

Developing a Marine Sport Fish Statistics Program

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INTRODUCTION

In 1970, the National Marine Fisheries Service (NMFS) assumed the responsibility for federal activities relating to marine game fish. Part of this responsibility, as spelled out in the Fish and Wildlife Act of 1956, is the collection of statistics on the marine sport fisheries of the United States. In the past, this activity consisted primarily of collecting catch, effort and expenditures data for broad geographic areas every 5 years through household surveys. NMFS recognizes that this collection effort is no longer adequate, particularly in view of increasing numbers of fishermen and in view of increasing concern for our fishery resources. Better data are needed if we are to manage our fishery resources effectively. Because NMFS recognizes the importance of meaningful statistics to public and private researchers, decision makers and policy makers concerned with fishery resources, we are attempting to determine the kinds of data needed by various interest groups and to develop a viable national marine sport fish data collection program based on determined needs.

I would like to tell you today about the progress we have made thus far toward developing a national sport fish statistics program and what we have planned for the future. First, however, I would like to describe in more detail the statistics collection activities of the past.

PAST DATA COLLECTION ACTIVITIES

Data on the number of fishermen, the number of days spent fishing and the expenditures by fishermen, have been collected every 5 years since 1955 by the Bureau of the Census in its National Surveys of Fishing and Hunting. These surveys have been funded by the Bureau of Sport Fisheries and Wildlife. Data on the number and weight of fish caught by species, geographical area and method of fishing, have been collected in Salt-Water Angling Surveys every 5 years since 1960 by the Bureau of the Census as a supplement to the National Surveys of Fishing and Hunting. The first two Salt-Water Angling Surveys were funded by the Bureau of Sport Fisheries and Wildlife and the survey for 1970 was funded by the National Marine Fisheries Service. Both of these surveys, i.e., the National Survey of Fishing and Hunting and the Salt-Water Angling Survey, are based on personal interviews with members of sample households scattered throughout the United States.

As some of you know, the results from past Salt-Water Angling Surveys for certain species in certain geographical areas have been subject to question. Errors are possible in such a survey due to two main factors: (1) small sample size and

(2) response bias; that is, the inability of persons being interviewed to give the correct answer for any number of reasons; such as, the recall period may be too far in the past to be able to remember correctly, or the individual may be reluctant to admit small or insignificant catches.

RESPONSE BIAS STUDY AND PILOT HOUSEHOLD SURVEY

Because the accuracy of the only sport fish catch data collected on a national scale was subject to question, we felt we should do what we could to improve these data. Therefore, in June 1971, we contracted with a professional survey firm, Audits & Surveys, Inc., to (1) determine the causes of error (response bias); (2) recommend methods for obtaining responses from household interviews that contain a minimum amount of error (bias); (3) recommend methods to correct for remaining error and (4) test these recommendations in a pilot household survey. The response bias study, which consisted of progressive stages of interviewing saltwater fishermen, was conducted in Massachusetts and California. The study showed that a respondent should not be required to recall more than 2 months in the past. Response bias also can be reduced by using calendars and appropriate questionnaire phrasing designed to obtain specific information. The study suggested methods to minimize species identification problems such as presenting names and pictures of fish in the questionnaire. Estimates of catch also can be improved through a means of adjusting reported catches based on the reliability of respondents' reports.

The pilot household survey testing the above methodology was conducted in California in October and November 1971, using a stratified area probability sampling plan to obtain number, length and weight of fish caught by species, and fishing effort (angler days) by different fishing methods and locations. Anglers were queried on a trip-by-trip basis about the most recent trip and for trips during the prior 2 months or less.

California party boat logbook data, collected by the California Department of Fish and Game, were used for comparing the Audits and Surveys catch estimates. These party boat data comprise one of the best continuous sets of marine sport fish catch statistics in the country. Some comparisons based on data for southern California follow. The pilot household survey estimated 490,800 fish caught during the 2-month period, an over-estimate of 15% compared with the logbook catch of 427,700 fish. For October, the pilot survey overestimated the catch by 24% and for November by 1%. Estimated angler days from the pilot survey were 50,400 compared with 51,800 from the logbooks, an underestimate of 3%.

The pilot household survey resulted in substantial improvement over the 1-year recall Salt-Water Angling Survey, as indicated by comparison with the California party boat logs. The 1965 and 1970 Angling Surveys produced total party boat estimates for southern California of 305% and 193%, respectively, above the logbook estimates, while the pilot household survey estimate was only 15% over the California logs.

Our Tiburon, California, Laboratory conducted a field survey for all fishing methods except party boats, to obtain length and weight data for comparison with the household survey. Anglers were better able to estimate lengths than weights. Comparing averages taken over all species and fishing methods, lengths were overestimated by 13% and weights by 231% in southern California. In northern California, anglers underestimated lengths by 4% and overestimated weights by 158%. Statewide, lengths were overestimated by 8% and weights by 204%. Conversion of average length data to weights would result in better weight data than direct estimation of weight by anglers.

The above studies were conducted in an attempt to improve on estimates produced by the Bureau of the Census. Now, I would like to discuss our efforts to date in developing an optimum statistics collection program.

DETERMINING DATA NEEDS AND DEVELOPING A PLAN OF ACTION

A first step to developing a viable national sport fish statistics program is to determine the kinds of data needed by various interest groups. After preliminary discussions with persons knowledgeable in the area of marine sport fisheries, we soon learned that there are as many different kinds of data needed as there are people interested in marine sport fisheries. To be as responsive as possible to the needs for various data on the marine sport fisheries, we contracted with a private research firm, Moshman Associates, Inc., to develop a priority listing of data needs and to prepare alternative 5-year development plans for collecting these statistics, based on various levels of funding. In developing the priority listing of data needs, Moshman has questioned over 100 individuals representing the coastal state fishery agencies, universities, sport-fish-related industries, the National Marine Fisheries Service and others. In addition to the kinds of data needed, Moshman also is asking why each kind of data is needed and what degree of accuracy is acceptable for each kind of data.

Based on the priority listing of data needs, the results of the study by Audits and Surveys and other available information, Moshman is preparing alternative 5-year program development plans laying out when and how the data specified in the priority listing are to be collected. One plan would involve a national survey to be carried out (probably by contract) by the National Marine Fisheries Service. The second plan would encourage each coastal state to participate by collecting data on the marine sport fisheries off the coast of the respective state, probably with funding assistance from the federal government. Each plan will be developed in such a way that it can be implemented in priority stages depending on available funding. It may be that because of the kinds of data to be collected, we would want to have a "mixed" collection plan, i.e., some data would be collected by a national collection agency and other data collected in a cooperative program with the states.

A report presenting both the priority listing of data needs and the alternative program development plans are expected to be completed by December 4, 1972. The report will be reviewed by a special board consisting of the Executive Directors of each of the Inter-State Commissions, the Executive Director of Sport Fishing Institute, a university professor and representatives from NMFS.

THE FUTURE

With the help of the states, Sport Fishing Institute and others interested in marine sport fishing statistics, we expect to begin finalizing a data collection program after the Moshman report is approved. Perhaps "finalizing" is the wrong word since I don't want to convey the idea that the program will be set in concrete. To the contrary, because we are aware that data needs will change over time due to a variety of factors, we intend to develop a program that will be flexible enough to be able to respond to such changes.

Developing a viable sport fish data collection program has high priority in NMFS, and as soon as the budget permits we expect to increase funds in this area. Collecting statistics is a costly business, and to collect the data that will probably be called for will require a substantial amount. Of course, we'll do the best we can with whatever amount we have available. In any case, we intend to work closely with each coastal state in developing a cooperative program that will produce accurate data. We feel State-Federal cooperation is extremely important in this kind of endeavor and so we will be asking for assistance from, and providing assistance to the states as we work toward developing a viable program.