

**SUPPORTING STATEMENT  
MARINE RECREATIONAL FISHERY STATISTICS SURVEY  
OMB CONTROL NO. 0648-0052**

**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.**

The study will be conducted in North Carolina (NC) and Florida (FL). Panelists will be recruited through a screening mail survey. The sample universe will include all saltwater anglers in NC and FL. The screening survey will utilize a dual-frame approach. The sample will be randomly selected from state databases of licensed, saltwater anglers and household address frames derived from the United States Postal Services (USPS) Delivery Sequence File (DSF). The license frames include all anglers who have a saltwater fishing license for either NC or FL, and the DSF frames include all residential addresses within the study areas.

	<b>NC Residential Addresses<sub>2</sub></b>	<b>NC License Frame<sub>1</sub></b>	<b>FL Residential Addresses<sub>2</sub></b>	<b>FL License Frame<sub>1</sub></b>	<b>Totals</b>
Frame Size	3,830,555	500,000	7,398,200	750,000	
Sample Size	6,000	840	6,000	840	13,680
Complete Screeners <sub>3</sub>	2,100 (35%)	420 (50%)	2,100 (35%)	420 (50%)	5,040
Eligible (Active) Anglers	420 (25%)	420 (100%)	420 (25%)	420 (100%)	
Complete Diaries	315 (75%)	315 (75%)	315 (75%)	315 (75%)	1,260

1. Approximate number of licensed saltwater anglers as of 12/31/2009.
2. Estimated number of occupied housing units (Demographics USA, 2008).
3. Response rates for similar studies of recreational anglers range from 35-45% for addressed-based sampling and 50-65% for licensed-based sampling.

**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.**

**Sample Design**

This study will investigate the use of a diary to determine its effectiveness to capture catch, type of species, and demographic information from anglers accessing both public and private access fishing sites. This approach has been successful in the National Recreational Fishing Survey conducted in Australia in 2000 (a related article is attached). Using this approach, data will be

collected in NC and Florida, two states who have documented approximately 30% of trips from private access sites.

The panel study will utilize a dual-frame design; panelists will be recruited from state databases of licensed saltwater anglers, as well as address-based frames of residential addresses within North Carolina and Florida. These two frames are overlapping; the license frame is a subset of the address-based frame.

Within each frame, a stratified design will be used. Two strata will be developed based on county of residence; one stratum will consist of coastal counties (within 25 miles of the coast) and the other strata will consist of non-coastal counties. Previous studies suggest that anglers who reside in coastal counties fish at a higher rate than anglers who reside in non-coastal counties. For the license frame, sample will be allocated in proportion to the number of licenses within each stratum. For the address frame, sample will be allocated equally among the two strata.

Panelists from each frame will be recruited via a mail screening questionnaire. Panelists will then be asked to provide individual-level fishing data either by telephone or an online reporting tool. Specifically, anglers will be asked to participate in a diary survey, recording trips and catch information over the course of a year. At a minimum, anglers will be asked to report fishing activities at 1-month intervals. More avid anglers will be asked to report more frequently. Each of these frames is first discussed separately followed by approaches to deal with the dual-frame approach.

### **License Frame**

The license frame will be derived from lists of all anglers who were licensed to participate in saltwater fishing in NC or FL during the previous year. Sample frames will be screened to identify and remove duplicate listings and listings for anglers who are less than 18 years of age. Within each stratum, a simple random sample of anglers will be selected. Sampled anglers will be sent a screening questionnaire and asked to participate in the panel study.

### **Address Frame**

The address-based sampling (ABS) frame includes all residential addresses within NC and FL that are serviced by the USPS. Sampling anglers from the ABS frame will utilize a two-stage design. In the first stage, a random sample of addresses will be mailed a screener questionnaire to identify individual saltwater anglers. In the second stage a single angler will be randomly selected from each household and asked to participate in the panel study.

### **Estimation**

As mentioned above, independent samples will be selected from the two frames to make direct estimates of totals for the numbers of participants and fishing effort. Estimates of totals from individuals found only on the address frame and only on the license frame will be produced. Individuals found on both frames will be identified (selected license frame individuals also found

on address-based frame; address frame individual also found on the license frame) by address matching. Estimates of totals for these two overlapping groups will be computed. The two totals will be averaged to give a more precise overall estimate for the overlapping group. The estimates for the license frame, the address frame and the overlapping frame will be summed to estimate the total population.

The first step in estimation is to develop base weights that are the inverses of the probabilities of selection for the units by frame. These standard weights will then be adjusted by the inverse of the response rates within stratum, separately by frame, to account for nonresponse from within each frame. The estimates produced from these weights will overestimate totals because the units in the overlap are over-represented because they could be sampled from both frames. The final step is to adjust the weights of the units in the overlap. A simple averaging of the two overall domain estimates (as discussed above) can be accomplished by dividing the weight of any unit in the overlap by two. More sophisticated weighting could be carried out but this is not the main point of the survey and the average has some benefits, notably simplicity of operation and explanation. More complex schemes such as post-stratification of the weights will also be investigated.

Information collected through the angler diary survey will be further partitioned into domains defined by the characteristics of the fishing trips. Two primary domains will be defined; 1) trips that would be accessible to field samplers (fishing trips occurring at or returning to publicly-accessible sites), and 2) trips that would not be accessible to field samplers (fishing trips occurring at or returning to private-access sites such as private residences, community marinas, private yacht clubs, etc.). Catch rate by fishing mode (shore, private boat) and species will be independently estimated for each of these two domains.

**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.**

Standard mail survey protocol will be implemented (Dillman et al, 2008) for the screener questionnaire. Sampled households will be mailed an advance letter describing the survey and requesting that the household participate when the questionnaire is sent. Screener questionnaires, along with a \$1 cash incentive, will be mailed three days later. Households will be asked to complete the instrument and mail it back in the material provided.

Approximately 2 weeks after the first mailing, a thank you postcard will be sent to all addresses. Households that have participated will be thanked for their prompt response. Households that have not yet responded will be reminded to participate. Three weeks after the initial contact, a second questionnaire will be mailed to all households that have not responded. Additional measures to increase response rates may include a final, specialized mailing by FedEx and/or a follow-up telephone contact.

In addition to increasing response rates, the sequential reminders will allow us to compare response variables among respondents who participate with varying levels of prompting (e.g. early respondents vs. late respondents). This will help us identify and measure non-response bias.

For the diary (panel), in order to compare data collection by phone versus Web, half of the panelists will be called to report fishing activity via an interviewer-administered telephone interview and half will be asked to report via an online form located on the Web.

For the telephone sample, we will ask panelists to provide a time when they are most likely to be available to participate in a telephone interview. In addition, a minimum of five call attempts, distributed among day and evening time periods and weekday and weekend day types, will be made to contact each panelist.

For the web panelists, a one-week window will be provided at the conclusion of each reporting month to allow panelists to log onto the online form and provide fishing information. At the conclusion of this “reporting week”, telephone interviewers will attempt to contact the panelists via telephone and remind them to provide their data for the month. Alternatively, web panelists will have the option of providing data directly to the telephone interviewer.

**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 plan to conduct focus groups and/or cognitive testing with fewer than 10 individuals to ensure that instructions and survey instruments are clear. Mail survey questionnaires will be developed by Dr. Nancy A. Mathiowetz, University of Wisconsin-Milwaukee.

**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.**

Statistical support was provided by the following:

Dr. Virginia Lesser, Oregon State University, 541-737-3366

Dr. Nancy A. Mathiowetz, University of Wisconsin-Milwaukee, 414-229-2216

Dr. Dave Van Voorhees, Chief of the Fisheries Statistics Division, which administers the MRFS Program, 301-713-2328