



NOAA FISHERIES

Southeast Fisheries Science Center

Data Collection and Management Program Review

Southeast Fisheries Science Center Summary and Response

August 2013

Introduction

On June 3-5, 2013, the Southeast Fisheries Science Center (SEFSC) hosted a panel of experts to conduct a peer review of the data collection and data management programs that feed assessments and scientific advice for stocks managed under the Magnuson-Stevens Act. This review was the first of a series of annual reviews, conducted on a different theme each year over a five-year cycle, designed to obtain expert input on opportunities to improve the quality of science products and scientific advice delivered by the SEFSC. Results from this year's review, along with those being conducted at each of the other five fishery science centers and the Office of Science and Technology, will be used to prepare a national summary, to highlight best practices and to inform decisions on opportunities for improving data collection and data management programs across NOAA Fisheries. More information regarding the SEFSC review may be found at:

<http://www.sefsc.noaa.gov/spr/sefsc-science-program-review.html>

Acknowledgements

It seems fitting to begin with a few words of appreciation. First, thanks go to the review panelists who devoted a significant amount of time to prepare for and participate in this review. Their observations are invaluable in providing a feedback on how our data programs are faring relative to our goals and objectives. Similarly, their recommendations provide an opportunity to refine these programs to improve their effectiveness and efficiency. Panelists for this review were:

- Cecil Jennings (Chair), US Geological Survey/University of Georgia
- Robert Ahrens, University of Florida
- Andrew Cooper, Simon Fraser University, British Columbia, Canada
- Wendy Gabriel, NOAA Fisheries – Northeast Fisheries Science Center
- Mark Monaco, NOAA Ocean Service – Center for Coastal Monitoring and Assessment

Our data collection partners in the states, the Virgin Islands and Puerto Rico, the interstate commissions, and academia collaborated on presentations made during the review, which was essential in helping us portray the rich collaborations we've built together over the years. Many of these partners made the trip to join us for the review.

Several of our management partners, the key users of our science products and scientific advice, also joined us for the review. This created an opportunity for them to offer their unique perspective on our programs and for them to get a broad overview of our data collection efforts, providing context for how their issues fit into the broader whole.

Finally, I'd like to thank the constituents who attended. Their insights and questions were informative for the reviewers, but also for SEFSC staff as we strive to improve our science and how we communicate about it.

Remarks

High quality and timely data inputs are a prerequisite for a scientifically sound stock assessment, making this review on data collection and data management programs a logical starting place for our five-year cycle of reviews. At the same time, the scope of the review was daunting. Stocks managed under the Magnuson-Stevens Act within the southeastern United States are diverse, and they dwell in an equally diverse range of habitats over their respective life histories. Sampling strategies within the region reflect this diversity, making the preparation for and conduct of this review challenging, but well worth the effort. The review panelists' reports yielded some excellent observations and recommendations to improve our data collection and management programs.

As a first step, a meta-analysis of the challenges and the recommendations identified by the panelists was conducted to enable us to look for common themes, or unique observations among the reviewers (Appendix A). SEFSC staff will continue to study the panelists' reports to evaluate potential costs and benefits of the recommendations. This will help guide a focused effort to prioritize and ultimately implement the recommendations deemed to have the highest return on the investment. Meantime, some recommendations stand out as particularly germane.

Panelists universally recognized the importance of having a sound strategy for priority setting to ensure the data collection efforts remain focused on high-impact work. This is especially true in an environment of static or shrinking budgets.

The recommendation to make better use of the assessment and peer review reports from the Southeast Data, Assessment and Review (SEDAR) process is a good one. The assessment reports provide sensitivity analyses on data inputs which are informative in evaluating how the various inputs stack up in terms of their relative contribution to the precision of the estimate. Likewise, assessment reports include a list of research priorities, augmentations to existing data collections or altogether new surveys, which could strengthen the subject stock assessment. This information is valuable for setting priorities for data collection within a given stock assessment, and for making decisions among competing demands among assessments or geographic areas.

Exploiting the benefits of electronic monitoring and electronic reporting came up in the discussions and was mentioned in the reports. The SEFSC has made some good progress on moving to electronic reporting, and recognizes that more gains in the timeliness and quality of our data can be realized by continuing investments in this area.

Another common theme was that the quantity and maturity data collections in the Caribbean lagged behind those of the Gulf of Mexico and South Atlantic areas. NOAA Fisheries recognizes this is true of programs for the Caribbean and also the Pacific Islands. The FY14 President's Budget includes an initiative to improve data collections in these insular areas.

Investments to support biological sample processing to keep pace with data demands of stock assessment scientists was another area highlighted in the report. In the same vein, a need for investments to bolster data management staffing and infrastructure was viewed as critical.

During one of the public comment periods, a constituent reminded us of the importance of catalyzing the evolution toward ecosystem approaches to management in the region. Strengthening our capacity for process studies must have a seat at the table when priorities are set for at-sea data collections.

Throughout the review, it was abundantly clear what a critical role our collection partnerships play in the success of our data collection programs. At least one reviewer rightly pointed out that an adequate flow of resources and strong planning and communications are required to maintain these collaborations for them to remain one of our greatest strengths.

We will watch with interest the outcomes of the remaining reviews to be conducted this fiscal year and look forward to the national synthesis of those results. The synthesis of findings and recommendations from across the science enterprise and development of best practices will provide powerful guidance for improving the data collections feeding stock assessments in this region.

Appendix A

Summary of Challenges and Recommendations

Fishery-dependent Sampling	
Comments	x of 5 Commenters
CHALLENGES	
Lack of ability to track changes in catchability to generate unbiased CPUE trends	2
Self-reported data with inadequate ground truthing	2
Low observer coverage	2
Coarse spatial resolution of MRIP	1
Uncertainty in effort estimates	1
Increased recreational intercept rates	1
Texas' departure from MRIP protocols	3
Caribbean is underserved in commercial and recreational catch monitoring	3
Time lag in incorporating data into assessments	1
Lack of recreational sampling in Virgin Islands	1
RECOMMENDATIONS	
Collaborate more closely with Texas on recreational sampling and estimation	3
Estimate bias of self-reported discards using comparisons with observer data	4
Establish data collection to monitor changes in catchability; perhaps in form of a fleet-wide survey on changes in gear and fishing practices done periodically, or incorporate questions into current surveys	2
Increase observer coverage everywhere (especially in SA)	3
Landings and discards from recreational fleet must be better measured	1
Bycatch estimation requires more attention	1
Continue investments in electronic reporting to improve timeliness and facilitate data validation	4
Improve dockside validation of commercial landings for Caribbean	1

Fishery-dependent Sampling	
Comments	x of 5 Commenters
Use simulation evaluation to quantify impact of bycatch estimate uncertainty to determine required sampling levels for observers	1
As improvements in commercial sampling in Caribbean are made, conduct an analysis of relative importance of recreational data collections to optimize relative investments in each	3
Analyze bycatch estimate CVs against cost of observer coverage to increase them and a sensitivity analysis in the assessment models to enable a cost-benefit analysis	1
Consider one, consolidated at-sea data entry program for all observer programs to gain efficiency	1
Consider an adaptive sampling plan to account for in-season effort shifts for observer program rather than relying exclusively on historic fishing patterns to set coverage	1
Improve spatial resolution of sampling	1

Fishery-independent Sampling	
Comment	x of 5 Commenters
CHALLENGES	
Limited ship time	1
Some departure from standards by state partners	1
Lack of benthic habitat maps	4
Lack of net mensuration for trawl surveys	2
Long sample processing time - video	1
Limited geographic coverage for some surveys	2
Caribbean and South Atlantic underserved	2
Gaps in habitats sampled	1
Geographic scope of Florida panhandle seagrass trawls may limit data utility	2
RECOMMENDATIONS	
Consider reducing temporal resolution to enable expanded spatial resolution, provided analysis shows this is a net benefit	2
High priority to generate fishery-independent indices of abundance	1
Summarize how each current fishery-independent survey is used in stock assessments	1
Revisit SEAMAP surveys to ensure they focus on priority stocks, or if not, do them less frequently to use savings on other surveys	2
Concurs that video sampling should not replace trap sampling without adequately addressing potential bias and calibration between gears	1
Improving Fishery independent sampling in Caribbean may be a higher priority than improving fishery-dependent sampling there.	1
Increase resources expended on estimating natural mortality	1
Habitat characterization in all regions must be increased	3
Ensure we're collecting the data necessary (e.g., diet, environmental) to allow estimates of relative changes in natural mortality over time	1
Collect diet data to enable eventual multi-species assessments and ecosystems questions	3
Maintain or increase funding for process-oriented studies that improve assessments	3

Fishery-independent Sampling	
Comment	x of 5 Commenters
Increase fishery-independent sampling for use in indices of abundance (So.Atlantic and Caribbean)	2
Redirect some of the South Atlantic trap effort into surveying for new sampling locations	2
Formalize sampling protocol manual for video trap survey	1
Explore potential of shifting to sampling regime that allows absolute abundance rather than relative abundance indices using cameras and acoustics	1
Ensure MARMAP and SEAMAP sampling in the South Atlantic is at a resolution and geographic scope that is adequate for stock assessments	1
Continue work on sampling methodologies for untrawlable habitats	3
Study larval survey sampling protocols to ensure they are unbiased	2
Employ net mensuration on trawl surveys and piggy back acoustic sampling to gain additional data valuable in interpreting the data	2
Continue to invest in electronic reporting for fishery-independent sampling on federal and partner cruises	2
Expand benthic habitat mapping to improve fishery-independent sampling precision	1
Improve spatial resolution of sampling	1

Biological Sampling	
Comments	X of 5 Commenters
CHALLENGES	
Insufficient staffing	3
Dependency on extra mural funding	1
Long sample processing time	1
Inadequate reproductive sampling	1
Inadequate bio sampling in Caribbean	1
Inadequate sampling in general weakens stock assessments	1
Inadequate bio sampling of discards	1
Inadequate bio sampling impacts ability to apply ecosystem approaches - e.g. quantify impacts of climate change	1
RECOMMENDATIONS	
Increase resources for collection and processing of biological samples.	1
Use simulation evaluation methods to set sample size targets for biological sampling for both fishery-independent and fishery-dependent sampling	2
Increase biological sampling in Caribbean to enable more sophisticated assessments	1
Incorporate diet studies to understand predation mortality	1
Imbalance in ratio of FTE to contract staff processing biological samples	1

Data Management	
Comments	X of 5 Commenters
CHALLENGES	
Ratio of contractors to FTEs controlling the data is too high	2
Inadequate staffing levels	1
Reliance on state and territorial partners	1
RECOMMENDATIONS	
Need staff specifically dedicated to data management rather than having biologist/s assessment scientists do this work	1
Shift to higher percentage of FTEs managing the data	2
Better data standards and coordination among partners	1
Ensure all data are adequately backed up, especially the videos	1
More resources needed for both staff and infrastructure	2
Invest in aggressive training programs for current and new IT staff to improve and maintain capabilities	1
Invest in IT infrastructure	1
Collaborate on governance systems for fishery-dependent data collections across the Center and partners	1

Cross-cutting Issues	
Comments	X of 5 Commenters
RECOMMENDATIONS	
Use SEDAR sensitivity runs to determine what surveys are contributing most to precision	4
Perform meta-analysis of all research recommendations from SEDARs and track which were implemented	1
Perform simulation-estimation exercises to examine contribution of data sources to accuracy and precision	4
Need strong objectives to set priorities for what gets fixed first for both precision and timeliness	1
Create a flow chart, similar to a Gantt chart to explore how increased or decreased timing of one data collection or data processing influences timing of a stock assessment	1
Seek solutions to long-standing issues in Caribbean	4