

**Proceedings of
Recreational Fisheries Statistics Requirements
Management Framework Workshop**

6 – 8 September 2006

Denver, CO

The NOAA Fisheries Service (NMFS) convened a three-day workshop on Recreational Fishery Statistics Requirements in Denver, CO from September 5-7, 2006. The main topic of this meeting was to examine and discuss the basic recreational fisheries information needs of fishery managers and stock assessment scientists for the purpose of supporting the development of a new data collection program. The workshop was a collaborative effort among regional fishery managers, stock assessment scientists, and survey statisticians. State and federal agencies, interstate marine fishery commissions, and the Marine Fishery Advisory Committee (MAFAC) sent representatives to this workshop.

Specific objectives of the workshop were to identify and prioritize regional and national information requirements for successful stewardship of resources impacted by recreational fisheries, to review and prioritize possible improvements in the methods used to survey and monitor recreational fisheries catch and effort, including those recommended in a recent review by the National Research Council (NRC), and to identify better ways to coordinate and integrate regional and national statistical survey programs. The workshop also focused on generating ideas for improving communications and collaborative planning among survey managers, stock assessment scientists, fishery managers, and various recreational fishery constituents as we move forward to enhance or re-design the current programs.

To facilitate discussion, workshop participants were divided into three concurrent breakout sessions that discussed the following topics:

- Management and stock assessment practices,
- Data needs for stock assessment and management,
- Methodological improvements,
- Balancing national and regional data requirements,
- Developing an outreach and communication strategy.

The first two topics were addressed by regional groups and the latter three were composed of mixed groups with all regions represented in each session. The attached proceedings provide a summary of the discussions and recommendations of the breakout sessions. Because the management and stock assessment practices and the data needs of these practices are regionally specific, these sessions are summarized by region under each topic heading. The remaining sessions are summarized by breakout session topic. In an attempt to get these proceedings out to all our participants, data users, and constituents as soon as possible so they can be used for discussions and planning of the data collection program revisions, they are necessarily coarse while maintaining the integrity of the actual discussions.

Management and Stock Assessment Practices

Atlantic Region

A white paper submitted by Atlantic States Marine Fisheries Commission (ASMFC) provides a relatively comprehensive view of the Atlantic coast perspective of the current recreational fisheries survey, management and stock assessment information needs not currently being met by existing surveys, as well as costs of obtaining that information.

Currently, most species on the Atlantic coast are managed on either a regional or state-by-state basis. For state-by-state management, each state receives an annual quota that is based upon the most recent stock assessment and the current year's landings. State quotas are generally distributed based upon historical landings. Regulations, which consist of size limits, bag limits and seasonal closures, are either regionally uniform or state-specific and established through conservation equivalency. Some states have water body-specific regulations (e.g., striped bass in Chesapeake Bay). It was widely agreed that there is always a demand for finer resolution (temporal and spatial) data, and that current management practices stretch survey data to manage state quotas.

Many current stock assessment models utilize catch-per-unit-effort (CPUE) as an index for abundance. However, complex and regularly changing regulations are making this index less valuable. Stock assessments are generally conservative and assume 100% discard mortality. Future models should utilize mortality estimates derived through observation and experimentation. However, models should be tested for sensitivity to recreational discard mortality prior to investing in accurate mortality estimates. In addition, future stock assessment processes should have a feedback mechanism for identifying data deficiencies and planning research and monitoring programs.

The group also discussed implementation of new data collection methods; specifically financing data collection. One suggestion was that NMFS cover basic parts of the survey, while local entities pay for finer-scale resolution. This could be accomplished through compatible "plug in modules". This is already occurring in some areas through add-on sampling.

Comments regarding future management and stock assessment practices:

- In-season quota monitoring: While this may be considered, it is unlikely to be implemented within the next several years.
- Forecasting: Both management and stock assessment may consider climate change, population trends, etc and try to forecast future conditions.
- Ecosystem-based approaches to management and assessment: Focus will shift from high-profile species to entire fish communities.
- It is unlikely that industry would support separation of for-hire modes from the recreational sector for management purposes.
- Possible consideration of subsistence fishing as separate category.
- Stock assessments will continue to place more and more importance on unobserved catch.

Gulf of Mexico Region

It was widely agreed that managers and stock assessment scientists need robust, reliable and timely information at a fine resolution to confidently make management decisions. The soundness of any data collection program, including the current Marine Recreational Fisheries Statistics Survey (MRFSS) program, needs to be statistically verified. This verification should include periodic testing of assumptions and potential biases.

Comments regarding current and future management and stock assessment practices:

- Current stock assessment models should include ALL data from the previous year.
- Future management practices may utilize finer geographic scales.
- In-season quota monitoring is needed.
- There should be separate allocations between the recreational and for-hire sectors.
- Mandatory logbook reporting for the for-hire sector. Where possible, logbook reporting should utilize advances in technology (electronic reporting).
- Management measures may include gear restrictions, area closures, limited entry fisheries, temporal closures within a week.
- Stock assessment models will shift to ecosystem approaches.
- Stock assessment models will require more detailed information on angler behavior, specific fishing location and depth, gear type, fishing techniques, hook type, habitat.
- Stock assessment will require better discard information and better information on stock identification.

Pacific Region

It was agreed that data collection programs must be useful for regional management and stock assessment needs, and must not be overshadowed by a demand for a national data collection program. Management and stock assessment practices utilize total catch, including landings and released catch, as well as measures of discard mortality. Potential biases associated with these measures must be understood. Current or increased regional sampling levels are needed to support management and stock assessment demands.

Comments regarding current and future management and stock assessment practices:

- Current management practices utilize in-season quota monitoring. Fisheries are shut down once quotas are reached.
- Future management may focus on finer geographic scales.
- Future management measures may need to track behaviors of individual fishing vessels (e.g., Individual Fishing Quotas, or IFQs).
- Area closures are currently utilized. Many are imposed for non-fishery reasons.
- Compatibility between data reporting units and management units. Currently use average weight to translate catch numbers into catch weight. This adds uncertainty into the in-season monitoring process.
- Some stock assessment models utilize CPUE as index of abundance.

- Future management and stock assessment measures may utilize ecosystem-based approaches.

Data Needs

Atlantic Region

The primary data needs in the Atlantic Region are for unbiased, state-specific, annual estimates of effort, landings, discards, and participation. Annual estimates should be species-specific and based upon the fishing year, rather than the calendar year. The ultimate data need will reflect the most demanding requirement, regardless of whether it is a management need or a stock assessment need.

It was acknowledged that fixing the problems associated with recreational data collection programs will not resolve all fisheries management and stock assessment problems. These processes rely on data inputs from multiple sources, and there are tradeoffs between allocating more resources to recreational data collection programs and allocating resources to other data collection programs (e.g., observer programs, fishery independent program). The decision to improve the accuracy (bias and precision) of recreational fishing statistics should be situation specific and based upon cost-benefit analyses considering all data inputs into management and stock assessment processes. For example, improving recreational landings estimates may not benefit a stock assessment that suffers from incomplete or imprecise observer data. An integrated process that includes input from data collectors, scientists, and managers should be formed to address such issues.

Specific needs include the following:

- Size composition of catch, including all fishing modes, species and catch types (both landings and discards). It is uncertain as to whether at-sea data collection on headboats satisfies stock assessment needs.
- Collection of more biological data, including aging structures for development of age/length keys, as well as tissue for DNA analysis to identify stocks.
- Better measures of discard mortality, which may include special studies to assess discard mortality, or adding new disposition codes to more specifically reflect the condition of released catch.
- Better participation estimates that are additive across states.
- More timely final estimates. Current final estimates are available in April or May. Management would benefit by having final estimates available in March.
- Annual estimates including all waves.
- Finer temporal resolution (e.g., 1-month waves) would limit the extent to which projections are used for developing new management measures. In addition, this would increase the feasibility of moving toward in-season adjustments.
- More frequent collection of socio-economic data.
- Improved methods for contacting small charters (guide boats), which are likely being missed in intercept survey.
- More precise state-level estimates for all species. Eventually may need even finer levels of geographic stratification (bays, upstream rivers).
- Unbiased estimates of uncertainty (precision).
- Improved QA/QC of intercept sampling.

- Information about fishing methods.
- More specific information about fishing areas (Atlantic Coastal Cooperative Statistics Program (ACCSP) standards).

Gulf of Mexico Region

General needs for the Gulf of Mexico Region include robust, reliable, and timely information at a finer resolution in order to make confident management decisions. At a minimum, the spatial scale of data collection should match the management scale. Estimates should be statistically sound and verified through independent observation or parallel data collection efforts, and all assumptions and potential sources of bias, such as night and private access fishing, should be tested.

Specific needs include the following:

- More timely delivery of annual estimates, sometime between January and March.
- Finer temporal resolution (1-month waves).
- Weekly effort estimates for for-hire sector, as well as a separate survey for shot-period recall of catch rate. Electronic reporting for the for-hire sector would facilitate more timely reporting. More timely estimates for for-hire sector would support in-season quota monitoring and/or IFQ.
- More size data, including both lengths and weights, within all sample cells. Mean weights calculated and reported by data collectors and scientists should be consistent.
- More detailed trip information, such as specific locations fished, location of catch, depth of catch, target species, habitat fished, and type of fishing (trolling, bottom, fishing, etc.). This could be facilitated by allowing survey respondents to identify fishing locations on maps.
- Better estimates of discarded catch, as well as estimates of discard mortality and the size distribution of discards. With limited exceptions (at-sea sampling on headboats), the identification and number of discards are reported by anglers. This self-reported information needs to be independently verified. There is also a need for more detailed information about the disposition of discarded catch, depth of catch, and gear types used. Independent tagging studies are needed to assess discard mortality.
- Current data gaps or areas of undercoverage include night fishing, private access fishing, tournaments, guide boat fishing, invertebrate fishing, fishing for highly migratory species, biological sampling (aging structures), non-traditional gear fishing.

Pacific Region

It was reiterated that data must be useful on a regional scale and not be overshadowed by a national data collection program. Current or increased sampling levels with accompanying funding are required to achieve data needs. All data should be collected at resolutions sufficient to meet management needs.

The importance of thorough documentation was stressed. Documentation should include specifics about the survey design, as well as discussion about the limitations of survey data.

Documentation should include the estimation programs, detailed descriptions of file structures and analysis methods, and information about data availability and the frequency at which data are updated.

Data needs were categorized by survey type. Specific data needs were identified for trip-level data (catch and effort), angler-level data, vessel data, and access-site data. Socio-economic data is needed within each of these categories and included as such. The need for community-level socio-economic data is also needed to assess community dependence on recreational fishing.

Specific needs include the following:

Trip-level data

- Detailed information about areas fished, as well as areas in which fish were caught (by species). Detailed information would include information about depth of catch for each species, duration of trips (hours fished) for each target species, and whether or not fishing occurred near marine protected areas.
- Port of departure/return.
- Species landed by mode and gear type.
- Lengths and weights of landed species, as well as discards.
- Accurate discard information including species identification, numbers and size of discarded fish, and a description of how fish were released (was some sort of device used to release the fish or return them to the bottom?).
- Interactions with non-fish species such as marine mammals, sea turtles, birds, corals, etc.
- Fish gender.
- Tournament fishing, as well as tournament type.
- Increased sampling to capture pulse fisheries.
- Trip expenditures, including airfare, hotel, charter fees, and other costs including fuel, tackle, ice, etc.

Angler-level data

- Residence information including country, state, county and zip code of residence. Mailing address and telephone number should be collected where possible, as well as information about cell phone use (identify cell phone-only anglers) and internet access.
- License-type or exemption.
- Fishing avidity, membership in angler clubs, and any other information about fishing expertise.
- Demographic data, including age, income, ethnicity, education, occupation, employment, gender, etc.).

Vessel data

- Census data is needed for the for-hire sector for purposes of tracking vessel histories.
- Owner and operator information.
- Vessel capacity and number of clients.
- Number of crew.

- Fishing/non-fishing activities throughout the year.
- Costs and revenues
- Census data would include the information captured under “trip-level data”

Access-site data

- Comprehensive list of fishing access sites.
- Up-to-date matrix of fishing pressure
- Information about accessibility to samplers.
- Information about types of fishing, including night fishing.
- Site amenities, including presence of bathrooms, launch ramps, bait shops, parking, etc.

Pacific Islands Region

In the Pacific Islands Region (PIR) local and regional management needs should be the paramount focus of any data collection program and the resulting data should be in a format that can also serve the national requirements. The statistical issues of the present survey should be addressed, and data collected through the Hawaii Marine Recreational Fishing Survey (HMRFS) during 2002-present should be re-evaluated and/or estimated to be of use to Hawaii managers. In Hawaii, it is important that our data collection program be reliable and robust enough to be useful for multi-gear, multi-species fisheries and have a resolution that allows for fisheries management at the island level.

- It is believed that a “longitudinal” or “panel” sampling technique for the Coastal Household Telephone Survey will increase cost efficiency and overall precision of estimates. Local control would further improve response and efficiency due to the range of dialects in Hawaii.
- Data needs to be made available to stock assessment biologists and fisheries managers in a timely manner and uniform format.
- Greater geographical stratification is required to allow for analyses in keeping with local and regional management demands.
- Future management and stock assessment measures will require information on the specific gear types and areas.
- There is a need to develop separate estimates for “pure” recreational fishers and recreational expense fishers.

Methodological Improvements

Following the discussions of management and assessment practices likely to drive the need for recreational fishery data, and what those data needs would be, the breakout groups reformed into cross-regional, cross-discipline groups to discuss methodological improvements to collect the desired data. These discussions built on, and may have reiterated, the actual data needs, while proposing methods to collect the data. The proposed methods include modifications to existing surveys, methods to evaluate current data and estimates for potential biases, and new methods to produce the estimates currently used. The groups identified several overall 'themes' in these discussions and tackled some very specific methods for specific data collection.

Overall Concerns:

Standardize at regional level.

Be careful that changes don't result in comparing apples and oranges (between states or regions).

All improvements must be regionally based.

Collection time frames are variable for different needs

Adjusting sampling efforts to account/adjust for higher spatial resolution (Species specific)

Benchmarking is necessary (per the ACCSP and Gulf Fishery Information Network (GulfFIN) standards).

Include fishing community in all discussions.

Potential Improvements to existing programs.

Fixing bias can be expensive. If the bias is small and uniform there may not be a need to eliminate it because a trend can still be quantified and the trend may be more important to fishery management. Have a national workshop to assess needs vs. availability under existing programs (gap analysis). Look at getting the best bang-for-the-buck (i.e., efficient use of financial and personnel resources to guide priority modifications).

Look at untested assumptions.

Look at quantifiable data and determine what studies have been done already and assess the current knowledge. If bias can be assessed with currently available data, is correction necessary in estimation? Can bias be eliminated through survey sampling modifications? Study these issues every few years; there may not be a need to sample every year.

Data needs identified as priorities for bias examination and / or reduction:

Private access may be the largest source of bias. A variety of ways to answer the question of bias and test the assumptions were identified. Private access – log book or other method to study issue. California is studying this issue. Potential methods include: Empanel a group of anglers, 'capture' them at fuel dock, weekly call/recall, or personal visits. Because Hawaii has limited number of private access sites, is there good potential for a pilot study?

Discarded catch – 1) number of fish (easier to get), 2) species identification and size, or size distribution, of fish (difficult – need direct observations by trained staff) and 3) post release mortality (independent studies).

Night fishing needs to be looked at as another assumption, but previous studies exist and suggest that may be a small source of bias (Gulf of Mexico). This topic was not identified as an issue on the Pacific mainland coast, but may be in Hawaii and in some regions on the Atlantic Coast.

Potential methods for improved / additional data collection:

Discarded fish, size reporting methods: video monitoring; punch cards; personal observations (for-hire).

Longitudinal panel of private anglers (shore and boat) – Important priority for Atlantic Coast and Pacific Islands b/c angler registry may be years off. Understand the appropriate role of panels and be wary of bias.

- Logbook reporting (mandatory?)

- Recruiting active participants (representative?)

- Credibility and buy-in (angler provided, but must be verified)

Collect info from enforcement actions (frequency of violations, sizes, etc).

Stratify for-hire industry and use separate (from private boat & shore anglers) methods:

- Vessel monitoring/electronic log books

- Independent verification needed and possible here

- Better frame for guide/small boats (identify and additional stratification)

- Survey states for their current registration requirements

- Mandatory trip reports (includes participation in all survey methods for data collection)

Independent verification of self-reported data stream (primarily effort reporting):

- Remote sensing of effort

- Could be met using angler panels plus intercept

- Dual frame on effort

- Effort trends vs. business trends (e.g., Industry cash register data; fishing tackle sales; fuel sales; bait sales) – can they be correlated to support survey effort estimates?

Angler registries

- Difficulties?

 - Compliance / Enforcement

 - Exceptions

 - Inherent biases (saltwater designation?)

- Recognize regional differences

- Validate state by state against RDD?

- Technical committee to identify strengths and weaknesses of registries.

Modifications to Household Telephone Survey (fishing effort):

- Current dialing zone – are coastal counties enough? Assess statistical validity of collecting non-coastal effort from intercept survey

- Obtain number of telephone lines in households (bias)

Sample weighting of intercept data (potential bias)
Identify cell-phone only households (separate from no telephone household?) in intercept survey to adjust household survey effort

Improving credibility of intercept survey

Negative perceptions:

Distribution of intercepts doesn't match effort distribution
Distribution of intercepts not random – trips with catch sampled more often

Suggested Improvements:

Stratification within states (e.g., FL, Keys within FL, NC, LA)
Improved fishing location information
Conservation equivalency – estimate matching management (regional aggregation vs. state level)
Increasing sample sizes
Improving field staff credibility/training/demeanor
Use state personnel to conduct interviews (cost and willingness to participate)
Use a uniform for an official look contributing to credibility
Using the field sampler as the front line liaison to the community
Increase contractor contact with state and NMFS personnel
Anadromous fish range coverage – improvements in upstream sampling
More detailed trip-level information – species targeting

For in-season quota monitoring:

Weekly reporting – e.g., salmon on Pacific coast – genetic stock ID pilot study
License frame, for-hire list sampling for effort; boat counts (Pacific coast)
Technology – electronic data capture for improved timeliness
Need flexible time scales for species-specific fishing years.
Increase sample size to accommodate finer time-scale estimates.
Use improvements in technology to better capture fish size information and increase sample sizes.

Use Pilot studies:

Dual frame analyses
Email frame/web panel
Wave 1 Sampling on Atlantic Coast, north of FL
Analytical approaches to finer-scale coverage/stratification – possible regression techniques, or models.

National and Regional Requirements

One of the basic recommendations of the NRC called for a greater degree of standardization among surveys, both state and federal. The common interpretation of this recommendation is that all recreational data collections should meet some basic standards with respect to information collected and outputs from the programs. It does not mean that the same methodologies should be used everywhere. Regional requirements for information needs take precedence and collection approaches need to take into consideration unique aspects of the regional fisheries. The bottom line is that surveys need to produce unbiased estimates of catch, effort, and participation. These estimates should be additive to allow production of national-level statistics. This necessarily means that where collections or surveys overlap that sufficient information is collected to allow a breakdown of the estimates so as to avoid overestimation.

National Needs

Catch – by species - units: numbers, weight, by state/federal waters, by mode (have for all states but TX, Commonwealth, territories; Texas has partial harvest); also disposition.

Landings (weight and number of fish)

Number released (dead / alive)

Effort – number of angler-trips

Participation – number of fishermen – resident, non-resident (currently not able to aggregate non-resident anglers)

- All statistical estimates need associated error estimates computed and reported (e.g., variance, Coefficient of Variation)

- All by fishing mode (shore, private boat, for-hire boat) and inland, coastal ocean (State Territorial Sea), federal ocean (Exclusive Economic Zone).

- Needed to fulfill information requests (Congress, etc.) and to publish *Fisheries of the United States* and other reports

- Influences priority setting of recreational fisheries issues vs. other issues

- Common definitions across regions (e.g., resident, “day”)

- Atlantic Highly Migratory Species (HMS) information needed at cross-regional level for management purposes

- Current incomplete coverage of all regions (e.g., no data for USVI) – need coverage

Economic Value / impacts

Site registry – accurate and complete list of all public-access fishing sites (sample frame)

Protected Resources/Endangered Species bycatch in recreational fisheries and marine mammal interactions with recreational fisheries

Socio-economic data nationwide:

Number of jobs supported

Expenditures

Economic impact (income and employment effects)

Cultural value of fishing access?

Community impacts: Gulf of Mexico currently most complete

Vessels (for-hire, private) lists (for-hire nearly complete in all regions)

Regional Needs / Priorities

All regions

Statistical issues: impact of site weighting in catch estimation on catches and CVs.

Need to align intercept survey distribution with effort survey distribution.

Needs to be more in tune to management need: may require more precise, more frequent, more spatially defined data & estimation.

Regions differ in survey requirements.

Within region needs to meet regional needs?

Need agreement on minimum data elements, procedures, timeliness of data availability, and QA/QC

Survey design may be necessarily different for certain states based on management regimes and legislative and budget constraints

Economies of scale – the more surveys differ within a region, the less efficient the standardization process

Not all states sample all modes in all years and may use recent historical data as proxy

Developing estimates across states that reflect similar level of precaution (e.g., discard mortality)

Ensure ability to estimate CPUE for stock assessment in similar manner across states (e.g., in cases where target strategy changes over course of trip, may need data on hours fished by strategy)

Biological samples needed throughout range of the individual stock

Individual Regional Needs

Pacific priorities

- Discards (primarily private vessel issue - question on whether one can extrapolate from data collected in the Commercial Passenger Fishing Vessel (CPFV) fishery); also need mortality rates
- night fishing not a priority
- private access (working on this issue)
- CA license to be completed (not a priority)
- Exempted persons for license frame (children, seniors); note that their catch rate is being included but effort is not being completely included
- Improving timeliness of stock assessments

Western Pacific (Hawaiian Islands)

- island-level stratification and estimation
- night fishing
- sampling frame: national registry would help in HI but cooperation would be problematic
- remote and private access issue is unknown. A pilot study on Oahu is possible.
- Pelagics and bottomfish need improved precision
- subsistence fishing and cultural value of fishing
- discards
- local control over phone survey

Gulf of Mexico

- private access major issue
- HMS
- Discards
- Implementation of recreational fishing license sample frame
- Exemptions, differences across states
- nightfishing
- coordination with Atlantic data elements
- FL needs estimates on finer spatial scale
- Need better guideboat coverage

Caribbean:

- need sampling in USVI
- control over phone survey

Atlantic

- private access major issue
- HMS (south of NC)
- Discards
- Implementation of recreational fishing license sample frame
- Exemptions, differences across states
- nightfishing
- coordination with Gulf data elements
- Need better guideboat coverage
- Wave 1 coverage, where appropriate
- TX: lack of discards, periodically sample shore

Several means to ensure that national and regional/state needs are met:

- Increased funding and rational (equitable) allocation of survey resources
- Common set of goals/guidelines/timelines
- Communication
- Coordination among states and regional/national agencies
- Cooperation
- Periodic review with examination of methods

Outreach

Fishery management, and supporting assessments and data collection programs, is often viewed skeptically by those impacted by government decisions. In the context of this workshop and the recent review of the recreational fisheries data collection program the approach used by the NMFS is two-pronged. First, program problems will be addressed in an open and transparent manner, and second, perception issues will be dealt with through improved communications with all fishing interests.

For these sessions the groups were tasked with discussing topics including what the perception issues are, how can we re-shape the negative perceptions, what are appropriate methods for outreach efforts, and who should be involved in these efforts. Overall, the theme of all the responses was inclusion of everyone with interest in the entire process of reviewing, developing and revising the data collection programs, transparency of all proceedings, and dissemination of results and supporting educational materials.

General comments on perception of recreational fishery issues and surveys

Commercial fishers perceive that recreational anglers are getting an advantage in allocation because they are not penalized for overages. Some commercial fisheries are penalized with lower landings in subsequent fishing seasons.

Contra-indicators to survey data: e.g., bait sales, tackle sales, fuel sales. The perceived correlation between these indicators and fishing effort forms the basis of industry's evaluation of fishing effort and success. Study and develop a correlation index, if possible, between fisheries data and appropriate business indicators.

Stakeholders want to see specific responses to the NRC study and know how they will be involved. Survey problems should be acknowledged, and corrective actions taken, but the parts that work should be retained. Explain limitations of the data expansion and estimation routines (e.g., rare events) related to the survey design. The recommended national registry needs to be tied to outreach to explain what is to be gained from creation and use of a registry.

Several participants stressed the importance of finding additional funds to support the identified program improvement needs.

Key stakeholders and grass roots

Inclusion – constituents need to observe / participate in this process to understand – they need to be involved at all steps of the process for it to have credibility. Utilize industry to “ground truth” estimates.

It was suggested that a MAFAC-established working group can be the first step in the process of engaging anglers. Members include key fishing industry representatives and the regional Fishery Commission directors. The inclusion of representatives from regions that are under-represented

was discussed. The working group will work with regional Councils, NOAA coordinators, and state representatives.

Key stakeholders are crucial elements in any communication strategy. Work with the key stakeholders and constituent representatives to include and inform all folks.

Regional outreach is necessary – not a national plan. There is a need to customize to meet regional needs.

The surveys ask for some sensitive data. Survey staff need to spend time explaining why these data are needed and why they are important.

Involve anglers and organizations directly in data collection – make them part of the program. Ownership of the survey – participation in a program leads to understanding and support.

Weather – People remember severe, short-term events and extrapolate such events to the entire wave. Study methods for weather indicator inclusion or adjustments to effort estimates, if appropriate. Include detailed explanation of how weather is inherently included in any frame-expansion estimate of fishing effort and potential recall bias.

Several survey conduct topics were discussed. These included alternatives to telephone surveys for collecting effort information, the use of state personnel to conduct telephone surveys, and why fishery catch information is not collected by the telephone surveys. All of these are good topics for future public education campaigns and consideration in program design.

Outreach with States

Have to work with the states individually, and early on, to craft approaches. Work with states and councils to provide info directly to constituents – public affairs offices all have good contacts. Invite state agencies to send outreach specialists to our meetings

Use other successful natural resource agency outreach programs as models for development of an outreach program for our data collection programs.

Field Interviewers

Inform field staff – front-line contact with anglers – they are / can be our voice – they give the first impression and establish or destroy credibility. Hold workshops with contractor staff and state agency staff – work together to support program – train field staff on responding to many angler questions – contact and feedback. Use field staff to obtain angler concerns and feed that back to managers – what are current issues.

Need an information flow from anglers to field staff to managers and program staff and feedback to anglers. When interviewers are in the field, they get asked questions that aren't just survey-related (fluke limits, dogfish, etc.). Interviewers should have materials (FAQs, websites) that can

help them with those issues, and be trained to refer the people to the appropriate contact (state or federal) in a non-awkward way.

Getting the Message Out

Results of the surveys need to be better publicized – disseminate outcomes and information.

The recreational fishery data collection program should have a full-time outreach coordinator / staff and include collaborative work with constituent affairs. They need to use people with outreach and communications expertise, not scientists, to craft outreach.

Constituents may have trouble getting to many meetings, and financial resources are not unlimited – use existing meetings and gatherings to communicate the response to the NRC study. Town hall format for public comment piggy-backed onto other meetings (e.g., GMFMC) is suggested.

Use the Internet to get the word out, including a website for public communication of the NRC response process by NMFS:

Provide links to partner agencies on the recreational fisheries survey web site

Involve Sea Grant and the Assoc. of Fish and Wildlife Agencies – their expertise in information dissemination and outreach should be transferable to our needs.

Outdoor writers – provide information for public dissemination / inclusion in articles.