defining a numerical estimate of the respondent universe is challenging, due to the diversity of sectors that will be assessed and because there is no single source of information from which a respondent universe can be assembled.

A potential sample frame exists for federal and state commercial permit holders (i.e., vessel owners) because permits are required and include contact information (i.e., address, telephone number, permit type, etc.) on the application forms. However, this information provides only an approximation of the numerical universe as one person may own more than one vessel and some vessels may have multiple owners. Information on seafood dealers was assembled from state and

federal sources. There are no comprehensive lists of bait and tackle stores and marinas available. These must be assembled from a variety of sources including industry representatives of various marine trade related businesses and the internet.

Values for calculating the respondent universe ***(Table 5)*** come from a combination of published data and information from personal communications. The respondent universe for this study was assembled from NMFS license files, state license files and a variety of other sources including the Mid-Atlantic Fishery Council, NY and NJ state agencies, fishing industry organizations, the internet and other key informants. For example, published data for delimiting the number of active commercial and for-hire vessels include the number of permitted vessels from the NMFS Northeast Regional Office (NERO) database and associated landings value and pounds from the NMFS Northeast Fisheries Science Center (NEFSC) dealer database. Any vessel with a permit but no landings is considered inactive. Dealers were identified and redundancies eliminated based on NEFSC and state agency databases. The number of marinas, bait and tackle stores is estimated based on marine trade association membership lists and internet searches. Aquaculture facilities were identified via a shellfish association membership list. Estimated population universe and sample sizes for New York and New Jersey separately and combined are presented in ***Table 5***. Details of the sample size estimate calculation are described under Part B, Question 2.

Table 5. Estimated respondent universe and estimated sample by sector for New York and New Jersey combined and for each state separate

	Fishermen (commercial and for-hire)		**Aquaculture facilities (owner/manager)**		**Seafood dealers (owner/manager)**		**Bait and Tackle Stores and marinas (owner/manager)**		**Totals**	
Total (NY & NJ)										
Universe	4,929	*(100%)*	20	*(100%)*	587	*(100%)*	1700	*(100%)*	**7,236**	***(100%)***
Sample	356		19		232		314		**921**	
New York										
Universe	2680	*(54%)*	5	*(25%)*	464	*(79%)*	1035	*(61%)*	**4,184**	***(58%)***
Sample	192		5		183		191		**571**	
New Jersey										
Universe	2249	*(46%)*	15	*(75%)*	123	*(21%)*	665	*(39%)*	**3,052**	***(42%)***
Sample	164		14		49		123		**350**	

Expected response rate

This study will make use of three methods for data collection: mail, telephone, and intercept face-to-face surveys. Precise information on expected response rates are not currently available because researchers involved in this study have not previously conducted interviews applying all three methods described in one effort and potential response rates for each method are expected to differ. However, mixed-mode surveys involving telephone and/or in-person interviews as follow up methods to mail surveys have been shown to increase response rates significantly (Shettle and Mooney 1999, Griffin and Obenski 2002). Dillman et al. (2009) found that mail surveys followed by telephone contact yielded a total response rate of 82%. Extensive previous experience by the researchers involved in this study justifies the use of in-person interviews to reach recreational and commercial fishermen. The intercept method used previously by the investigators to reach fishermen in a study on job satisfaction and well-being in fishing

communities in the Mid-Atlantic elicited an 85% response rate. Based on this information, the overall response rate for this study is expected to be approximately 80%.

The sample sizes described in ***Table 5*** reflect the desirable sample sizes based on the calculation described under **Section B, Question 2** below. Oversampling based on the estimated response rate may be employed to maximize the overall sample size.

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.

Interviews will be conducted primarily by mail and over the telephone. To maximize participation, a post card explaining the objectives of the survey will be sent to the sample population approximately two weeks prior to being mailed the questionnaire. A waiting period of 2 weeks will precede a follow up contact by telephone of those participants from whom no response was obtained. Each potential interviewee will be called up to three times before he is recorded as a non-respondent. Following the Pew Research Center's approach, the calls will be staggered over times of day and days of the week (including at least one daytime call) to maximize the chances of making contact with a potential respondent. Interviewing will also be spread as evenly as possible across the survey period. The number of calls where contact was made, a survey was successfully completed, and refusals will be recorded (Pew Research Center 2013).

Commercial and recreational fishermen will be contacted by intercept survey in addition to mail and telephone methods. Unlike the other businesses in this study whose work place is stationary fishermen work at sea often out of cell phone range and under conditions that would make interviews unsafe. Therefore, communities most dependent on fishing will be selected for intercept surveys at docks and other places fishermen tend to congregate. Ports will be systematically selected using indices of community dependence on commercial and/or recreational fishing developed using factor analysis (Jepson and Colburn 2013).

The estimated sample sizes (see ***Table 5*** above) were calculated using a 5% confidence interval and 95% confidence level for each sector being surveyed using as basis the estimated universe population described in Section B, Question 1 above. Since the most critical questions in the survey will be analyzed as dichotomies, a simple calculation was made assuming the expected frequency of the factors to be 50%. The sample selection process will be a stratified random sample approach where a proportionate number of participants from each stratum will be contacted. In other words, each individual vessel owner, bait and tackle owner/manager, dealer, marina owner/manager and aquaculture facility owner/manager is considered one respondent unit and each one, in the fishing industries of New Jersey and New York, will have an equal chance of being selected within each stratum. No unusual problems are expected; therefore specialized sampling procedures will not be needed.

This is a one-time data collection intended to capture information regarding the impacts of Hurricane Sandy one-year post impact. The projected study year is 2013 - 2014.

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.

Various steps will be taken to maximize response rates. To maximize response rates survey administrators will conduct surveys in three ways: by mail, over the phone, and in-person. First, surveys will be mailed to the entire sample population with an address. The telephone will be used as a follow-up to improve the response rate. In-person interviews will specifically target fishermen who are a highly mobile and difficult to find population. Mixed mode surveys approach will be used because there is evidence that response rates will increase if a respondent who did not complete a survey with one mode is offered a different mode (de Leeuw 2005: 233-255)

To decrease the potential for nonresponse, the survey instrument has been carefully designed to ensure that questions are posed in simple and straight forward language and are as brief as possible without compromising the quality of information obtained. Moreover, prior to the implementation of the survey, interviewers will explain that the survey is confidential, participation is voluntary and that the interview can be stopped at any point. It will also be explained that participants can skip questions they do not want to answer.

In the face of an unexpected and significant frequency of nonresponse that could lead to potentially biased results, the data in hand on respondents and non-respondents will be compared to investigate differences that could indicate biased results. If bias is suspected, demographic and other relevant information about the specific target sectors, available prior to contact and obtained through the surveys, will be used to adjust weights for non-response. This approach has been extensively used to address non-response bias (Carlson and Williams 2001, Little and Vartivarian 2003). The type and extent of information that is readily available on the target populations as well as information that will be obtained during the data collection are considered appropriate to adjust the weights of respondents presenting similar characteristics to non-respondents if such approach is necessary.

Contact has been made with key members of NMFS, academia, and industry to better understand the study universe.

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.

A review of the study description, the study methodology, and the survey instrument has been undertaken. NMFS personnel in the Northeast region have reviewed the survey tool and provided comments on both the survey tool and the study. A meeting with New Jersey fishing industry and state representatives was held to discuss the content of the survey and elicit feedback. Because a meeting was not feasible in New York, fishing industry representatives were contacted individually to discuss the survey content. These conversations provided valuable feedback that was used to modify the survey.

The survey questions were tested prior to the start of this project in the port of Point Judith in Narragansett, Rhode Island, where a total of 9 interviews were conducted with commercial fishermen (N=3), party/charter businesses and boat owners (N=4), and other fishing industry support businesses (N=2). These trials were used to improve the clarity of questions.

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.

The internal NMFS design, development, and review team including statistical analysis includes the Principal Investigators Dr. Lisa L. Colburn (401) 782-3253 and Dr. Patricia M. Clay (301) 427-8116. Both are social scientists with the Northeast Fisheries Science Center (NEFSC).

The primary individuals expected to collect the data include Dr. Lisa L. Colburn (NEFSC), Tarsila Seara (NEFSC) and Angela Silva (NEFSC) who are contractors. The investigators who are expected to analyze the data include Dr. Lisa L. Colburn, Dr. Patricia M. Clay, and Tarsila Seara.

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