SUPPORTING STATEMENT
SOUTHEAST REGION DEALER AND INTERVIEW FAMILY OF FORMS
OMB CONTROL NO. 0648-0013

B.   COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

In contrast to the mandatory landings and value data collected from all wholesale seafood dealers, the effort and area data (i.e., the interviews in the shrimp statistics and TIP) are collected from fishing trips by interviewing fishermen as they are encountered at the docks.

Fisheries sampling consists of sampling an often-changing situation with multiple objectives. Fisheries occur over broad areas and at different times in the year. Fisheries usually exhibit extensive geographic and temporal variation in fishing effort, in the species caught and in the size of fish caught within each species. Multiple external forces add to this variability; those forces include short and long term environmental changes which may impact fishermen and resource population abundance, economic factors such as the price of fuel and the price of fish, and management factors which are changing rapidly at this time. There is variation between fishing trips in their duration (from hours to weeks), in the quantities of fish landed (from no catch, to tens of pounds, to tens of thousands of pounds) and in the numbers of species caught. In some fisheries, catches usually consist of one or two species while in other fisheries, catches consist of tens of different species and different life history stages within some species. To properly manage living marine resources, information is needed on both the species which often dominate the landings as well as the less common and even rare event species.

A broad range of information is needed for assessment and management of marine resources and often what may be needed in the future is not anticipated at the time of sampling. Some types of data needed include: 1) distributions of size and age of the landings, 2) the species/life history stage composition of the landings and 3) the size distribution by depth and/or fine scale geographic area. Often the purposes for which the data will be used are not known in advance; for instance, it has only been in recent years that the size distribution at depth has become critical information for assessing the status of resources.

Given that the sampling situations are changing and that there are multiple sampling goals, the primary objective of the SEFSC dockside sampling of commercial fisheries is to obtain representative samples of the trips and species caught. The approach is to take a large number of samples across important strata (time, space, fishery types) under the assumption that, with sufficient sample size, the sample will approximate a random sample. We work cooperatively with personnel from state and territorial agencies to ensure broad coverage of the multiple fisheries. Sampling approaches and targets are coordinated through annual and semi-annual regional meetings. The results of federal, state and territorial sampling are combined for analyses for stock status determination and management.

Recognizing the difficulty in obtaining representative samples of multiple species in multiple fisheries under changing conditions, we have been developing analytical methods which will be

useful in correcting for potentially non-random sampling. These will be described below in Question 2.

1. **Describe the potential respondent universe and any sampling or other respondent selection method to be used.**

The universe includes all commercial fishing trips which land federally managed species. Port agents are distributed throughout the region so that they can cover all federally managed fisheries; each agent covers a defined area. Port agents' knowledge of the fishery is used to attempt to obtain information from trips which are representative of the fishery in each area. The guidance they have been given is that the weight of their samples should in general be proportional to the weight of the landings in their area. There are a large number of trips sampled through the ports at which landings occur throughout the fishing year, so agents are encouraged to sample more trips obtaining adequate sample sizes (see below) rather than fewer trips with very large sample sizes.

Interview programs:

Trip Interview Program

In the past five years (2007-2011) the SEFSC logbook receives roughly 40,000 fishing trip reports on coastal fishery logbooks annually. Federal agents have sampled roughly 1300-1500 trips directed at fisheries each year from North Carolina through Texas. Additional state and territorial partners have sampled an additional 1,400 - 2,000 such trips. In the high activity areas federal personnel have sampled roughly 100-150 trips per sampler each year. The overall percentage of trips sampled varies from year to year; however, historically the trip interview program has sampled less than 1% of the trips annually to achieve adequate data from each of the target fisheries required for stock assessments.

In the Gulf of Mexico, vessels with Individual Fishery Quota (IFQ) shares are required to provide advance notice of landing red snapper. That information is used to alert port samplers of vessels returning from fishing to ports in their region and they use it in selecting vessels to sample so that they obtain a representative sample of trips from the red snapper fishery. In January 2010 the Gulf of Mexico IFQ program expanded to cover many other species in the reef fish fishery (groupers and tilefishes). The samplers will receive information on expected landing times from all IFQ monitored trips, which should facilitate their efforts to select representative trips to sample.

Shrimp Interviews

In recent years (2007-2011) federal agents have sampled roughly 12,500 trips directed at shrimp each year between North Carolina and Texas. In the high activity areas, federal personnel have sampled roughly 1300 trips per person each year with the overall sampling fractions of 10%-20%.

Respondent selection

Port agents are instructed to sample trips which are representative of the fishery in their defined area; thus trips are generally selected in proportion to the pounds landed by gear and species in their respective area. It is typical for port agents to adjust their daily work schedules to accommodate the changes in fishing industry activities.

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 specific use of periodic (less frequent than annual) data collection cycles to reduce burden.

Interview programs:

Fin fish sampling (trip interviews)

Trip selection – The goal is to sample fishing trips at random within specified spatial-temporal strata, so that each vessel or fisherman will occur in the sample, in proportion to the fishing activity. Port agents use local knowledge about the proportionality of fishing trips within the gear, area, season strata to determine which locations should be sampled to obtain representative trips. Because port agents do not know a priori which trips will be landing, locations are generally selected where it is felt that trips for a given strata will have a high chance of being encountered.

Species selection- All species landed from the trip are to be included in the sampling. Primary or target species have a target sample size, while species that are rare in catches are sampled proportionately to the catch.

Fish selection- For unsorted catch, random basket samples are taken, which include all species. 30-50 fish are selected from primary species, while for rare species, the number sampled should be proportional to the catch. When the catch is sorted, random boxes of each size category are selected in proportion to the catch. 30-50 fish are measured for each species across size categories. For rare species not assigned a size class, sampling should be proportional to the catch. For very small trips, it may be difficult to obtain a representative sample, so the entire catch is measured if feasible.

Historically, samplers have been instructed to obtain samples of 30-50 fish of each of the primary species in a landing and to obtain proportionately similar numbers of samples from less common species in a landing (Zweifel, 1988). At times, landings are small and the numbers of fish available for sampling is low in those situations it is recommended that samplers attempt to obtain length samples from at least 5-10% of the fish landed. On very small trips on which less than fifty fish of all species combined are landed, a sampler will typically measure the entire catch, as it may be difficult to obtain a representative sample with such a small sample size.

Region-wide sampling targets (number of fish) are established for the primary 30-40 species in each region (South Atlantic or Gulf of Mexico) through a cooperative process with regional partners (states and fisheries commissions). Those targets take into account significant strata (usually fishing gear and for some species sub-region) based on the biology of the species, the distribution of sizes in the harvested population and the variability in size at age (Thompson 1987). The stratified sampling targets are then used to provide guidance to samplers on sampling intensity (number of trips to sample).

Shrimp sampling:

Port agents work within their defined area of coverage, and attempt to obtain data which is representative of the shrimp fishery. On average, 2,600 interviews have been conducted annually by the trip interview program in recent years and approximately 12,500 shrimp trips have been made each year. This represents an approximate sampling fraction of 10-20% annually.

Estimation procedures:

The Southeast Fisheries Science Center (SEFSC) recognizes that it is difficult to obtain a random sample of landings from a stock of fish when landings consist of multiple species and are distributed across multiple strata. Additionally, fishermen may target different segments of a population such as smaller fish, larger fish or spawning groups at different times resulting in clustered samples. Because of these difficulties, the SEFSC has developed and continues to study methods to improve estimates of vital statistics such as length composition, age composition and growth rates, taking into account the difficulty in obtaining representative samples (Brooks 2004, Nowlis 2004, Chih 2006, Anonymous 2006a, 2006b, Anonymous 2007, Chih 2009a, Chih 2009b, Chih 2009c, 2009d, 2009e)

Anonymous. 2006a. SEDAR 10 stock assessment report South Atlantic gag grouper. SEDAR, 485p.
Anonymous. 2006b. SEDAR 12 stock assessment report Gulf of Mexico red grouper. SEDAR, 358p.
Anonymous. 2007. SEDAR 15 stock assessment report 1 (SAR1) South Atlantic red snapper. SEDAR, 511p.
Brooks, E. 2004. Calculation of relative length frequencies. SEDAR7-AW6a. 1p.
Chih, C.P. 2006. Selected sampling issues regarding the length/age frequency distributions of red groupers caught by commercial fisheries in the Gulf of Mexico from 1984 to 2005. SEDAR12 DW-10 42p.
Chih, C.P. 2009a. The effects of otolith sampling methods on the precision of growth curves. N. Am. J. Fish. Man. 29.
Chih, C.P. 2009b. Evaluation of the sampling efficiency of three otolith sampling methods for commercial king mackerel fisheries. Trans. Am. Fish. Soc. 138:990-999.
Chih, C.P. 2009c. Improving the sampling efficiency for sampling vermilion snappers in the Gulf of Mexico. NMFS SEFSC SFD Contrib. No. SFD-2009-18. 26p.
Chih, C.P. 2009d. Improving the sampling efficiency for sampling red snappers in the Gulf of Mexico. NMFS SEFSC SFD Contrib. No. SFD-2009-19. 24p.
Chih, C.P. 2009e. Improving the sampling efficiency for sampling red groupers in the Gulf of Mexico. NMFS SEFSC SFD Contrib. No. SFD-2009-20. 28p.

Nowlis, J.S. 2004. Draft Gulf of Mexico red snapper observed catch at age. SEDAR7-AW19. 13p.

Thompson, S.K. 1987. Sample size for estimating multinomial proportions. Am. Stat. 41(1): 42-46.

Zweifel, J.R. 1988. Operations Manual for the Trip Interview Program in the State/Federal Cooperative Statistics Program. SEFSC. 65p.

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 specialized justification must be provided if they will not yield "reliable" data that can be generalized to the universe studied.

Interview programs:

Port agents attempt to maintain cooperative relationships with fishermen and attempt to ensure that mandatory interviews are conducted so that they have minimal impact on business activity. To maximize response, port agents stay in close contact with dealers and fishermen to determine when vessels will be arriving at the dock and off-loading. When possible, sampling is conducted when multiple vessels will be off-loading to increase the chances of sampling multiple vessels.

The reliability of data collected under the finfish (and shrimp) sampling program(s) is examined in multiple ways. Extensive quality control procedures are used at data entry and subsequently. Sampling personnel are instructed to visually compare entered data with data sheets after data entry. Additional quality control checks are performed periodically in preparation for analyses and data users/analysts are frequently reviewing and checking the data.

In addition, the South Atlantic, Gulf of Mexico and Caribbean Fisheries Management Councils, in cooperation with the NOAA Fisheries Southeast Fishery Science Center, have developed a process called SEDAR (Southeast Data, Assessment and Review) to conduct assessments of the status of exploited finfish and shell fish marine stocks. The process involves a series of workshops and involves knowledgeable fishermen, representatives of non-governmental organizations, regional scientists from both state and federal agencies and independent scientists, often from outside of the region and from other nations. A central component of that process is extensive review of the reliability and adequacy of the data used to characterize the fish and the fisheries. That review is primarily conducted in the SEDAR Data Workshop, but also in the Assessment and Review Workshops. The types of criteria used by the reviewers generally include the consistency of the data with historical patterns, the expected patterns across fisheries, the perceptions of knowledgeable resource users and samplers, sampling fractions, the internal consistency of the data, and the like. The SEDARs have found sampling to be adequate for the species which comprise substantial proportions of the landings.

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.

Vessels permitted in the Gulf of Mexico reef fish fishery (the primary finfish fishery) are required to have electronic position monitoring systems active at all times. SEFSC has not yet been permitted access to that information, though we expect to obtain access in the near future due to a change in the availability of access licenses. We plan to develop a system for Gulf of Mexico port agents to view vessel tracks so that they can anticipate landing times. We anticipate that the resulting information will further assist samplers in selecting representative trips to sample from the reef fish fishery (and probably other fisheries because vessels are usually permitted in multiple fisheries).

SEFSC has contracted with researchers from the Virginia Institute of Marine Science to conduct a small feasibility study of a systematic sampling approach and to compare the results with our current sampling methods.

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 following Southeast Fisheries Science Center staff were consulted on the statistical aspects of this data collection activity:

Dr. David Gloeckner, Leader of the Fisheries Monitoring Branch , is responsible for some of these data collection activities (305) 361-4257

Lawrence R. Beerkircher, Leader of the Fisheries Sampling Branch, is responsible for some of these data collection activities (305)361-4290

Dr. Steve Turner, Fisheries Statistics division chief (305)361-4482