

Development Plan for Improving Recreational Fisheries Statistics

Background

NOAA's National Marine Fisheries Service (NOAA Fisheries) is working together with the interstate marine fisheries commissions, state agencies, regional fishery management councils, and constituents to redesign the way data are collected and statistics are estimated for marine recreational fisheries of the United States.

National Research Council Review

In 2004, NOAA Fisheries contracted with the National Research Council (NRC) of the National Academy of Sciences (NAS) to conduct a review of the current marine recreational fishery survey methods used by NOAA Fisheries and its partners to monitor fishing effort and catch. NOAA asked the NRC to: (1) assess current types of survey methods for their suitability in monitoring fishing effort and catch in the shoreline, private boat, and for-hire boat recreational fisheries; (2) assess the adequacy of the methods for providing the quality of information needed to support accurate stock assessments and responsible fisheries management decisions; and (3) make recommendations for possible methodological improvements that would ensure more accurate and precise estimates of recreational effort and catch.

The NRC's Ocean Studies Board formed a 10-member committee to conduct the requested review, held a series of five public meetings in 2005 to gather information about the current survey programs in each region, and published a final report in April 2006 [<http://fermat.nap.edu/catalog/11616.html>]. The NRC report identified a number of potential problems with the sampling and estimation designs employed in the current surveys and questioned the adequacy of the existing surveys in providing the statistics needed to support accurate stock assessments and appropriate fishery management decisions. The report recommended that current surveys should be redesigned to improve their effectiveness, the appropriateness of their sampling procedures, their applicability to various kinds of management decisions, and their usefulness for social and economic analyses. The NRC review left it up to NOAA Fisheries to develop a process that determines which specific changes have the highest priority given the costs and benefits of any given improvement.

Management Framework Meetings and Workshop

Following the release of the NRC report, NOAA Fisheries immediately began working with the interstate fisheries commissions and other relevant agencies to initiate a state-federal collaborative process that would reassess and redesign how recreational data are collected, analyzed, and used. NOAA Fisheries and its partners committed to building an improved recreational fisheries statistics program that will gain the confidence of scientists, managers, and the recreational fishing community.

The first step taken by the partners was to plan a coordinated two-step regional and national assessment of the recreational fisheries information needs of fishery managers and stock assessment scientists.

Regional Meetings – In August, the three interstate fisheries commissions for the Pacific, Atlantic, and Gulf of Mexico gathered input from a variety of sources to identify their recreational fisheries information needs. In addition, Council, State, and NMFS staff met to develop the information needs

for Hawaii.

National Workshop – In September, NOAA Fisheries and the three interstate fisheries commissions held a National Management Framework Workshop. Participants included regional fishery managers, stock assessment scientists, and survey statisticians from state and federal agencies, regional councils, and interstate marine fishery commissions. Also included were a representative of the Department of Commerce’s Marine Fishery Advisory Committee (MAFAC) and a representative of the NRC Committee that reviewed the current recreational fisheries surveys. The proceedings of the workshop have been summarized in a report posted on the NOAA Fisheries Service Office of Science and Technology (S&T) website:

[http://www.st.nmfs.gov/st1/recreational/Review_Recreational_Survey_Methods/workshop/2006/Workshop_Report_final.pdf].

Specific objectives of the Workshop were to:

- Identify and prioritize regional and national information requirements for successful stewardship of resources impacted by recreational fisheries;
- Review and prioritize possible improvements in the methods used to survey and monitor recreational fisheries catch and effort, including those recommended in the NRC report;
- Identify better ways to coordinate and integrate regional and national statistical survey programs; and
- Generate ideas for improving communications and collaborative planning among survey managers, stock assessment scientists, fishery managers, and recreational fishery constituents.

Magnuson-Stevens Act Reauthorization Requirements for Recreational Fisheries Information

In addition to the above, efforts to redesign recreational fishing data collection programs will meet the requirements specified in Section 201 of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act (MSA), which was signed into law by President Bush on January 12, 2007. Briefly, the reauthorized MSA requires the Department of Commerce to develop and implement an improved recreational fisheries survey program by January 1, 2009. It also requires creation of Federal, regionally based registry programs for marine recreational fishing that can be used to support more efficient statistical surveys. The complete text of the 2007 MSA reauthorization bill can be viewed at the following website: [http://www.nmfs.noaa.gov/sfa/2007reauth_notsigned.pdf].

Planning for Evaluation of Potential Biases in Current Surveys

Also immediately following the publication of the NRC Report, the NOAA Fisheries Office of Science and Technology (S&T) initiated an exhaustive search for existing data that could be used to help evaluate potential causes of bias in the current sampling and estimation procedures employed for the Marine Recreational Fisheries Statistics Survey (MRFSS), the For-Hire Survey (FHS), and the Large Pelagics Survey (LPS). This effort by S&T has focused on potential bias issues identified in the NRC report and other sources.

S&T has also begun identifying potential causes of bias that cannot be evaluated with existing data and looking at ways in which existing surveys could be used to collect the data needed to evaluate at least some of those possible bias issues. S&T is preparing a plan that will present options for addressing the staffing and resources needed to complete the evaluations of potential bias issues in a timely manner.

Planning of Gulf Pilot Study to Test Dual Frame Telephone Survey Approach

In April 2006, S&T also initiated work with the Gulf States Marine Fisheries Commission and the state agencies of Florida, Alabama, Mississippi, and Louisiana to plan a cooperative 2007 pilot study which will utilize angler list frames developed from existing state licensing programs, in conjunction with traditional random-digit-dialing household frames, to support a dual-frame telephone survey approach for estimating fishing effort. This dual-frame approach was recommended in the NRC report as a possible means of improving sampling efficiency and the precision of estimated effort and catch statistics in states where complete angler registries are not currently available.

The cooperative pilot study will be designed to allow side-by-side comparisons with the “single frame” household survey approach used in the traditional MRFSS, and the testing and evaluation will be carried out through the cooperative efforts of the state and federal partners. In order to procure contractor services to conduct the Gulf dual frame telephone survey starting in 2007, S&T has already allocated the necessary funds, developed a statement of work, and issued a formal request for proposals.

Center for Independent Experts Review of Recreational Fisheries Economics Program

In October, the NMFS convened a workshop as part of the University of Miami Center for Independent Experts (CIE) review of NMFS’ recreational economics program. NMFS has been gathering economic and demographic data using add-on surveys to the MRFSS since 1994. The CIE was asked to review the three basic types of analysis NMFS conducts with these data including: (1) estimation of revealed preference models, which value access to fishing sites; (2) stated preference choice experiments, which directly ask anglers about preferred management options; and (3) economic impact analysis, which provide information on the contribution of recreational fishing to the local economy.

The CIE review found the MRFSS add-ons to be an effective means of gathering data and that there is no evidence that MRFSS shortcomings identified by the NRC cause severe problems for the economic data and analyses. In addition, the review found the suite of models used by NMFS to be appropriate given the extent of peer reviewed publications using the economic data. Further, the CIE also found the recreational economics program to be very cost effective and currently the only feasible way to collect the data given the “meager” budget.

The CIE recommended continued focus on surveys targeted for specific management goals, like stated preference choice experiments, while testing the validity of these measures and streamlining data collection. Additionally, to the extent that fishing access sites serve as the basis for estimating revealed preference models, improvements in the site register would improve those models. Finally, the CIE recognized that as effort and participation grow into the future increased attention to the economics of recreational fishing and increases in funding will be required. The CIE Review Report is posted on the S&T website

[http://www.st.nmfs.gov/st1/recreational/Review_Recreational_Survey_Methods/documents/CIE_recreational_fishery_economics_report.pdf].

Development Plan

NOAA Fisheries is committed to responding to the NRC’s recommendations, as well as the changing informational requirements of stock assessment scientists and fishery managers, through an inclusive process that will be both peer-reviewed and publicly accessible. Improving recreational fisheries

monitoring programs will require planning, research and analysis, collaboration and partnerships, resources, and time.

A plan has been developed to map the necessary “next steps” for a successful, collaborative redesign of current survey statistics programs for marine recreational fisheries. At the heart of the plan are several committees and workgroups that will address the issues identified by both the NRC Report and the National Management Framework Workshop. To ensure that a range of viewpoints and expertise will inform the process and lead to a better set of recreational surveys, the plan seeks to create a dialogue with those most involved and affected by the data, including anglers, state and federal fishery managers, and stock assessment scientists. Execution of this plan is a necessary next step toward meeting the specific requirements and deadlines established for an improved recreational fisheries survey program in the reauthorized MSA.

Objective of Development Plan for Redesigned Survey Program

The objective of the Development Plan is to formulate a system of surveys that provides the best possible scientific information for use in management of the nation’s marine recreational fisheries. The system will be designed to be: 1) flexible so it is capable of being updated, modified, expanded, or contracted to meet specific regional or local informational needs; 2) robust enough to provide the most precise and least biased information possible; and 3) national in scope but regionally specific, recognizing that each region (Atlantic Coast, Gulf Coast, Pacific Coast, Pacific Islands, Alaska, and the Caribbean) has unique informational needs and data collection issues.

The Development Plan is designed to address the NRC report recommendations, as well as informational needs identified by fishery managers, stock assessment scientists, and constituents. While recognizing the need to implement an improved survey system by January 1, 2009, the Development Plan will be executed at a pace that will ensure that redesign efforts are transparent, inclusive, and well-documented.

Dialogue among partner agencies and constituent groups will be facilitated through maintaining a diverse and representative membership in the various committees and working groups. The plan establishes an Executive Steering Committee (ESC) that will take responsibility for establishing and directing teams or workgroups as needed to execute necessary tasks. Initially, the ESC will establish an Operations Team and two working groups – a Design and Analysis Group and a Communications and Education Group.

Executive Steering Committee

The Executive Steering Committee will represent state, federal, and public interests. States will be represented by the Executive Directors of the three interstate fisheries commissions: the Atlantic States Marine Fisheries Commission (ASMFC), the Gulf States Marine Fisheries Commission (GSMFC), and the Pacific States Fisheries Management Commission (PSMFC). Federal interests will be represented by three NOAA Fisheries Service executives, including the Director of the Office of Science and Technology, who will chair the ESC, as well as one Regional Administrator and one Science Center Director. The ESC will also include representation from the Department of Commerce’s constituent advisory body, MAFAC, as well as appropriate executive level representation from the Alaska, Pacific Islands, and Caribbean regions.

The goals of the ESC will be to provide high-level guidance and advice on cross-regional issues, as well as to ensure that the collaborative design of the new system of surveys proceeds in a manner that is consistent with the fundamental policies and general principles of the partner agencies. To ensure that these goals are realized, the ESC will provide advice on program management issues; ensure that the mission, goals, and objectives of the plan match available resources; assist in resolving critical, high-level management issues in a timely manner; approve spending plans; and coordinate and inform all partners about the functions and progress of the redesign efforts. Although the ESC will strive to find a new system design that will meet all of the critical information needs for stock assessments and fishery management, it will also foster the development of optimal contingency plans that can be implemented when and if the resources needed for the full program are not available.

The ESC will initiate the redesign effort as soon as is practical by approving the governance structure. Upon release of the Development Plan to the public, the ESC will establish and assign leadership and membership for an Operations Team and a Communications and Education Group. Once the redesign effort is operational, the ESC will authorize committee and working group leaders to make assignments to members, and review and approve established priorities, project selection, project plans, resource allocations, performance monitoring and progress reporting.

The ESC will assume responsibility for organizing collaborative planning of an integrated state-federal registry program for anglers and for-hire fishing vessels, as mandated in the Magnuson-Stevens Act, that will build and maintain the telephone and address directories needed to support more complete and efficient survey coverage of recreational fishing participants. The ESC will establish additional working groups, as needed, to address this important priority. The ESC will also take responsibility for identifying additional ways to manage a collaborative state-federal recreational fishery statistics program more effectively. The ESC will consider specific program management models recommended by the NRC report, as well as other feasible approaches.

The ESC will establish additional working groups as needed to support the evolving demands of fisheries management and stock assessment. For example, regional working groups may be created to assess the effectiveness of current or new survey programs in meeting informational needs, to evaluate the impacts of recognized or potential biases on stock assessment or management decisions, or to assess the relative advantages and disadvantages of alternative management strategies when the resources needed for more timely and precise surveys become limiting. The ESC will determine whether new workgroups should be subgroups of existing workgroups, or new, independent workgroups.

Operations Team

The ESC will establish the membership of the Operations Team (OT) to assure appropriate regional representation and representation from all stakeholders, including NMFS, state fishery agencies, the interstate marine fisheries commissions, the regional fishery management councils, the fishing industry, non-governmental organizations, and the fishing public.

The goal of the OT will be to ensure that formulation of the new system of surveys adheres to the overall approach described within the Development Plan. The OT will be responsible for providing a leadership role in updating and improving the Development Plan, establishing priorities, project

selection, resource allocation, performance monitoring, and progress reporting of all working groups. In addition, the OT will develop and execute a plan for communications with the ESC and the working groups. It will also coordinate and facilitate a Public Advisory Process (described below). In executing that plan, the OT will facilitate coordination among working groups, as well as promote the collaborative nature of the redesign effort within member organizations.

The tasks and responsibilities assigned to the OT will be carried out through a series of regularly scheduled meetings and conference calls. OT members will be responsible for establishing meeting schedules, preparing meeting agendas, and compiling and distributing meeting minutes. Once leadership and membership are established, the OT's first priority will be to produce a refined version of the Development Plan. The OT will submit the plan for review by the ESC. In addition, the OT will accommodate constituent review of the revised plan by scheduling constituent listening sessions. Based upon ESC and constituent inputs, the OT will revise and finalize the Development Plan.

The OT will also be tasked with defining standard operating procedures for the working groups. Operating procedures will be standardized in a "Terms of Reference Template", which will be used by the working groups to document goals, objectives, scope, operational approach, funding sources, criteria for success, performance metrics, and milestones. For each working group, the OT will determine the main objectives, establish rules of operation, specify the decision-making process, and assign leadership. The OT will also specify how working groups will interact with the OT and each other.

Once working groups have been established, the OT will task each with providing their terms of reference and general work plans. General work plans will include a matrix identifying specific issues to be addressed, priorities assigned, projects proposed to resolve each issue, estimated costs and timelines, and estimated statistical and management policy impacts. The OT will review and approve the general work plans, suggest any necessary changes, and then ask for more detailed project plans. The OT will develop an acquisition and resource allocation plan for selected projects that will include the final, detailed project plans from each working group.

Design and Analysis Group

The Design and Analysis Group (DAG) will be established by the Operations Team to have appropriate expertise and representation of federal and state agency partners, as well as recreational fishery constituents, in all regions. The DAG will be responsible for analyzing current and historical data collection programs, as well as developing new surveys of marine recreational fishing catch and effort. For current and past programs, the DAG will continue the work initiated by NOAA Fisheries S&T to identify potential causes of bias and evaluate the magnitude and direction of any apparent biases. In addition, the group will advise the Operations Team on possible additional work needed to evaluate the relative impacts of known biases on stock assessments and fisheries management decisions. Moving forward, the DAG will design improved sampling and estimation methods that will provide less biased and more precise catch and effort statistics. The DAG will consider both census and sampling approaches in developing the strategic approach for an improved program.

To assess current and past survey programs, the DAG will identify: 1) potential biases that can be examined by existing data, 2) potential biases that cannot be evaluated with existing data, but could be evaluated with new data collected by current surveys, and 3) potential biases that require new data

collection programs for evaluation. To assess biases that can be examined with existing data, the DAG will propose projects to mine historical databases and conduct appropriate analyses. To assess biases that can be evaluated with new data collected by current surveys, the DAG will propose projects to collect and analyze new data. To assess potential biases requiring new data collection projects, the DAG will develop and propose projects to design, test, and implement new approaches to data collection, as well as evaluate resulting data.

Finally, the DAG will identify ways to improve sampling and estimation designs for future surveys to produce more precise and less biased catch and effort statistics. Specifically, the DAG will develop and propose projects to: 1) identify appropriate survey sampling frames to maximize coverage of the study population, minimize over-coverage, and avoid duplication of sampling units; 2) identify appropriate sampling designs, protocols, and quality assurance procedures that would ensure random probability sampling in all surveys; 3) ensure that sample frames, sample selection probabilities, and sampling designs are appropriately accounted for in estimation procedures; 4) verify completeness and accuracy of self-reported data; and 5) measure and account for potential non-response, response, and measurement error in statistical estimation.

The scope of the DAG will include all catch and effort data collection programs that receive funding from NOAA Fisheries. This includes all component surveys of the Marine Recreational Fisheries Statistics Survey (MRFSS) and the For-Hire Survey (FHS), as well as state-specific surveys administered by Pacific RecFIN, and specialized data collection programs such as the Large Pelagics Survey (LPS), the Southeast Headboat Survey (SEHS), and the Northeast Vessel Trip Reporting Program (VTR). A complete list of data collection programs funded by NOAA Fisheries is included as Appendix A

The initial meeting of the DAG will be held as soon as possible after public release of the Development Plan, and the group will first be tasked with submitting a general work plan. The work plan will establish subgroups to work on regionally-specific tasks as needed ; provide a plan for utilizing external consultants or specialized contractors to support project planning, implementation of projects, or evaluations of project findings wherever appropriate; and include a matrix that identifies statistical design and analysis issues raised by the NRC panel and issues identified as stakeholder concerns or needs.

Based upon ESC, OT, and public input, the DAG will determine priorities and produce a detailed work plan, complete with cost estimates and anticipated benefits for each project. The detailed work plan will be submitted for OT approval, and project implementation will start once that approval is obtained.

Communications and Education Group

The Communications and Education Group (CEG) will be established by and report directly to the ESC. The CEG will have appropriate expertise and representation of federal and state agency partners, as well as recreational fishery constituents, in all regions. The CEG will promote communication between and among NOAA Fisheries, partner organizations, and constituents during the survey redesign effort. Specifically, the CEG will coordinate with the ESC, OT, MAFAC, DAG, and other working groups to inform constituents about the development and progress of survey improvement efforts. The CEG will also work to improve communications about recreational fisheries surveys, survey statistics on catch and effort, and the various uses of survey statistics in management, by

establishing a clear strategy and mechanisms for better communications with key audiences, both internal and external. In addition, the CEG will ensure that the documentation of survey designs, limitations, and analysis methods is understandable to constituents and other data users.

The CEG will first produce a general work plan that includes a matrix of issues highlighted by the NRC Report, Denver workshop participants, and constituent feedback. The plan will address regionally-specific issues and establish subgroups as necessary to address these issues. Based upon ESC, OT, and public input, the CEG will identify priorities and produce a detailed project plan that includes cost estimates and anticipated benefits for each project. Following approval of the project plan by ESC, the CEG will begin implementing projects.

Public Advisory Process

Designing the best possible data collection program is a cooperative effort between scientists, managers, and all fishery resource stakeholders. It is imperative that the process provide opportunities for open dialogue about recreational data needs, collection and analysis methodologies, and data uses. There are a variety of ways that an interested citizen can stay informed and add input to the recreational data improvement process. These include the following:

1. Accessing the NOAA *Upgrade of Recreational Fishery Survey Methods* web site. The web site will be updated regularly with progress reports and the latest developments. All documents, reports, meeting minutes, and announcements will be posted on the NMFS website. The website will also provide contact information for NOAA staff who will be available via phone or email to answer questions about the re-design effort. The web site link is:
[http://www.st.nmfs.gov/st1/recreational/Review_Recreational_Survey_Methods/nrc.html]
The email address for providing input and asking questions is recdata@noaa.gov
2. Attending regional public meetings. The goal of these meetings will be to educate the public and provide an opportunity for them to express their thoughts, ideas, and concerns regarding the survey redesign process.
3. Attending committee and work group meetings. All ESC and OT meetings will be advertised and open to the public.
4. Participating in Council and Commission meetings. The recreational data effort will be a regular topic on Council and Commission meeting agendas. Councils and Commissions may also choose to create Advisory Panels or other public bodies charged with staying informed and providing input into the redesign effort.
5. Attending angler club meetings, industry events, trade shows, fishing tournaments, and other venues where experts will be available to address questions about the redesign effort. NOAA Fisheries and the CEG will work with partner organizations to identify appropriate venues to update interested parties on the progress, as well as to collect feedback.

MAFAC: As the Department of Commerce's public advisory body on living marine resources, the MAFAC has been requested to assist the NOAA Fisheries with maximizing constituent input into the process of redesigning the recreational fisheries survey programs by: 1) providing an additional access point for the public to convey its views and participate in the process; 2) utilizing its web page and the professional affiliations and communication networks of its members to keep the recreational

community informed and involved; and 3) through its public deliberation process, advising the agency on key decision points throughout the plan's development and implementation.

Detailed language of MAFAC's role and operations for this project can viewed at www.nmfs.noaa.gov/ocs/mafac . For further information or questions, contact Laurel Bryant, Executive Director, MAFAC, Laurel.Bryant@noaa.gov or Forbes.Darby@noaa.gov , National Recreational Fisheries Coordinator.

Appendix A: Recreational Fishing Data Collection Programs Funded by NOAA Fisheries

• Standard ACCSP and Gulf FIN Surveys

- MRFSS
 - Coastal Household Telephone Survey (CHTS)
 - Intercept Survey of Angler Trips
- For-Hire Survey (FHS)
 - Vessel Directory Telephone Survey
 - Intercept/At-Sea Surveys of Angler Trips

• Other Atlantic & Gulf Surveys

- Large Pelagics Survey (LPS) – VA-ME
 - Vessel Directory Telephone Survey
 - Intercept Survey of Vessel Trips
- Southeast Headboat Survey (SEHS) – NC-TX
- Vessel Trip Reports (VTR) – NE For-Hire Boats

• Pacific RecFIN Surveys

- Washington Ocean Sampling Program
 - On-Site Entrance Count Survey of Vessel Trips
 - Intercept Survey of Vessel Trips
- Washington Puget Sound Sampling Program
 - Angler License Directory Telephone Survey (ALDTS)
 - Intercept Survey of Vessel Trips
- Oregon Recreational Boat Survey (ORBS)
 - On-Site Exit Count Survey of Vessel Trips
 - Intercept Survey of Vessel Trips
- Oregon Shore and Estuary Boat Survey (SEBS)
 - ALDTS
 - Intercept Survey of Angler Trips
- California Recreational Fisheries Surveys (CRFS)
 - Party-Charter Survey (PCS)
 - Vessel Directory Telephone Survey
 - Intercept/At-Sea Surveys of Angler Trips
 - On-Site Private Boat Survey at Primary Sites:
 - Entrance Count Survey of Vessel Trips
 - Intercept Survey of Vessel Trips
 - On-Site Private Boat Survey at Secondary Sites:
 - Roving Count Survey of Vessel Trips
 - Intercept Survey of Angler Trips
 - On-Site Shore Fishing Surveys
 - Roving Count Survey of Anglers Fishing on Man-Made Structures
 - Intercept Surveys of Angler Trips
 - ALDTS – used to estimate effort missed by other surveys

- **Western Pacific Surveys**

- Hawaii Marine Recreational Fishery Survey (HMRFS)
 - Coastal Household Telephone Survey
 - Intercept Survey of Angler Trips
- WPacFIN Surveys in the Pacific Islands