

FISHERIES

Leadership & Sustainability

FORUM

East Coast Forum Summary and Guide to Additional Resources

Topic: Catch Accounting and Monitoring

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The Fisheries Leadership & Sustainability Forum (“Fisheries Forum”), a joint initiative among four of the nation's leading academic and policy institutions, promotes professional development and continuing education by bringing together fishery managers and experts from a range of disciplines. The Fisheries Forum offers fishery managers opportunities to share experiences, build leadership skills, and enhance their understanding of fisheries law, policy, science, and economics. The semi-annual forums are the cornerstone of the Fisheries Forum and provide members of the regional fishery management councils with access to the latest research and an opportunity to discuss challenges and share success stories across regions. Each interactive forum is developed and led by faculty and staff from Duke and Stanford Universities in conjunction with leading experts from a range of disciplines. The forums focus on learning from experience and applying knowledge and problem solving skills to real world challenges.

For more information about the forums and to view material from past forums, please visit the [Fisheries Forum website](#).

Introduction

The 2011 East Coast Forum explored the topic of data collection and monitoring, with an emphasis on catch accounting. The term catch accounting refers to landings, discards and other interactions with target, non-target and protected species, which collectively help to characterize the impacts of fishing on fisheries. Regional fishery management councils (“councils”) utilize catch accounting data in order to meet the mandates of the revised Magnuson-Stevens Fishery Conservation and Management Act (MSA), reduce management and scientific uncertainty, and support a broad range of policy decisions and management strategies.

Catch accounting is a particularly timely topic as councils take steps to comply with the MSA requirement to set annual catch limits (ACLs) and accountability measures (AMs) by the end of this year. In 2011 and beyond, catch accounting data will help the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service monitor catch levels relative to ACLs, and determine if and when AMs should be triggered. Accurate and credible catch accounting data will also continue to support the development and implementation of a range of management strategies. The East Coast Forum provided council members with an opportunity to exchange ideas, learn from experts in the design and implementation of catch accounting

programs, and discuss how catch accounting can be structured to meet the needs of decision makers now and in the future. The following summary is designed to help participants and other interested parties navigate the resources from the East Coast Forum.

Forum Agenda and Learning Objectives

The Fisheries Forum developed the agenda and learning objectives for the East Coast Forum based on an extensive scoping process, intended to identify themes and examples with cross-regional relevance to an audience of decision makers. Councils provide crucial policy guidance to the state and federal agencies, regional partners, and service providers involved in the design, implementation and analysis of catch accounting programs. The agenda for this Forum focused on elucidating the many goals supported by catch accounting data, and exploring opportunities for decision makers to identify and communicate these goals effectively. The East Coast Forum investigated the following learning objectives across commercial, recreational and for-hire fisheries:

- Identify outcomes and goals of catch accounting as pathways for providing guidance to the state and federal agencies, regional partners and service providers involved in the design, analysis and/or implementation of catch accounting programs
- Explore the broader context of catch accounting, including the costs associated with scientific and management uncertainty, the benefits of improved accountability, and the importance of accurate and credible fishery dependent data
- Gain exposure to catch accounting challenges, solutions and funding strategies in a range of fisheries
- Evaluate priorities for data timeliness, resolution and other characteristics relative to catch accounting goals, and understand how goals and data collection priorities can inform the development of a catch accounting strategy
- Understand the range of catch accounting strategies, the information each strategy can yield, the ways data sources can be combined, and the characteristics, constraints or challenges of a fishery that make each strategy appropriate

The invited experts for the East Coast Forum contributed expertise from a broad range of regions and disciplines. The Fisheries Forum was also pleased to welcome Mr. Eric Schwaab, NOAA's Assistant Administrator for Fisheries, as our keynote speaker.

Included in this document are brief descriptions of each panel session and presentation, along with direct links to the accompanying video and Powerpoint presentations. A full guide to [multimedia resources](#), list of [briefing materials](#), and the final [East Coast Forum agenda](#) are available on the Fisheries Forum website. This summary concludes with an overview of the major themes and topics of discussion.

Presentations and Panel Sessions

Keynote presentation

Eric Schwaab

Assistant Administrator for Fisheries, NOAA

Mr. Schwaab provided the agency's perspective on the importance of data in the context of national policy implementation, with an emphasis on ACLs and AMs. He emphasized that data is an investment and a tool. Stakeholders across all sectors are important sources of data, and their involvement in data collection programs and their confidence in the outcomes are critical.

Mr. Schwaab reflected on the progress that has been made over the last year toward implementing the ACL and AM requirements of the revised MSA. He emphasized that ending overfishing is a pathway, rather than a single accomplishment, and acknowledged that fishing communities have made sacrifices along the way. Mr. Schwaab highlighted several recent developments, including the implementation of sector based management in the New England groundfish fishery, the agency's recent management review of New England fisheries, the progress and increase in funding to the Marine Recreational Information Program, and the Inspector General's Review of NOAA Fisheries enforcement programs and operations. Each of these issues underscores the importance of credible, cost-effective and accurate catch accounting data. Mr. Schwaab concluded by reinforcing the importance of identifying and deliberating about catch accounting tradeoffs, including costs.

Fundamentals of survey sampling

Dr. Cynthia Jones

Director, Center for Quantitative Fisheries Ecology, Old Dominion University

[Video](#) [Slide Presentation](#)

Dr. Jones provided an overview of the fundamentals of survey sampling for catch accounting, in order to create a foundation for later presentations and discussion. A census-based catch accounting approach collects information about all fish landed and/or discarded, while a sampling approach collects information about a representative sample. Survey sampling is the primary strategy for measuring recreational catch and effort, and has important commercial applications as well (i.e., to provide estimates of catch composition). Dr. Jones reviewed concepts of sampling frames and units, estimation procedures, and sampling error and bias. She emphasized the importance of setting clear survey objectives in order to guide sampling procedures, and to illustrate tradeoffs between precision, accuracy and timing.

Setting the stage for catch accounting: Guiding principles for monitoring programs

Dr. Robert Trumble

Vice President, MRAG Americas

[Video](#) [Slide Presentation](#)

Dr. Trumble outlined broadly applicable guidance for monitoring programs based on the Guiding Principles for Development of Effective Monitoring Programs, a project contracted through MRAG Americas by Environmental Defense Fund. The workshops and subsequent report distill the experiences and lessons learned by international and domestic fishery experts into a set of eight principles for implementing and reviewing monitoring programs.

The guiding principles provide guidance on:

- engaging stakeholders,
- tailoring monitoring programs to the characteristics of a fishery,
- developing and prioritizing goals and evaluating tradeoffs,
- considering enforceability and creating incentives for compliance,
- evaluating the full range of monitoring options, including at-sea and dockside and self-reported and independently collected options,
- considering costs,
- identifying the right level of coverage and understanding tradeoffs, and
- utilizing a comprehensive and adaptive approach.

The guiding principles serve as a feedback loop to ensure that catch accounting programs achieve their goals, and evolve over time as fisheries change. Dr. Trumble emphasized the critical role council members can play with regard to the first four principles, by providing clear policy guidance for the implementation and review of catch accounting programs.

Presentations and panel discussion: Catch accounting goals, tradeoffs and outcomes

Speakers: Martin Loefflad and Gordon Colvin

The first panel session provided a high level look at the purposes and applications of catch accounting, and the drivers for reducing uncertainty and improving accountability. Speakers reinforced the importance of setting data collection goals and priorities, and understanding tradeoffs related to timeliness, accuracy, precision, and cost.

Catch accounting goals and tradeoffs in commercial fisheries

Martin Loefflad

Director, Fisheries Analysis and Monitoring Division, Alaska Fisheries Science Center

[Video](#)

Mr. Loefflad proposed that catch accounting information can be timely, accurate or cost-effective ("fast, right, or cheap"), but that only two of these qualities can be prioritized at one time. Decision makers need to evaluate the tradeoffs between these qualities relative to management goals. For example, in order to achieve in-season management of quotas and bycatch caps, Alaska prioritizes timeliness, accuracy and information sharing by investing in

its landings monitoring system, at-sea observers, and an information management system. This strategy, however, comes at a high price to industry.

Mr. Loefflad introduced three questions which inform the development of a catch accounting strategy across a range of scenarios:

- What information do you need?
- When do you need it?
- Who needs it?

He explained that the answers to these questions will influence cost. To illustrate this framework Mr. Loefflad shared the example of the North Pacific Council's recent action to set a salmon bycatch cap for the pollock midwater trawl fishery, and shift the burden of finer-scale monitoring to the industry. Incentives for greater accuracy and timeliness caused the pollock industry to move from a sampling-based bycatch estimate to a costly but extremely timely and precise census-based approach.

Recreational catch data collection: Summary of current methods and attributes of data and tradeoffs of improvements

Gordon Colvin

Program Manager, Marine Recreational Information Program, NOAA Fisheries Office of Science and Technology

[Video](#) [Slide Presentation](#)

Mr. Colvin provided an update on recent improvements to recreational catch accounting under the Marine Recreational Information Program (MRIP). MRIP is a process for ensuring that the catch and effort sampling programs administered by states and regional partnerships achieve minimum information standards. The program is a response by the National Marine Fisheries Service (NMFS) to the National Research Council's 2006 recommendations¹ to improve the quality and accuracy of recreational data collection. Within the MRIP framework, states and regional partnerships have the ability to make survey design choices in consultation with management bodies, including the councils, to achieve region-specific goals (i.e., finer spatial resolution). Mr. Colvin concluded with a discussion of recreational data timeliness, which managers and stakeholders have identified as a high priority in many council regions with the implementation of ACLs and AMs.

Presentations and panel discussion: Catch accounting methods and design considerations

Speakers: Shawn Stebbins, Dr. Cynthia Jones, and Beverly Sauls

This panel session examined the full range of catch accounting methods and data sources for commercial, for-hire and private recreational fisheries. Each of the three panelists outlined the "toolbox" of data collection strategies, including the high level design considerations which help inform the selection of an appropriate catch accounting strategy. Panelists discussed the

¹ NMFS commissioned the National Research Council of the National Academies of Science to review the methods used to collect and analyze data on catch and effort in marine recreational fisheries. The full report, published in 2006, can be viewed [online](#).

importance of identifying clear management goals, and evaluating priorities for accuracy, precision, and timeliness relative to cost.

Catch accounting methods and design considerations for commercial fisheries

Shawn Stebbins

President and CEO, Archipelago Marine Research

[Video](#) [Slide Presentation](#)

Mr. Stebbins compared the data outputs, advantages and challenges of at-sea versus dockside data collection strategies, and reviewed the self-reporting and independent collection options associated with both strategies. As part of his discussion of at-sea observing Mr. Stebbins devoted additional time to electronic monitoring, which can supplement or replace at-sea monitoring. While the capital investment and implementation can be costly, electronic monitoring can provide at-sea coverage at a lower cost, and across a wider range of scenarios than onboard observers. Mr. Stebbins then discussed program funding, data ownership, coverage, and infrastructure. He concluded by emphasizing that the implementation of a catch accounting program must be followed by review and adaptation.

Designing a recreational angling survey

Dr. Cynthia Jones

Director, Center for Quantitative Fisheries Ecology at Old Dominion University

[Video](#) [Slide Presentation](#)

Dr. Jones discussed methods for conducting recreational angler surveys, the information collected by each method, and their comparative strengths and weaknesses. She began by noting some of the inherent challenges of sampling recreational anglers, including diffuse effort and heterogeneity of skill and motivations. Dr. Jones distinguished between onsite sampling of effort and catch (such as intercept surveys), which can be validated by direct observation, and offsite methods (such as phone interviews), which rely on self-reporting. Angler surveys often utilize a complemented approach, which includes both onsite and offsite methods. Dr. Jones reviewed sources of error and bias, and discussed the importance of an accurate, complete, and up-to-date sampling frame from which to draw a representative random sample.

Catch accounting methods and design considerations for for-hire fisheries

Beverly Sauls

Associate Research Scientist, Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission

[Video](#) [Slide Presentation](#)

Ms. Sauls explained how for-hire fisheries utilize a combination of commercial and recreational catch accounting strategies. For-hire customers may be surveyed using traditional angler surveys, while for-hire operators can provide additional information through logbooks and other methods more often utilized in the commercial sector. Ms. Sauls reviewed existing for-hire survey methods, as well as gaps in coverage and emerging data needs. The National Research Council's 2006 report recognized similarities between for-hire

and commercial fisheries; and in 2008, MRIP created a for-hire workgroup and review process to recommend best practices for for-hire catch accounting.

Presentations and panel discussion: Combining catch accounting strategies for cost effectiveness and data quality through audits and validation

Speakers: Shawn Stebbins, Beverly Sauls and Gordon Colvin

This panel session continued the discussion of catch accounting strategies, with a look at three different catch accounting programs in commercial, recreational and for-hire fisheries. These examples illustrate how elements of a catch accounting strategy are combined to improve data quality. Speakers discussed the management goals and data collection priorities that informed the development of each catch accounting strategy, and shared lessons learned from the design and implementation phases. They also provided insight into the role of stakeholder outreach and engagement.

Catch accounting using integrated monitoring and an audit approach

Shawn Stebbins

President and CEO, Archipelago Marine Research

[Video](#) [Slide Presentation](#)

Mr. Stebbins discussed the integrated dockside and at-sea monitoring and audit system used in British Columbia's groundfish fishery. He began by describing the management directives that led to the implementation of a catch share program with full retention of rockfish. The fishery's monitoring framework combines logbooks, 100% dockside monitoring, and 100% at-sea coverage (with observers or electronic monitoring); and supports a census-based approach with an auditing process to ensure data accuracy. This system now supports the government's goals for stock specific management and individual accountability, while promoting selective fishing practices and accurate reporting. Mr. Stebbins noted that while this monitoring framework is resource intensive, the use of electronic monitoring and audits makes this system more cost-effective than full observer coverage in supporting the desired management outcomes.

The MRIP for-hire electronic logbook pilot study in the Gulf of Mexico

Beverly Sauls

Associate Research Scientist, Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission

[Video](#) [Slide Presentation](#)

Ms. Sauls provided an overview of a current MRIP pilot study, designed to test the feasibility of validated electronic logbook reporting for the for-hire fleet in the Gulf of Mexico. The pilot program, implemented in Corpus Christie, Texas and the Florida panhandle in 2010, requires weekly online reporting coupled with dockside and at-sea validation of self reported catch and effort data. Ms. Sauls explained that an important element of the program is that the for-hire reef fishery in the Gulf of Mexico operates under a limited entry permit system, enabling NMFS to require compliance with these reporting requirements as a condition for

permit renewal. Looking forward, MRIP will work with statisticians to compare self-reported with validated data, and evaluate the feasibility of this approach for wider implementation.

Considerations in the use of angler registries as survey sample frames

Gordon Colvin

Program Manager, Marine Recreational Information Program, NOAA Fisheries Office of Science and Technology

[Video](#) [Slide Presentation](#)

Mr. Colvin discussed the development of the National Saltwater Angler Registry, a major MRIP initiative to create a sampling frame (a "list" of active saltwater anglers) for surveying recreational fishing effort. The current survey approach, referred to as random digit dialing (RDD) can result in undercoverage of portions of the population (i.e., anglers who only have cell phones). The National Saltwater Angler Registry incorporates information from state-administered saltwater fishing licenses and creates a more inclusive and efficient sampling frame. However, state licenses often involve exemptions that exclude categories of anglers, such as seniors and youth. MRIP will test alternatives to the RDD approach, including a mixed-mode survey which uses addresses as well as information from the license frame, to improve coverage as well as efficiency.

Presentations and panel discussion: Financing tools and cost optimization strategies for data collection and monitoring

Speakers: Meghan Jeans, Martin Loefflad and Monica Jain

This panel session focused on the cost and financing of catch accounting programs, a topic which participants identified as a major priority for the East Coast Forum. Panelists highlighted examples of the funding mechanisms authorized by the MSA, as well as approaches that have been used in other countries. This panel session also focused on redefining cost to acknowledge opportunities for value creation through data collection.

Funding data collection and monitoring: Legal limits and latitude

Meghan Jeans, Program Director, Fisheries Leadership & Sustainability Forum

[Video](#) [Slide Presentation](#)

Ms. Jeans noted that the structure and extent of fisheries financing depends in part on the limitations and latitude provided by governing statutory authorities. In the case of federally managed fisheries in the United States, the MSA provides some guidance and limits on the financing of data collection and monitoring programs². She highlighted statutory provisions authorizing the creation of the Fisheries Conservation and Management Fund and cost recovery for limited access privilege programs (LAPPs), community development quotas (CDQs), and North Pacific fisheries. Ms. Jeans observed that the law provides councils with some degree of flexibility and discretion to develop alternative and innovative strategies to fund data collection and monitoring programs.

² Fisheries Forum staff compiled an [annotated list of MSA provisions](#) related to data collection and monitoring. [2007 Magnuson Stevens Act \(PDF\)](#)

Ms. Jeans briefly discussed the concept of cost optimization and then introduced several different types of financing tools. Included in the presentation was a discussion of several different financing tools including user fees, devolution of services from government to industry and quota set-asides.

Redesigning Alaska's observer program

Martin Loefflad

Director, Fisheries Analysis and Monitoring Division, Alaska Fisheries Science Center

[Video](#)

Mr. Loefflad described how the North Pacific utilized region-specific provisions of the MSA to redesign Alaska's observer program, to achieve greater equity in the distribution of observer costs across participants in the fishery. Vessels were originally classified into three tiers corresponding to 100%, 30% and 0% observer coverage based on vessel length. The new framework combines the two lower tiers, and each vessel contributes 1.25% from the value of their landings to fund coverage of all of the vessels in this category. This more equitable allocation of monitoring costs acknowledges that all participants in the fishery derive benefits from a rigorous monitoring program. Mr. Loefflad recognized that leadership on the part of the North Pacific Council, the development of a clear problem statement, and effective communication between the agency and the council helped support this transition.

Making data collection and monitoring financeable

Monica Jain

Executive Director, Manta Consulting, Inc.

[Video](#) [Slide Presentation](#)

Ms. Jain encouraged participants to refocus their consideration of cost to recognize that an investment in data collection can create value. Costs should be evaluated as part of an integrated assessment that includes information on financing feasibility and value creation. She introduced a series of considerations for evaluating value and financing feasibility, beginning with the nature of costs (fixed versus variable), access to capital, and timing. These considerations impact the ability of industry participants to comply with data collection requirements and incorporate these costs into their business planning. Ms. Jain also looked at who benefits and who pays, and noted the potential for broader cost sharing. Finally, she observed that the value and financeability of data and data collection services may also depend on who collects the payments, and the effect on supply chain relationships. Value and financing options can also depend on who owns the data that is financed.

Interactive presentation: Incorporating compliance risks into management decisions

LCDR Gregg Casad, U.S. Coast Guard liaison to the NOAA Office of Law Enforcement

Todd Dubois, Assistant Director, NOAA Office of Law Enforcement

[Slide Presentation](#)

LCDR Casad and Mr. Dubois led an interactive discussion exploring how councils incorporate enforcement and compliance risks into decisionmaking, and how enforceability informs the development of catch accounting strategies. Participants discussed compliance and the enforceability of regulations as contributors to successful management decisions in support of national policy goals. LCDR Casad and Mr. Dubois sought feedback from participants regarding how enforcement representatives can communicate effectively with decision makers about compliance risks.

LCDR Casad proposed a framework for understanding how enforcement time and resources are allocated toward education, deterrence and pursuit among contingents of fishery participants who (a) comply or try to comply, (b) are opportunistic violators, and (c) will not comply. The group shared different perspectives on how resources can be allocated between these categories most effectively. Mr. Dubois emphasized that enforcement officials as well as councils can engage in education and outreach to support those who comply or try to comply. Compliance is also affected by the complexity of regulations, economic incentives, and the perceived risk of detection. LCDR Casad and Mr. Dubois prompted participants to think about the role of successful compliance relative to management goals, and to discuss how the impacts and risks of noncompliance are considered during the decision making process.

Participants discussed the costs and returns related to compliance, as well as ways to create positive incentives for compliance while making noncompliance costly. The group recognized that while enforcement is often perceived to focus on violators, enforcement is critical to the success of management goals, and protects the interests and investments of those who do comply. The discussion concluded with support for continuing a dialogue between enforcement representatives and decision makers, and for identifying models for productive communication between decision makers, enforcement representatives and stakeholders.

Breakout Exercise: What are the goals of catch accounting?

Forum participants and speakers took part in an interactive mind mapping discussion facilitated by Fisheries Forum staff. In contrast to the hierarchical nature of lists, mind mapping is a technique for visualizing relationships between the goals, outcomes, trends and influences which contribute to a topic. In this case, a mind map was created to identify and visualize the importance of data collection and monitoring across council regions. Participants responded to the question, "what are the purposes of catch accounting?", creating a visual depiction of the legal requirements, council discussions, stakeholder input and other factors that contribute to answering this question as well as the relationships and feedback loops related to these ideas. The purpose of the mind mapping exercise was to develop a more comprehensive understanding of catch accounting and create a shared foundation for discussion while accommodating differences in perspective. When the breakout groups reconvened, participants shared feedback on the exercise and reviewed the themes that emerged during discussion.

The breakout sessions and follow up discussions covered a broad range of topics related to catch accounting, including:

- The ways in which managers use catch accounting data to reduce scientific and management uncertainty, meet legal mandates for ending overfishing and setting ACLs, support national policy goals for sustainable fisheries, and achieve consistency with the National Standards
- The definition of catch accounting, and the components of total fishing mortality (landings and discards, target and non-target species, regulated and unregulated species, protected species)
- Accountability and the correlation of fishing effort and harvest by categories such as sector, fleet, individual, and attributes such as location, gear type, time of year, etc.
- Management options and decisions that require catch accounting data
- The categories of users who utilize catch accounting data, including councils, Scientific and Statistical Committees, state and federal agencies, industry, stakeholders, consumers, and non-governmental organizations
- How each user group employs or derives benefits from catch accounting data, and attributes of the relationships between these groups such as trust, transparency and credibility
- The cost and funding of catch accounting programs

As part of our commitment to creative curriculum building, the Fisheries Forum employs learning tools that support collaborative discussion, and are customized to the learning objectives of each forum. For previous forums we utilized the case study approach to simulate decision making processes under a fictional scenario. For the topic of catch accounting, we found the mind mapping approach to be more consistent with the councils' role of providing guidance on the goals and priorities of catch accounting programs. While the case study will continue to be a mainstay of forum agendas, the Fisheries Forum will also continue to leverage the resources of our partner institutions to explore new strategies for presenting information and structuring constructive discussions.

Discussion

The Forum agenda included frequent opportunities for participants to ask questions, exchange ideas and engage in discussion. Themes and highlights from these discussions are summarized below.

Introductions

The East Coast Forum began with an opportunity for participants to comment on the topic of catch accounting, and identify the topics they hoped to discuss over the course of the Forum. Each council member introduced him or herself, and shared examples of regional catch accounting priorities and challenges. Many council members began by acknowledging stakeholders' demand for more data and their desire for greater accountability. This early discussion focused heavily on tradeoffs related cost, including the question of who pays and how much, and the challenges of scaling monitoring costs relative to the value of a fishery and the needed level of precision.

Themes of discussion

Each presentation and panel session included time for questions and discussion. This ongoing conversation evolved over the course of the Forum, as speakers shared new ideas and participants identified areas of mutual interest. Recurring themes of discussion included the following:

- *ACLs and AMs:* Across council regions, ACLs and AMs are the primary driver for improving accountability, and reducing scientific and management uncertainty through improved catch accounting. The consequences of accountability measures are influencing discussions about catch accounting tradeoffs with regard to cost. Areas of concern shared between councils and stakeholders include the relationship between cost and precision (i.e., the cost of accounting for low ACLS of rebuilding stocks), and cost and timeliness (i.e., the increase in sampling needed to support in-season management).
- *Goal setting, tradeoffs and policy guidance:* Participants offered different perspectives on whether broadly or narrowly defined catch accounting goals are more constructive, while recognizing that some degree of flexibility and responsiveness is important to the goal setting process. Within as well as between fisheries, catch accounting goals may compete for resources, or have different needs for timeliness and precision. Participants also mentioned the difficulty of incorporating new information and/or changing course during the development of a catch accounting program and suggested that tradeoffs, especially with regard to cost, be thoroughly evaluated early in the process.
- *Cost, value and financing:* Participants discussed what it means to consider costs, and how cost should be factored into the design of a catch accounting program relative to catch accounting goals and the availability of resources. One pathway for considering cost is to start by designing the "perfect" catch accounting system and then scale it down to fit within the allotted budget; another is to design a catch accounting program with cost limitations in mind from the beginning. Participants and speakers had different perspectives on which pathway is ideal, but many acknowledged the value of conducting

a cost-benefit analysis and setting goals early in the design of a catch accounting program. Following the financing and cost optimization panel, the discussion of cost expanded to include funding mechanisms, value creation, financial support for transitional periods and potential financing roles for community-based entities such as permit banks.

- *Role of stakeholders:* Stakeholder involvement in the design and implementation of catch accounting programs is critical for generating buy-in and ensuring that catch accounting and monitoring programs are practicable. Participants also discussed the importance of communicating with stakeholders about tradeoffs and the costs of uncertainty.
- *Looking forward:* The process of setting ACLs and AMs represents a major achievement for each of the councils. Looking forward, participants discussed how funding and financing mechanisms, technological developments and council processes such as visioning and strategic planning offer opportunities to meet the ongoing catch accounting needs of managing with ACLs and AMs.

Wrap-up discussion: Current catch accounting challenges

The East Coast Forum concluded with a facilitated discussion of current catch accounting challenges and solutions. This discussion incorporated themes of earlier conversations about goal setting, program design, compliance, and funding; with an emphasis on identifying catch accounting successes and proactive steps that councils can take to address current challenges.

Participants began by revisiting some of the specific catch accounting challenges faced by their council regions. The group acknowledged the value of setting catch accounting goals, but observed that competing issues can make it difficult to reconcile goals, particularly in diverse fisheries with multiple stocks, sectors, gear types, and management strategies. These challenges may be compounded by the enhanced monitoring requirements posed by constraining ACLs for weak stocks, and by bycatch caps. Participants were supportive of conducting cost-benefit analyses and evaluating costs relative to catch accounting goals and the value of a fishery early in the development of catch accounting strategy. The group also discussed challenges related to the distribution of monitoring costs across industry.

The discussion then shifted to focus on successful advances in catch accounting. In addition to several improvements in region-specific data collection programs, participants cited progress in recreational data collection and greater acceptance and support for more accurate catch accounting. Participants also identified where these elements of success could be applied to the challenges previously highlighted in the discussion (i.e., creating incentives for compliance). The discussion focused on early evaluations of tradeoffs, including program costs and implementation challenges; and identifying pathways for becoming more adaptive and responsive to new information. In conclusion, participants recounted the progress councils have made, and looked ahead to the steps they can take to identify and correct deficiencies, and operate proactively through strategic planning and visioning.