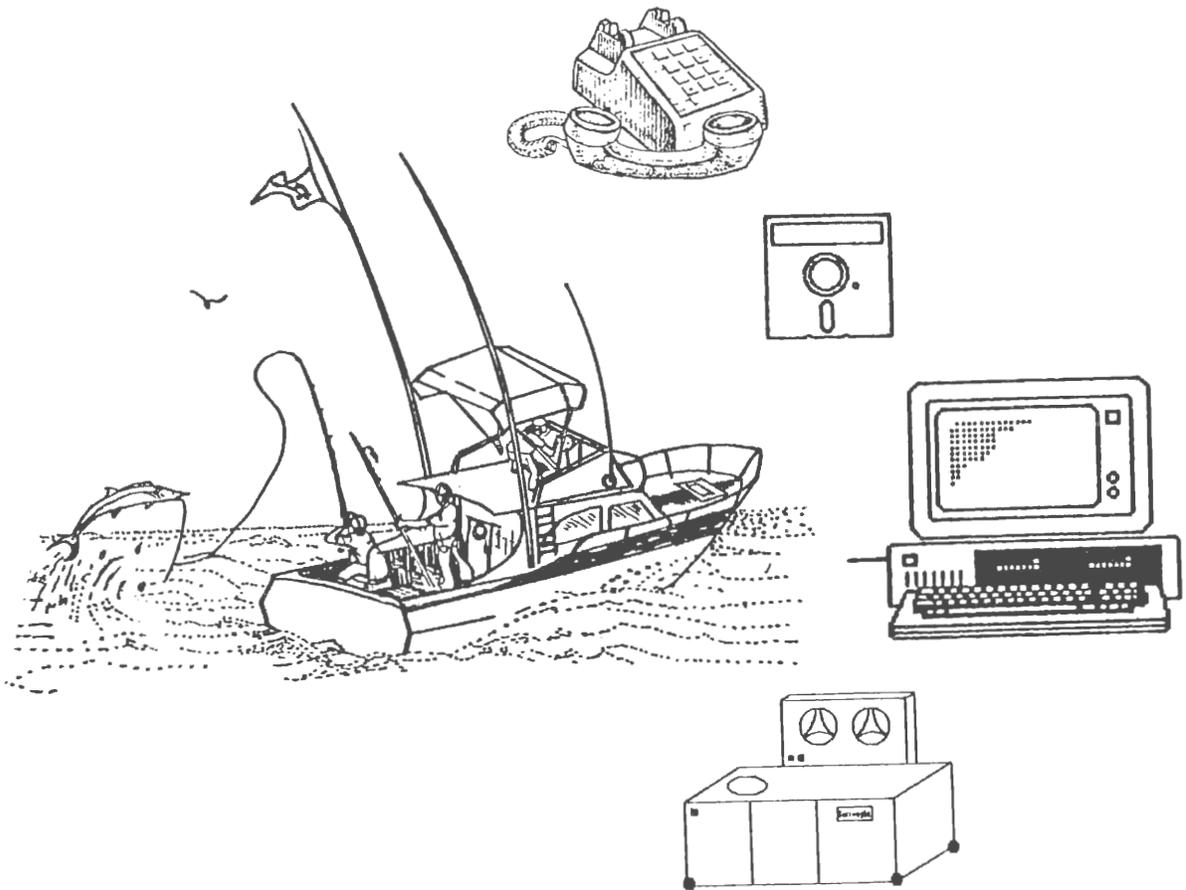


PROCEEDINGS:

**WORKSHOP ON MARINE
RECREATIONAL FISHERIES
STATISTICS COLLECTION IN THE
GULF OF MEXICO**



**GULF STATES MARINE
FISHERIES COMMISSION
Special Report No. 3-WB**



PROCEEDINGS:

**WORKSHOP ON MARINE
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STATISTICS COLLECTION IN THE
GULF OF MEXICO**

conducted by the

DATA MANAGEMENT SUBCOMMITTEE

of the

**TECHNICAL COORDINATING COMMITTEE
GULF STATES MARINE FISHERIES COMMISSION**

and the

NATIONAL MARINE FISHERIES SERVICE

EDITED BY

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TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	4
1.1 Background	4
1.2 Attendance	4
1.3 Acknowledgements	5
1.4 Organization	5
2.0 ISSUES OF CONCERN AND RECOMMENDATIONS	5
2.1 Goal	5
2.2 Overview of MRFSS and State Programs	5
2.3 MRFSS/State Data Collection Procedures	6
2.3.1 Sampling Allocation	6
2.3.2 Site Selection	6
2.3.3 Headboat Sampling	7
2.3.4 MRFSS Telephone Survey Methodology	7
2.3.5 Subsampling Procedures	7
2.3.6 Selection of Time of Day for Sampling	8
2.3.7 Declaring a Sample Weathered Out	8
2.3.8 Data Codes	8
2.3.9 Quality Control	8
2.4 Expansion and Associated Statistics	9
2.4.1 Availability of NMFS Data and Publications	9
2.4.2 Combining Telephone and On-site Data	9
2.4.3 Trips by Mode at State Level	10
2.4.4 Results of the MARFIN Add-on	10
2.4.5 Validity of Self-reported Data	11
2.4.6 Outliers	11
2.5 Integration of State/Federal Recreational Fisheries Programs	11
2.5.1 Publication of Texas Data	11
2.5.2 Options for Integration	11
2.5.3 Long Term Improvements in Collection of Recreational Fishery Statistics	13
3.0 FINAL RECOMMENDATIONS	14
APPENDIX A: Agenda	15

EXECUTIVE SUMMARY

At the November 1988 meeting of the Data Management Subcommittee of the Gulf States Marine Fisheries Commission (GSMFC), the Gulf States and the National Marine Fisheries Service (NMFS) agreed to a three-day workshop with the following goal:

Achieve a cooperative recreational fisheries statistics survey program that provides the best possible data, in the most cost-efficient manner, to satisfy management needs of involved agencies in the Gulf of Mexico.

The workshop was held February 7-9, 1989 at the NMFS Southeast Fisheries Center in Miami, Florida and the following action items were recommended by consensus:

1. MRFSS/State Data Collection Procedures:
 - a. Site selection.
 - Explore using historical intercept data to set on-site sampling probabilities.
 - Schedule regular rather than opportunistic site inventory updates.
 - Incorporate new site inventory and allocation procedures in the operations manual.
 - b. MRFSS telephone survey methodology.
 - Explore interviewing of self-identified freshwater fishermen fishing in salt water to eliminate harvest underestimation and standardize telephone responses.
 - c. Selection of time of day for sampling
 - Develop procedures to eliminate interjection of bias in choosing time of day to conduct interviews.
 - Modify the telephone survey to distinguish between night and day trips.
 - d. Quality control.
 - Develop national quality control standards for collection of recreational fishery statistics.
 - Explore methods to improve interviewer training and oversight procedures.
 - Expand and improve operations manuals specifying all procedures and reference the manuals in the RFP for future MRFSS surveys.
 - Publish a technical manual to clarify statistical design and expansions.

2. Expansion and Associated Statistics

- NMFS will compile a list of publications and data files available from the MRFSS.
- NMFS will provide a prioritized list of statistical concerns for resolution.
- Investigate formation of a statistical review committee, under the auspices of the American Statistical Association if possible; propose a series of projects to address statistical concerns and publish the results.
- NMFS will provide copies of correspondence concerning cluster variances.
- Validate self-reported data through special studies.

3. Integration of State/Federal Recreational Fisheries Programs

- a. Interjurisdictional management use of Texas data.
 - Texas will provide computerized files of estimates for use in stock assessments and management, in accordance with Texas proprietary policies.
- b. Integration of Alabama, Florida, Louisiana and Mississippi and MRFSS programs. This will require:
 - observable commitment by NMFS to improve the quality of the MRFSS survey, especially quality control;
 - eventual inclusion of recreational shellfishing; and
 - a goal of state estimates with coefficients of variation of 15-20%.
 - Cooperation should begin with state subcontracts for on-site sampling; long term cooperation should be achieved through cooperative agreements.
- c. Integration of Texas and MRFSS programs.
 - Continue current cooperative agreement on recreational statistics.
 - Direct participation by Texas in the MRFSS would require retention of comparability with previous estimates, a significant increase in cost-effectiveness, and maintenance of existing precision.
- d. Long term improvements in collection of recreational fishery statistics.
 - Investigate improvements to data collection for headboats and charterboats.
 - Explore evaluation of MRFSS and Texas estimates to compare for possible bias in estimation procedures.
 - Begin using screening procedures in the on-site survey to record recreational shellfish activity.
 - Explore alternate techniques for estimating effort and participation to increase cost effectiveness and precision.
 - Conduct a workshop to recommend data elements necessary for management that should be obtained under a recreational fisheries statistics program, including socio-economic data.

- Explore technological advancements to achieve real time data entry.
- Improve and increase publication of trend data and analyses of recreational fisheries data.

4. Final Recommendations

- Expand future Data Management Subcommittee meetings to a full day in order to review progress on action items and update appropriate issues.
- Form a Subcommittee work group to address specific recreational statistical and technical issues.

1.0 INTRODUCTION

1.1 Background

The National Marine Fisheries Service (NMFS) initiated the Marine Recreational Fishery Statistics Survey (MRFSS) in 1979 to establish a reliable data base for estimating the impact of recreational fishing on marine resources. The MRFSS was originally designed to provide regional estimates of catch by species, fishing area and mode of fishing, as well as participation and biological information on the catch. These data are being used for fisheries management purposes and their use is increasing.

Coastal states in the Gulf of Mexico have been asked to participate in the MRFSS in a cooperative manner to increase sample size and eliminate duplication. Cooperation has not been attained for a variety of reasons including:

1) the existence of some long-term state surveys and disagreement between NMFS and the states on which survey(s) is better and/or more cost-efficient and can maintain comparability with existing data bases;

2) concerns by the states and other users of the MRFSS data base about the design of the survey, statistical calculations, and perhaps most important quality control, especially when the survey has been subcontracted to private consulting firms;

3) contracting roadblocks; and

4) lack of funding.

Numerous attempts to solve these problems have been made in the form of correspondence, presentations of the MRFSS methodology, meetings, etc.; however, regional cooperation is still lacking. At the November 1988 meeting of the Data Management Subcommittee of the Gulf States Marine Fisheries Commission (GSMFC), the issue of cooperation was once again addressed, and the Gulf States and NMFS agreed to a three-day workshop to develop strategies to develop a cooperative recreational statistics program. Funding for the meeting was provided by the GSMFC through a Wallop-Breaux contract. The workshop was held February 7-9, 1989 at the NMFS Southeast Fisheries Center in Miami, Florida.

1.2 Attendance

- 1) Henry Lazauski, Alabama Marine Resources Division
- 2) Maury Osborn, Texas Department of Parks and Wildlife
- 3) Joey Shepard, Louisiana Department of Wildlife and Fisheries
- 4) Robert Muller, Florida Department of Natural Resources
- 5) Fred Deegan, Mississippi Bureau of Marine Resources
- 6) Albert Jones, National Marine Fisheries Service
- 7) Ron Lukens, Gulf States Marine Fisheries Commission
- 8) Mark Holliday, National Marine Fisheries Service
- 9) Ron Essig, National Marine Fisheries Service
- 10) Dick Stone, National Marine Fisheries Service

- 11) Don Hayne, North Carolina State University
- 12) Russell Porter, Pacific Marine Fisheries Commission
- 13) Cindy Dickens, Gulf States Marine Fisheries Commission
- 14) Lucia Hourihan, Gulf States Marine Fisheries Commission
- 15) Ron Schmied, National Marine Fisheries Service
- 16) Michael Schirripa, Everglades National Park
- 17) Bob Siegal, National Marine Fisheries Service
- 18) Joe O'Hop, Florida Department of Natural Resources
- 19) John Poffenberger, National Marine Fisheries Service
- 20) Joe Powers, National Marine Fisheries Service
- 21) Bob Palmer, Florida Marine Fisheries Commission
- 22) Beany Slater, National Marine Fisheries Service
- 23) James Zweifel, National Marine Fisheries Service
- 24) Ed Burgess, National Marine Fisheries Service
- 25) John Witzig, National Marine Fisheries Service

1.3 Acknowledgements

Invaluable support in organizing the workshop was provided by the Gulf States Marine Fisheries Commission, especially Ron Lukens, Lucia Hourihan and Cindy Dickens. Appreciation is also extended to Dr. Albert Jones and the NMFS Southeast Fisheries Center for hosting the workshop, to Dr. Don Hayne of North Carolina State University at Raleigh for providing objective statistical insight, and to Russell Porter of the Pacific Marine Fisheries Commission for presenting the Pacific viewpoint.

1.4 Organization

This report follows the workshop's agenda (Appendix A). Issues of concern are identified with a brief discussion and recommendations for action. In some cases no resolution of an issue was reached and no recommendations were made. Resolution of those issues is reserved for further discussions and/or workshops.

2.0 ISSUES OF CONCERN AND RECOMMENDATIONS

2.1 Goal

A goal statement was proposed and adopted:

Achieve a cooperative recreational fisheries statistics survey program that provides the best possible data, in the most cost-efficient manner, to satisfy management needs of involved agencies in the Gulf of Mexico.

2.2 Overview of MRFSS and State Programs

Each of the Gulf states and NMFS presented brief overviews of existing and recently begun recreational statistics programs. For details, contact the State or NMFS representative. NMFS is conducting the MRFSS in all Gulf states except Texas. Alabama conducted a

non-uniform probability roving survey for 3 years (1985-87) under contract with Auburn University at an estimated annual cost of \$250,000. Florida is relying on MRFSS estimates for species of interjurisdictional concern; special studies will probably always be required for some of their other recreationally important species such as tarpon and snook. Florida is currently concentrating their efforts in setting up a fishery independent monitoring program; because of restrictive bag limits and other variables they want to rely on resource monitoring data for trends in abundance. Louisiana has been planning to conduct a survey of private boat fishing with a tentative start date of April 1; they are committed to conducting a cooperative type of survey, either with adjacent states or NMFS. Mississippi is in the second year of a private boat survey using the Texas methodology. Texas has conducted a random proportional survey of private boat and charter boat fishing since 1974. Bimonthly estimates are provided to NMFS under a cooperative agreement. The wade-bank modes were surveyed in 1974-76 and 1979-80 and will be surveyed again in 1990-91. Participation estimates are made using mail surveys.

2.3 MRFSS/State Data Collection Procedures

2.3.1 Sampling Allocation

Issue: Allocations among regions and modes was discussed. Allocation is proportional to activity, after a minimum base level of sampling is met for each cell. Since 1987, allocations have shifted more to the Southeast and in the Gulf, allocations were shifted to the boat mode to get a better handle on mackerel. All shore modes were combined into one strata to accommodate these shifts. Historical data should be collapsed for shore modes to maintain comparability among years.

No recommendations necessary.

2.3.2 Site Selection

Issue: There are problems with inaccuracies in site inventories sent to the states, states not receiving inventories on a regular basis, and inadequate procedures, documentation and specified time frames for updating inventories. There is inadequate sampling of some fish species due to their seasonality; this is a problem with limited sample sizes. Dr. Hayne pointed out that the design of the MRFSS does not rely on pure probabilities for site selection; however, good representation is important.

Recommendations:

- 1) Explore using historical intercept data to set sampling probabilities, rather than relying on hearsay information from access operators, "regular" fishermen or subjective interviewer opinion.
- 2) Schedule regular rather than opportunistic site inventory updates.
- 3) Incorporate new procedures in the operations manual.

Issue: Waterfront residential access sites were discussed. These areas are not surveyed in the on-site intercepts but their effort is included in telephone estimates; catch rates are assumed to be similar to other fishermen.

No recommendation.

2.3.3 Headboat sampling

Issue: Headboats (boats for hire with 6 or more people and a guide) are no longer directly a part of the MRFSS in the South Atlantic and Gulf and the appropriate persons were not available to answer most of the identified questions. The issue of stressing half day trips was mentioned; catch rates are obtained through on-board interviews on shorter trips and at dockside for longer trips while effort is obtained through captain's logs. As long as adequate samples are taken of all trips this should not cause bias. This issue will be discussed further as a recommendation in the final section.

2.3.4 MRFSS Telephone Survey Methodology

Issue: The question allowing both telephone and on-site respondents to identify themselves as freshwater or saltwater⁶ results in corresponding data for both components but it causes underestimation of saltwater fish landed by fishermen who fish in brackish water areas and who consider themselves freshwater. If respondents request help in identifying salt vs. fresh water areas, legal state definitions are used, but these definitions are not mentioned unless requested.

Recommendation:

This issue needs to be explored further to eliminate underestimation and increase standardization of responses.

Issue: Expansion of coastal telephone trip estimates by observed on-site ratios of coastal/noncoastal residents is a cause for concern with small sample sizes. Some adjustments are made to ratios by pooling historical data when small sample sizes cause extreme estimates of noncoastal resident and nonresident trips. Dr. Hayne suggested that it might be appropriate for the telephone survey to be conducted in a stratified fashion to sample inland and coastal areas.

No resolution of this issue was reached. Increased sample sizes through better cooperation may alleviate the problem.

2.3.5 Subsampling Procedures

Issue: The MRFSS procedure was explained. Theoretically, when an interviewer finishes an interview and sees that too many fishermen remain for all to be intercepted, the interviewer estimates how many can be interviewed, counts all remaining fishermen and then picks the nth ones to obtain the number of anticipated interviews. Pragmatically, interviewers most likely move on to the next closest fishermen as they finish an interview.

No resolution or recommendations at this time.

2.3.6 Selection of Time of Day for Sampling

Issue: Rules for specifying time of day to conduct interviews are not specific enough. Interviewing procedures specify that at least one interview per hour should be collected; if activity is too low the interviewer moves to an alternate site. There was great concern about the introduction of interviewer bias through individual selection of times to begin and end interviewing.

Recommendation:

Procedures will be developed to eliminate interjection of bias in choosing time of day to conduct interviews. Such procedures should be examined on a small enough frame (seasonal, geographic and/or species oriented) to provide efficiency and consistency, yet assure adequate representation.

Issue: There are no rules or procedures to specify or eliminate night sampling. The telephone survey estimates include night trips yet they can not be identified.

Recommendation:

The telephone survey should distinguish night and day trips. Night sampling on the on-site survey needs to be addressed when developing time of day sampling procedures.

2.3.7 Declaring a Sample Weathered Out

Issue: Current procedures state that a scheduled day may be rescheduled if small craft warnings are in effect, or sampling at a site is terminated or changed to an alternate site if no interviews are encountered within two hours.

Issue Resolved. The consensus was that procedures provided specific enough criteria while ensuring efficiency.

2.3.8 Data Codes

Issue: Water body codes listed in the manuals do not appear to be useful to many states. The procedure in the past has been that when an individual state begins a cooperative effort on the MRFSS, desired codes and even additional data items are discussed and agreed upon.

Issue resolved. This procedure is apparently working well and satisfying involved states.

2.3.9 Quality Control

Issue: Species identification was a major concern although all aspects of quality were discussed. Training is one day long and is considered inadequate. Supervision is indirect although dry-labbing

data is probably negligible because of call backs to interviewed fishermen. Interviewers working for the subcontractor do not have the benefit of coordinating on a daily basis with others involved in the survey.

Recommendations:

1) The states and NMFS will develop written national quality control standards for collection of recreational fishery statistics. The Data Management Subcommittee of the GSMFC will meet an additional half day at the March 1989 meeting to review existing quality control procedures and develop a preliminary draft of quality control measures for consideration. Russell Porter will provide existing written procedures from the Pacific and Maury Osborn will provide copies of existing Texas procedures.

2) The states and NMFS will explore ways to improve interviewer training and oversight procedures.

3) Documentation will be expanded and improved. NMFS will develop operations manuals specifying all procedures and the manual(s) will be referenced in the RFP, rather than development of operations manuals by individual contractors.

4) A technical manual on statistical design and expansion will be published in an effort to clarify methodology.

2.4 Expansion and Associated Statistics

2.4.1 Availability of NMFS Data and Publications

Issue: There was some discussion that states were not aware of all publications or data files available from the MRFSS.

Recommendation:

NMFS will compile a list of publications and data files available from the MRFSS.

2.4.2 Combining Telephone and On-site Data

Issue: Use of incomplete trip interviews in the wade-bank strata was discussed. NMFS is assuming that catch rates are similar between complete and incomplete trips: freshwater studies have found no differences.

No consensus was reached.

Issue: Calculation of variances was discussed at length. Cluster sampling is used but variances do not incorporate cluster techniques. This problem has been addressed for some species by consultants at the University of Chicago (1985-86). NMFS stated that work by Kish suggests that variances may be underestimated by 20% (i.e. 20% of a coefficient of variation of 20% is equal to 4%). There was concern about expansion

variances that ignored adjustments for the ratio of telephone owners to the total population. There was also concern that the telephone survey was only conducted for coastal counties; a suggestion was made that it should be conducted on a stratified basis nationwide. Frequency of outside statistical review and publication of findings was also discussed. NMFS is concerned about several sources of variance.

Recommendations:

1) NMFS will provide a list of their current statistical concerns for eventual resolution, with a listing of priority.

2) The Data Management Subcommittee, in conjunction with NMFS, will investigate formation of a statistical review committee, under the auspices of the American Statistical Association if possible. A series of projects, i.e. workshops, funding of consultations, etc., will be proposed to address statistical concerns and to publish the results of the reviews/critiques.

3) NMFS will provide copies of past correspondence with the contractor and the University of Chicago concerning cluster variances to Dr. Hayne and other interested parties.

2.4.3 Trips by Mode at State Level

Issue: Participants wanted to know why state level estimates by mode are not included in annual publications as such estimates are produced and used by managers. NMFS responded that the MRFSS was designed for regional estimates and that state mode estimates were not published due to inadequate sample sizes, although they are available upon request.

No consensus was reached. Publication of those estimates might be considered later if states participate at a significant level to solve inadequate sample size problems

2.4.4 Results of the MARFIN Add-on

The objectives of the MARFIN add-on were to

- 1) increase timeliness of the estimates to a monthly basis, and
- 2) minimize variances for king mackerel.

Issue: Sampling was more than doubled and one-time data processing tasks to allow monthly estimation were completed. Coefficients of variation were decreased (no. of total finfish, July-August) to 14% in the South Atlantic from 21% in 1987 and 35% in 1986 and to 17% in the Gulf from 28% in 1987 and 31% in 1986.

Issue resolved. Based on preliminary analysis, it appears the objectives of the add-on were met. Additional sampling effort gave predicted response for variances.

2.4.5 Validity of Self-reported Data

Issue: The accuracy of self-reported data, catch not available for examination and length of fishing time, were discussed.

Recommendation: Self-reported data should be validated where possible through special studies.

2.4.6 Outliers

Issue: Outliers, specifically number of trips, are not thrown out. Responses exceeding three standard errors of the mean are identified and the fishermen are recontacted if possible to verify their responses. If the response is verified and still exceeds the 3 SE criterion, the response is adjusted to the 95% limit of the range of data. This adjustment is necessary because of small sample sizes.

Issue resolved. The consensus was that small sample sizes force this approach.

2.5 Integration of State/Federal Recreational Fisheries Programs

2.5.1 Publication of Texas Data

Issue: Participants were curious why Texas data are not included in the annual publication of MRFSS estimates. One reason is that it creates problems of public confusion to have two estimates for the same time periods since the MRFSS estimates are made on a calendar year basis and Texas estimates are made on a May to November (high use season) and November to May (low use season) basis. Another reason is that the annual MRFSS document is intended to publish the results of the MRFSS, not to serve as a clearinghouse for other recreational surveys. Participants stated that non-computerized use of Texas data was time-consuming, inefficient and could lead to omissions and/or errors when examining harvest for the entire Gulf.

Recommendation: Texas has already agreed to provide ASCII files of estimates for use in stock assessments and management, with the proviso of no publication of the results without the approval of Texas Parks and Wildlife Department and arrangements for joint authorship. These files will be available after Texas completes a scheduled data processing job to revise the harvest estimation programs for better report production.

2.5.2 Options for Integration

Issue: Options for integration form a spectrum from complete cooperation of all states using exactly the same methodology on one end to all states using their own methodology with aggregation of separate estimates to obtain a Gulf total on the other end. Each of the Gulf state participants was asked their preferences for integration and if they indicated a desire to participate in the MRFSS, exactly what would be required to get the ball rolling.

Integration with Alabama, Florida, Louisiana and Mississippi

Representatives from Alabama, Florida, Louisiana and Mississippi all indicated a desire to participate with NMFS at some level, including the addition of state funding, but with the following conditions:

- 1) an observable commitment by NMFS to improve the survey as indicated in this document, with quality control being of primary concern,
- 2) eventual inclusion of recreational shellfishing in the survey,
- 3) a goal of state estimates with coefficients of variation of 15-20%, (some states need estimates for defined areas within the state), and
- 4) eventual participation levels such that state personnel would be doing intercept sampling.

Participation would occur in a step-wise fashion: first with addition of funds for increased sampling by the contractor, second with the addition of state participation in the supervision of interviewers, and finally on-site sampling by state personnel.

Recommendations:

Given observable commitment by NMFS towards improving the survey:

- 1) Short term cooperation will begin with state subcontracts with the existing contractor under the current RFP.
- 2) Long term cooperation would arrange on-site sampling through cooperative agreements. Such cooperative agreements would result in less money spent on overhead and allow hiring of personnel unrestrained by state manpower caps.

Integration with Texas

Cooperation was addressed separately with Texas because of its existing cooperative agreement with NMFS to provide recreational landings estimates. The Texas program relies on a survey that began in 1974. The MRFSS and Texas methodologies are similar in some respects; however estimates of pressure and participation are quite different. The cooperative agreement with NMFS specifies that Texas provides NMFS with bimonthly estimates of private-boat, charter boat (less than 10 people with a paid guide) and bay headboat (10 or more people with a paid guide) landings. Raw data, primarily individual fishing party and length data, are provided for Gulf of Mexico Fishery Management Council management needs upon request with the proviso of no publication without permission and joint authorship of research papers. A wade-bank survey will be conducted in 1990-91, and evaluated for permanent staffing; the wade-bank strata is of minor importance for species of concern to interjurisdictional management. Texas was asked what would be required

for adoption of the MRFSS methodology. Adoption of a different methodology would require:

- 1) retention of comparability with previous estimates,
- 2) a significant increase in cost-effectiveness to justify disruption of existing programs, and
- 3) maintenance of existing precision on a bay system basis.

Texas is receptive to any improvements to existing data collection efforts and improving cooperation whenever possible. Specific cooperative efforts to improve existing programs were suggested and are discussed in the following section.

2.5.3 Long Term Improvements in Collection of Recreational Fishery Statistics

Issue: Future improvements and modifications to the MRFSS and other recreational fishery statistics programs were discussed with the objectives of increasing cost effectiveness and efficiency, collection of all data vital for effective management, assuring accuracy of estimates for all states and furthering cooperative estimates.

Recommendations:

1) Investigate improvements to data collection for the party/charterboat strata. The MRFSS surveys charterboats (6 or less people) as a separate strata; Texas incorporates these fishermen on an opportunistic basis in the private boat stratum. Both programs provide an unbiased estimate of landings; however coefficients of variance are large. Given the relatively low impact of this component on total finfish landings, such estimates may be adequate, but additional socio-economic data is important for allocation decisions. Headboat and additional charterboat data are collected in separate programs by the NMFS Beaufort and Panama City Laboratories; these programs need to be included in a broad umbrella program of recreational fishery statistics data collection.

2) Texas and NMFS will explore evaluation of MRFSS and Texas estimates to compare for possible bias in estimation procedures.

3) The MRFSS will incorporate screening procedures in the on-site survey to record recreational shellfish activity for future use in incorporating shellfish estimates. Estimation of recreational shellfish statistics in the MRFSS or associated programs will be addressed.

4) NMFS and the Gulf States will explore alternate techniques for estimating pressure and participation to increase cost effectiveness and precision.

5) A workshop will be conducted to examine and recommend all data elements necessary for management purposes that should be obtained under

a recreational fisheries statistics collection program, including socio-economic data.

6) Explore technological advancements to provide real time data entry and improve ease of access to raw data and expanded estimates.

7) Publication of trend data and analyses of recreational fisheries data will be improved and increased.

3.0 FINAL RECOMMENDATIONS

Any successful workshop that deals with problems and their resolution ultimately generates work. Participants at this workshop indicated a refreshing and potentially ground-breaking attitude towards cooperation and problem solving; however ultimate success depends upon continued dialogue and work on mutual goals. Achievement of cooperative programs that provide vital management data requires a commitment of personnel and funding by the individual states and the federal government. Success also requires cooperation by all concerned parties from program conception to program implementation and year to year modifications. In this light the final recommendations are:

1) Expand future Data Management Subcommittee meetings to a full day, in order to review progress on items identified in this document and update appropriate issues, with invited representation by the Recreational Fisheries Committee; and

2) Form a Data Management Subcommittee work group to address specific recreational statistical and technical issues.

Appendix A: Agenda

AGENDA: STATE/FEDERAL MRFSS WORKSHOP

February 7-9, 1989

- I. Call to Order: Henry Lazauski
- II. Adoption of Agenda
- III. Adoption of Goal
- IV. Overview of the MRFSS and State Programs
- V. Issues of Concern
 - A. Data Collection Procedures: Henry Lazauski
 - 1. Sampling Allocations
 - 2. Site Selection
 - 3. Charterboat Sampling
 - 4. Telephone Survey Methods
 - 5. Subsampling procedures
 - 6. Time of Day Selection
 - 7. Declaring a Sample Weathered Out
 - 8. Data Codes
 - 9. Quality Control
 - B. Estimate Expansion and Associated Techniques
 - 1. Availability of Data and Publications
 - 2. Combination of Telephone and On-Site Data
 - 3. Trips by Mode at State Levels
 - 4. MARFIN Add-On
 - 5. Self-Reported Data
 - 6. Outliers
 - C. Integration
 - 1. Publication of Texas Data
 - 2. Options for Integration
 - 3. Long Term Improvements
- VI. Final Recommendations

