

Marine Resource Education Project
Annual Report to the Northeast Consortium
Year 4: July 1, 2004-June 30, 2006

Award #ANEC URN FRA 1

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by

Mimi Larsen Becker, Ph.D

Project Leader and Principal Investigator

. Department of Natural Resources,

UNH. 215 James Hall 56 College Road, Durham, NH 03824

Ph: 603.-862-3950; E-mail: mlbecker@cisunix.unh.edu

Marine Resource Education Project (MREP)
Abstract

The Marine Resource Education Project (MREP) is a partnership program with the objective of bringing fishermen, scientists and managers together into a neutral setting to build trust and positive respectful relationships by exploring their common goals and their differences away from the pressure of the regulatory process. The program involves participants from the commercial fishing industry, conservation and nonprofit organizations, and state and federal government bi-annual six-day intensive seminars on the science and management of the fisheries resource in New England. The curriculum provides participants with a baseline of information about the marine ecosystem and their respective communities. Tangible results from the project include: (1) improved communication among fishermen, scientists and managers; (2) research partnerships between fishermen and scientists which are designed to gather more comprehensive and accurate information about the state of the fisheries; (3) more effective participation by fishermen in fisheries planning and regulatory decisions; (4) improved skills for joint problems solving; and (4) an enhanced sense of stewardship over fishery resources and increased trust in the decision making process.

Key Project Participants

Dr. Mimi Larsen Becker, Associate Professor of Natural Resources and Environmental Policy in the Department of Natural Resources at the University of New Hampshire, is the project leader and Principal Investigator for the program. John Williamson, from the fishing community and a member of the N.E. Fishery Management Council, has served the project as the industry Co- PI. Dr. Andy Rosenberg, Department of Natural Resources, has served as the Fisheries Science Advisor Co-PI. Participants in the Marine Resource Education Project during year 4 also included the members of the Board of Directors and the Implementation Team (see Appendix A) who have served as project advisors and implementers. Other fishermen, scientists, managers and graduate students have helped deliver specific module components (See Appendix B: Module Agendas) or participated in one or more of the training modules delivered during the fourth year of this project (See Appendix C: Participants).

MREP Board of Directors and Project Implementation Team

A list of current Board members is attached as Appendix A. The Board met once at the beginning of the year to provide policy direction, advice and guidance, particularly with respect to recruitment and program continuation beyond the current funding cycle. Many of the board members have also participated in the modules and served as resources to the project. Fishermen board members are: Rodney Avila, Vincent Balzano, Barbara Bragdon, Hans Davidson, David Goethel, James O’Grady, John Pappalardo, Luis Ribas, Michael Sosik, Jr., Robert Tetrault, Mary Beth Tooley and John Williamson. Dr William Overholtz, Dr. Andrew Rosenberg, Dr. Mimi Becker and former program coordinator John Coon, are the scientists. Mike Pentony from the National Marine Fisheries Services’ Northeast Regional Office in Gloucester also attended meetings in an ex-officio capacity.

Members of the Project Implementation Team (IT) are listed below:

Principal Investigator:

Dr. Mimi Larsen Becker
Department of Natural Resources, UNH
215 James Hall, 56 College Road
Durham, NH 03824
Phone: 603.862.3950
e-mail: mlbecker@cisunix.unh.edu

Program Coordinator

William Fleeger
Department of Natural Resources
215 James Hall, 56 College Road
Durham, NH 03824
Phone:603.862.0654
e-mail: wfleeger@unh.edu

Co-PI- Fishing Industry

John Williamson
201 Western Avenue
Kennebunk, ME 04043
Phone: 207.967.3847
e-mail: jwilliamson@fishadvocate.com

Co-PI and Science Advisor

Dr. Andy Rosenberg,
Morse Hall, UNH
Durham, NH 03824
Phone: 603.862.1450
e-mail: Andy.Rosenberg@unh.edu

Mary Beth Tooley
415 Turnpike Drive,
Camden, ME 04843
Phone: 207.763.4176
e-mail: ecpa@adelphia.net

David Goethel
23 Ridgeview Terrace
Hampton, NH 03842
Phone: 603.926.2135
e-mail: egoethal@comcast.net

Project Coordinator for 2004-2005 was William Fleeger, a DNR graduate student, who was responsible for administrative and organizational tasks under the direction of the PI and Co-PI.

Presenters and Support Staff

The MREP Science and Management Modules have continued to benefit tremendously from the enthusiastic and effective participation of staff from the NEFMC, USCG, NMFS Regional Office and the Northeast Science Center who have assisted in delivering the curriculum. Some of the presenters from these agencies in year 4 were participants in previous MREP modules including Lt. Ryan Hamel from the USCG and Allison Ferriera and Mike Pentony from the NMFS Regional Office.

MREP is housed in the Natural Resources and Environmental Policy Lab, James 206, in the UNH Department of Natural Resources. The website is :www.unh.mrep.dnr.edu. Telephone: 603.862.0654.

Project Goals and Objectives

The objectives of MREP are as follows:

- To bring representatives of three disciplines, fishermen, scientists and managers, into a neutral setting to build confidence in successful interaction between the disciplines.
- To substantially increase the number of individuals at work in New England fisheries who are comfortable navigating the fishery data and management systems.
- To deepen the familiarity of policy and science professionals with the workings of the fishing community.
- To encourage participants to define a level of professionalism in commercial fisheries and to prepare individuals for leadership.
- To foster an atmosphere in which conservation engineering becomes part and parcel of the innovative drive in daily fishing operations.

These objectives were established in an open, inclusive and transparent manner during the first year of the program. Based upon feedback from participants and guidance from the Board of Directors, the MREP curriculum has been refined annually in order to best meet the program objectives and adapt to the changing circumstances in the scientific and regulatory environment. Changes in the 04-05 program curriculums included and expanded discussion of ecosystem management in the science module and presentations regarding the use of social and economic science in the management processes during the management module.

Methods and Approach

Although MREP is not a collaborative scientific research project, it is a collaborative educational outreach program. The methods and approach of MREP focus on involving participants from the commercial fishing industry, conservation and nonprofit organizations, along with fisheries scientists and state and federal government regulatory and management officials in two sets of six-day intensive seminars on the science and management of the fisheries resource in New England. Each six day seminar is divided into two three day modules generally held within 3-4 weeks of each other in both the spring and the fall. The first three day “science module” focuses on the science of fisheries management including conservation engineering and ecosystem dynamics. The following “management module” focuses on how the management system works and how participants can most effectively monitor, and participate in making and guiding fisheries management policy and its implementation. Participants were strongly encouraged to attend both modules, and those who were willing to commit that level of participation were given priority. An overview on the 04-05 science and management modules is included below and detailed agendas for each of the modules are attached as [Appendix B](#).

The Science Module:

The first day of the science module covered the ‘nuts and bolts’ of fisheries science including: terminology, data collection and the methodology underlying fisheries population dynamics, stock assessments, statistics and modeling. This equips all participants with a common scientific language and understanding that facilitates later discussions. Scientists from NMFS Northeast Fisheries Science Center tag-team this effort and are able to get the key material and information to participants in the short time allowed. The second day continues the discussion on fisheries science and also includes a half day presentation by Dr. Chris Glass on the science and current research in the field conservation engineering and by-catch reduction. On the morning of third day, Dr. David Townsend from the University of Maine instructs participants on the oceanography of the Gulf of Maine and addresses larger scale impacts of earth systems dynamics on the Gulf’s ecology. The afternoon included presentations on ecosystem-based management and cooperative research as well time for general questions and open discussion between all participants and presenters. Ample time was provided during each presentation or exercises for questions and discussion among the participants and resource presenters. David Goethel, a fisherman, NEFMC member, and member of the IT, served as the translator/facilitator for the science module.

The Management module:

The management module provides fisheries managers the opportunity to discuss the roles played by their respective agencies and participants the opportunity to gain skills they could apply to participate more effectively in the fisheries decision making and management process. Mary Beth Tooley, a fishing industry representative, member of the IT and facilitator for the management module began the first day with an overview of how the various jurisdictions and regulations interact to manage the commercial fishing industry. This is followed by representatives of the NEFMC and NMFS discussing the

role of their agencies in the management process and how fishermen can effectively participate and have their voices heard. Once the foundation on fisheries policy and the fisheries management decision process and its implementation is discussed and clarified among the participants, they then have an opportunity to learn skills that will equip them to be effective participants in the policy and management process. The morning of the second day of the management module included presentations on attending and effectively participating in a NEFMC meeting, the role of and importance of participating in Trade Associations as well as the role of Congress in the fisheries management process. On the afternoon of the second day participant learned about alternative dispute resolution methods and engage in mock negotiations to address a complex multi-party fisheries management issue. The third day of the management module opened with a presentation by the leadership of the NEFMC on current issues in fisheries management followed by a presentation from a USCG representative on the role of the Coast Guard in Fisheries policy enforcement. Later, representatives from the NMFS Science Center explain how biological, social and economic sciences are integrated into the fisheries management and policy process. The final afternoon of the management module concluded with a wide-ranging moderated discussion with presenters, panelists and participants discussing current management issues along with future issues and concerns.

Participants

The primary audiences targeted by MREP modules include those from the fishing industry as well as scientists and fisheries managers. Fishermen in the New England region and “others” which include conservation organizations, trade associations, non-profit research organizations, graduate students and staff from federal and state management agencies were all engaged in this program. The three-day intensive Science and Management modules are each designed to engage 15 fishermen and 5 “others” and participants are selected by the IT from applications received from fishermen, fisheries management agencies, the scientific community, interested citizens, and academic institutions. The IT to selected industry participants who reflected geographical as well as gear-type diversity. Others were to represent a range of individuals and organizations, including scientists, with an interest in the NE Fishery. There was a bias toward those participants who could commit to attend both modules. Fishermen, scientists and managers who participate in the modules often return to as presenters for one or both of the modules.

Data

The type of data collected by the MREP program includes: 1) contact information for all participants and presenters and 2) detailed module evaluations by participant at the end of each session. Copies of participant lists are included as Appendix C and participant evaluation forms and results are included as Appendix D. This data is used by the Implementation Team to monitor the overall effectiveness of the program in achieving its goals as well as make changes to the curriculum based on participant feedback. This year, in addition, an MREP Program Participant Impact Assessment was designed to help evaluate the four years of the program. After design and testing, an in-depth survey was undertaken during the Fall of 2005 to assess the cumulative program impact on MREP

participants over the past four years of operation. The survey methods were as follows: (1) we compiled a list of all program participants during the four years of delivery and identified current e-mail and mailing addresses; (2) a web based survey, using “Survey Monkey” was designed and tested; (3) all participants were sent the web based survey and given a deadline for response; (4) all non-respondents were sent a second notice and deadline; (5) following that, the non-respondents were sent a hard copy by mail. The data and results of this impact assessment are reported in a separate document (See Appendix E)

Results and Conclusions

Based upon objective criteria as established in the original MREP proposal and verified by the BOARD of DIRECTORS during year one of the program, the primary objective of MREP -- to bring together fishermen, scientists and managers in a neutral atmosphere to learn together while respecting the perspectives of each -- continues to be successfully accomplished. During year four, 29 fishermen, many of whom are considered leaders in their respective communities participated in MREP modules. In addition, 12 “others,” including scientists, fisheries managers and representatives of environmental organizations have been through at least one of the modules. Nineteen (19) scientists, educators and fishermen served as presenters for the program during year 4. All modules have been held on “neutral ground” at the New England Center on the campus of UNH and most participants stayed onsite, allowing interaction between participants and presenters to continue late into the evenings. Providing opportunities for conference participants to interact, both formally during sessions, and informally during breaks and after hours, has remained a major theme for the modules and the curricula have been revised and adjusted to provide more meaningful opportunities for questions, discussion and interaction between fishermen, scientists and managers.

Participant evaluations make it clear that MREP remains a key forum for building capacity amongst fishermen, scientists and the regulatory community (see Appendix D). Listed below are a few of the comments received from participants in the spring 2005 modules:

- “What a wonderful learning experience and it help give me a working knowledge of how fishermen and managers may interact together. (I am optimistic)”
- “I am glad to be involved. Understanding the decision making process is essential to explaining it to others. There must be tangible ways to get this info out to more people and wider audiences”
- “I benefited most by learning through listening to others around me. This program was excellent and has encouraged me to pursue a masters in living Marine Resource management”
- “I learned a great deal in a short period of time and I am glad I participated”
- “This was an amazing program and I look forward to the next session”

Partnerships

MREP was designed to function as a partnership and as far as we know, this was the only such project in the NE Region. Its delivery engages all of the relevant institutions involved in the New England Fishery: NMFS Regional Office, NMFS Science Center, NEFMC, U.S. Coast Guard, University of Maine, University of New Hampshire, Manomet Center, conservation organizations and a number of fishing industry associations. All of the partners have been committed to help make the program a success. Its Investigators, its Implementation Team and its Board of Directors represent the structure of a partnership and have developed a coherent, well articulated curriculum and provided opportunities for participants to engage in discussions that explore potential collaborative research initiatives. The effects of bringing fishermen together with scientists and managers has established and opened lines of communication, improved working relationships and created potential that we are still learning about and that is just now beginning to develop.

Impacts and Applications

Over the past four years, MREP modules have reached 104 fishermen, 49 “others,” (including scientists, fisheries managers, regulators, environmental groups, Congressional staff and educators) and 29 scientists, management professionals, educators and fishermen have served as presenters and/or facilitators for at least some portion of the module presentations. . Of the 104 total fishermen attendees, 82 (79%) attended both the science and the management modules and received an MREP/UNH Certificate of Achievement for their accomplishment. The Fishermen attendees represented an impressive diversity of fisheries and gear types and hailed from 6 different states (See Table A).

Table A: Geographical Distribution of MREP Fishermen Participants

State	Participants
Connecticut	1
Maine	31
Massachusetts	44
New Hampshire	14
New York	2
Rhode Island	12

In addition to the fishermen participants, 48 individuals attended at least one module in the “others” category over the past four years. Most of the “others” attended both the science and the management module, and 10 of the 12 attendees (83%) in Year 4 received a certificate for attending both modules. Those who attended in the “others” category represented a diverse group, with attendees from state marine and fisheries management agencies, federal agencies, shoreside support groups, environmental

organizations, graduate students and NMFS Regional Office and Science Center staff (See Appendix C).

The approach and techniques used in MREP modules may have relevance for other initiatives looming on the horizon. One obvious implication stems from the recommendations of the Pew Commission and the US Ocean Commission reports calling for the creation and implementation of ecosystem-based management of large marine ecosystems. Clearly regional councils and the regulated communities will need to be educated on the very broad and substantive issues that will accompany any material change in national and regional marine resource regulation. The participation of the public and regulated community at every significant decision-making level will be critical to any change. MREP's model may provide a valuable tool for the involvement of the public in future management decisions.

Related Projects

There are no related projects being undertaken at this time

Published reports and papers

Our 2002-2003 Project Report was submitted to NEC for website publication. We will be writing a paper describing the outcome of the project this summer. An abstract and poster were published for the NEC Conference in December 2003. The abstract is included in the hard cover conference proceedings cited:

Becker, M.L., J. Coon, A. Rosenberg, J. Williamson, M B Tooley, and D. Goethel "Bridging the Gap to Build Collaborative Research, Science Communication and Industry Participation in New England Fisheries Management" in David Witherell, ed. Managing Our Nation's Fisheries: Past Present and Future. Proceedings of a Conference on Fisheries Management in the United States: Washington, D.C.: November 13-15, 2003. NOAA, 2004: 225.

Presentations

A poster presentation was made by Dr. Becker at the NEC Conference in December, 2003. A poster abstract was submitted and accepted for the Washington Fisheries Conference Fall 2004. Presentations about MREP were made to several UNH Classes and at the annual meeting of the Institute for the Policy Sciences, Yale University.

Student participation

Student presentation was apparent at a variety of levels. William Fleeger, a Natural Resources Graduate Student served as coordinator of the program during Year 4. Amy Holt Kline, A graduate student and employee of the UNH Coastal Observing Center also was a participant in the program. Additionally, graduate and undergraduate students from UNH environmental policy classes were allowed to sit in on various MREP presentations.

APPENDICES Attached:

Appendix A: Board of Directors and Project Implementation Team, 2004-2005

Appendix B: MREP Training Module Agendas Fall 2004, Spring 2005

Appendix C: Participants

Appendix D: Meeting Evaluations

Appendix E: MREP Project Participant Impact Assessment 2001-2005

Appendix F: Images

Appendix A
Marine Resource Education Project
Board of Directors

Rodney Avila
369 Belair Street
New Bedford, MA 02745
(508) 979-1750 rodavila@comcast.net
Background: trawl fisheries, pelagic gillnet and pelagic longline fisheries; New Bedford Family Assistance Center director; NEFMC member.

Vincent Balzano
31 Vines Road
Saco, ME 04072
(207) 282-3627 vbalzano@maine.rr.com
Background: trawl fisheries, NEFMC Groundfish and Whiting Committee Advisor.

Dr. Mimi Becker **
Dept. of Natural Resources, UNH
James Hall, 56 College Road
Durham, NH 03824
(603) 862-3950 mlbecker@cisunix.unh.edu
Background: Natural resource policy, Great Lakes commercial fishing family.

Barbara Bragdon
PO Box 789
Dennis Port, MA 02639
(508) 398-6162 bragnet@comcast.net
Background: scallop fishery; NEFMC Scallop Committee Advisor.

John Coon
Dept. of Natural Resources, UNH
James Hall, 56 College Road
Durham, NH 03824
(603) 862-0654 jcoon@unh.edu
Background: Marine resource policy

Hans Davidsen
6 Brookside Drive
Acuschnet, MA 02743
(508) 971-7001 scallop@attbi.com
Background: scallop fishery; NEFMC Scallop Committee Advisor.

David Goethel **
23 Ridgeview Terrace
Hampton, NH 03842-2071
(603) 926-2165 egoethal@comcast.net
Background: trawl fisheries; NEFMC member; Research Steering Committee member.

Paul Howard

New England Fishery Management Council
50 Water Street, Mill #2
Newburyport, MA 01950
(978) 465-0492 phoward@nefmc.org
Background: Coast Guard; Executive Director NEFMC.

James O'Grady
288 Blackberry Hill Rd.
Wakefield, RI 02879
(401) 284-0911 tbfishery@cox.net
Background: trawl fisheries.

Dr. William Overholtz *
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026
(508) 495-2256 william.overholtz@noaa.gov
Background: Population Dynamics Branch, trawl and acoustic surveys, Multispecies Monitoring Committee, marine biologist

John Pappalardo
210 Orleans Road
North Chatham, MA 02630
(508) 945-2432 johnp@ccchfa.org
Background: hook fisheries; NEFMC member.

Michael Pentony
NOAA Fisheries, Northeast Regional Office
One Blackburn Drive
Gloucester, MA 01930-2298
(978) 281-9283 michael.pentony@noaa.gov
Background: marine policy.

Luis Ribas
7A Sandy Hill Lane
Provincetown, MA 02657
(508) 487-4462 lrfish@gis.net
Background: trawl fisheries; gear researcher; president Provincetown Fishermen's Association.

Dr. Andy Rosenberg **
Institute of Earth, Oceans & Space
Morse Hall, UNH
Durham, NH 03824
(603) 862-2020 andy.rosenberg@unh.edu
Background: National Marine Fisheries Service; Northeast Fisheries Science Center; marine biologist.

Mike Sosik, Jr.
PO Box 7
Sturbridge, MA 01566
(508) 347-5922 msosik@hey.net

Background: Owner/Operator Charter and Sport fishing service; president of New England Charterboat Captains Association. NEFMC Recreational Advisor

Robert Tetrault
T/R Fish Inc., Marine Trade Center
2 Portland Fish Pier
Portland, ME 04101
(207) 761-4418 bobt@cobank.com

Background: trawl fisheries; has served on boards for several fishery-related institutions; product marketing; contractor for the inshore trawl survey.

Mary Beth Tooley **
415 Turnpike Drive
Camden, ME 04843
(207) 763-4176 ecpa@adelphia.net

Background: herring industry; Executive Director of East Coast Pelagics Association.

John Williamson **
201 Western Avenue
Kennebunk, ME 04043
(207) 967-3847 jwilliamson@fishadvocate.com

Background: bottom tending and pelagic gillnet, hook, trap, trawl fisheries; NEFMC member.

** Implementation Team (IT) Members

Appendix B

Marine Resource Education Project

Science Module
November 8 – 10, 2004

New England Center

University of New Hampshire
Durham, NH

DRAFT Agenda

Monday, November 8, 2004

7:00 - 8:30	Breakfast	New England Center Dining Room
8:30 - 9:00	Welcome and Overview	Dr. Mimi L. Becker John Williamson
9:00 - 10:15	Concepts in Population Biology	Dr. William Overholtz Capt. David Goethel

Goals: To get everyone talking the same language with a fundamental understanding of the fundamentals of commercial fisheries science. Get everyone talking the same language.

Key Concepts:

- Basic Definitions: Growth, recruitment, mortality, etc.
- Basic Population Model
- Population concepts, vital rates (birth, death, decline of a cohort, ages)
- Age structure
- Reproductive Biology
- Stock Concepts (unit stock, spawning stock, recruits, stock-recruitment, etc.)
- Other important concepts (distribution, migration, spawning, primary production, temperature, etc.)

10:15 - 10:30	Break (Dissection of a fish)	
10:30 - 12:00	Population Biology (cont.)	Dr. William Overholtz Capt. David Goethel

Monday, November 8 (cont.)

12:00 - 1:00	Lunch	NE Center Dining Room
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1:00 - 2:30	Sampling, Statistics and Surveys	Dr. Steve Cadrin Dr. William Overholtz Capt. David Goethel
<i>Goals:</i> Introduce the basic tools of analysis used in stock assessment; Understand how stock surveys are conducted and how stock assessment generates models.		
<i>Key Concepts:</i>		
<ul style="list-style-type: none"> • The why and how of statistics and sampling • Description and demonstration of sampling protocols • Data bases • Research vessel surveys 		
2:30 - 2:45	Break	
2:45 - 5:00	NMFS Survey Vessel approach	Dr. Steve Cadrin Dr. William Overholtz Capt. Dave Goethel
5:00 – 6:00	Question and Answer session	All presenters and participants
6:00 - 6:30	Break	
6:30 - 7:30	Dinner	NE Center Dining Room

Tuesday, November 9, 2004

7:00 - 8:30	Breakfast	NE Center Dining Room
<i>Goal:</i> The main goal of Day 2 is to provide presentations designed to spur discussion and to cause participants to participate fully in the program.		
8:30 - 10:15	Stock assessments and modeling	Dr. William Overholtz Capt. Dave Goethel
<i>Key concepts:</i>		
<ul style="list-style-type: none"> • The how and why of modeling • Surplus production, VPA's • Stock assessments 		
10:15 – 10:30	Break	

Tuesday, November 9 (cont.)

10:30- 12:00	Stock Assessments and Modeling (cont.)	
<ul style="list-style-type: none"> • Biological Reference Points 		

- Overfishing
- SARC

12:00 - 1:00	Lunch	NE Center Dining Room
1:00 – 2:15	Fishing Gear Operation Effects and Innovations	Dr. Chris Glass (Manomet)

Goal: For scientists, fishermen, and “others” to develop an understanding of fishing gear-types, their use, impact and recent innovations . Invite real world comparisons with fishermen's observations.,

Key concepts: Learn about gear operations and impacts and discuss commercial fishing operations, concerns and innovation

2:15 - 2:30	Break	
2:30 - 4:00	Fishing gear (cont.)	Dr. Chris Glass
4:30 – 5:00	Q and A	Dr. Chris Glass Dr. William Overholtz All participants
5:00 - 6:30	Break	
6:30 - 7:30	Dinner	NE Center Dining Room

Wednesday, November 10, 2004

7:00 - 8:30	Breakfast	NE Center Dining Room
8:30 – 10:00	The oceanography of the Gulf of Maine and Georges Bank and how it relates to species distribution patterns at different life stages.	Dr. David Townsend (UMO)

Goals: The main goals of this morning’s session are to:

- To develop participants understanding of the physical oceanography of the N.W. Atlantic, with a focus on the Gulf of Maine and Georges Bank, to enable better understanding of how fish communities are affected by the dynamics of their ecosystem.

Key concepts:

- Learn about spatial and annual patterns of distribution in the Gulf of Maine and Georges Bank

Wednesday, November 10, 2004 (cont.)

10:00 – 10:15	Break	
10:15 – 12:00	Gulf of Maine Oceanography (cont)	Dr. David Townsend
12:00- 1:00	Lunch	NE Center Dining Room
1:00 - 2:45	Science and Ecosystem-Based Management Panel and Participant Discussion	Dr. Mimi Larsen Becker Moderator
	<ul style="list-style-type: none"> • What are the issues? • What do we need to know? • How is the research proceeding? John Williamson, David Goethel, John R. Coon, and Others	
2:45 - 3:00	Break	
3:00 - 3:30	Collaborative Research	Dr. William Overholtz Captain Dave Goethel
	<i>Key concepts:</i>	
	<ul style="list-style-type: none"> • How collaborative research might better utilize the fishing industry. • What are the problems with current programs (from the perspective of the fishing industry participants) • How can fishermen be used in more meaningful ways (e.g. VPA, logs)? 	
3:45 - 4:30	Fishermen's Questions to Scientists...	All Participants and Presenters
	<i>Goals:</i> To begin to bring knowledge and discussions of the first two days together to discuss fisheries science issues.	
	<i>Key Concept:</i> This portion of the morning devoted to questions and answer period between participants.	
	<ul style="list-style-type: none"> • Engage participants in discussions to address fishermen's questions to scientists • What are the opportunities? 	
4:30 – 4:45	Wrap-up, concluding remarks, evaluations.	Dr. Mimi Larsen Becker All participants and speakers

Monday, December 6, 2004 (cont.)

10:30 - 10:45	Break	
10:45 – 11:30	National Marine Fisheries Service (Continued)	Mike Pentony
11:30 - 12:30	The New England Fisheries Management Council	Pat Fiorelli Lori Steele

Goals: The FMP process, including structure and participants in the process. Learn how to follow an Amendment/Framework/Adjustment

Key Concepts:

- How the NEFMC works
- Types of Council actions
- When are measures developed
- Roles of the Committees, Advisory Panels, and Plan Development Teams

12:30 - 1:30 Room	Lunch	N.E. Center Dining
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1:30 - 2:45	New England Fisheries Management Council (Continued)	Pat Fiorelli Lori Steele
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Goal: To learn how fishermen and scientists can best impact the management process.

Key Concepts:

- Improving stakeholder participation
- Know your state agencies and Council representatives
- Mailing lists, Advisory Panels, Industry groups, etc.

2:45 – 3:00	Break	
3:00 – 4:00	The Regulatory Process and submission of proposed regulations to NMFS	Mike Pentony

Goals: The goal is to deliver an understanding of how legal compliance is achieved and the measures that must be taken to assure validity.

Key Concepts:

- “Black Box” review
- Compliance with legal requirements

- NEPA
- When measures are ineffective or have unintended results

Monday, December 6, 2004 (cont.)

4:00 - 5:00 Bringing It All Together Panel: Pat Fiorelli/L. Steele
Mike Pentony

Moderator: Mary Beth Tooley

Goal: The goal is to put it the knowledge gained during the day together to explain and discuss real world issues - like why some fish stocks are low and what is being done about it.

Key Concepts:

- National standards and related issues
- Q and A and other issues raised by panel and module participants

7:00 *Dinner* *N.E. Center Dining*
Room

Tuesday, December 7, 2004

7:00 - 8:30 Breakfast N.E. Center Dining Room

8:30- 8:45 Overview of the day

8:45 – 10:15 The Role of Congress in the Management of Fisheries Sally McGee

Goals: To understand the role that Congress plays in fisheries management policy and regulation and how fishermen, scientists and managers can impact Congressional action.

Key concepts:

- How a Bill becomes Law
- How Committees operate – House Resources Committee – Fisheries, Wildlife & Oceans, and Senate Commerce Committee – Oceans & Fisheries
- Lobbying Congress: How can it be done effectively?

10:15 – 10:30 Break

10:30 – 11:15 Attending a Council Meeting John Williamson

Goal: To discuss council meetings from the perspective of a council member.

Key concepts:

- What you should consider NOT doing at a council meeting.
- Roberts Rules of Order (How to craft a motion, the power of the second, etc.)
- The Lingo: a glossary of Acronyms/Terms

11:15 – 12:00 Industry Trade Organizations Bonnie Spinazzola

Goals: To understand the roles played by industry trade organizations and how they can have a positive impact on the management process

Tuesday, December 7, 2004, (cont.)

12:00 - 1:00 Lunch N.E. Center Dining Room

1:00 – 1:45 Negotiation skills: The value of industry consensus and how to achieve it. Mimi L. Becker
John Coon

Goals: To explore negotiation processes: traditional vs. “interest” based negotiation and “mutual gains”

Key Concepts:

- BATNA = Best alternative to a negotiated agreement
- Interests versus positions

1:45 – 2:00 Negotiation Team Meetings

2:00 – 2:15 Break

2:15 – 5:00 Negotiation skills John Coon
Bill Fleeger

Goals: Develop negotiation skills and techniques through role playing and case study

Key Concepts:

- Integrative vs. distributive bargaining
- Consensus building
- Managing difficult people
- Bringing an effective coalition to the table

5:00-5:15	Break	
5:15-6:00	Negotiation debriefing	
7:00	Dinner	N.E. Center Dining Room

Wednesday, December 8, 2004

7:00 - 8:30	Breakfast	N.E. Center Dining Room
8:30 – 10:15	Sustainable Fisheries – What are the big issues?	Paul Howard

Goal: To examine current issues confronting the NEFMC with an eye toward improving fishermen/scientist appreciation for the issues and how each can play a role in their resolution.

Key Concepts:

- Ending overfishing
- Protecting habitat
- Eliminating over-capitalization and excess capacity
- Bycatch
- Improved future legislation
- Court decisions and how they impact the process (implementing NEPA requirements, etc.)

10:15 - 10:30 Break

10:30 – 11:30	United States Coast Guard	Captain Mark Landry
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Goal: Create a better understanding of the role the USCG and issues surrounding enforcement of fisheries regulations

Key concepts:

- Operation Guardian
- USCG input in the regulatory process
- Are regulations enforceable?
- Challenges for the future

11:30 – 12:30	The Role of Science in Management	Dr. John Boreman
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Goal: To develop an overview of the relationship between science and management.

Key concepts:

- How traditional scientific method can conflict with the expectations of fishermen and others and how this can impact the assessment process.
- Dealing with uncertainty in assessments
- What to expect out of peer review
- Best available science vs. best possible science

12:00 – 1:00

Lunch

New England Center Dining Room

Wednesday, December 8, 2004 (cont.)

1:00 – 2:00

Social and Economic Impact Analysis

Dr. Eric Thunberg

Dr. Julia Olson

Goal: Develop an understanding of the need for data collection and analysis of social and economic impacts to fishing communities

Key Concepts:

- National Standard 8
- Applicable laws and compliance
- Data Collection and analysis methods
- A role for fishing communities

2:00 – 2:15

Break

2:15 – 3:15

Concepts in Fisheries Management

John Coon

Goal: Develop understanding of principles often debated in the context of fisheries management.

Key concepts:

- Common Property
- Ecosystem based Management
 - Precautionary approach
 - Adaptive governance
 - Significant public participation
- US Oceans Commission Report

3:15 – 4:15
participants

Where do we go from here?

All

Goal: Begin to bring it all together with a panel discussion of fisheries management decisions, the management process (current and future)

Paul Howard
John Boreman
Capt. Mark Landry
John Williamson
John Coon
Mimi Becker
Eric Thunberg
Julia Olson

Key concepts: “For the greatest overall benefit of the nation”

- Short-term versus Long-term
- What do fishermen want managers and scientists to know about the New England fisheries?

4:15 – 4:30

Wrap-up, evaluations, certificates and final words

MREP IT

Marine Resource Education Project

Science Module
March 14 – 16, 2005

New England Center
University of New Hampshire
Durham, NH

Monday, March 14, 2005

7:00 - 8:30	Breakfast	New England Center Dining Room
8:30 - 9:00	Welcome and Overview	Dr. Mimi L. Becker John Williamson
9:00 - 10:15	Concepts in Population Biology	Dr. Steve Cadrin Capt. David Goethel

Goals: To get everyone talking the same language with a fundamental understanding of the fundamentals of commercial fisheries science. Get everyone talking the same language.

Key Concepts:

- Basic Definitions: Growth, recruitment, mortality, etc.
- Basic Population Model
- Population concepts, vital rates (birth, death, decline of a cohort, ages)
- Age structure
- Reproductive Biology
- Stock Concepts (unit stock, spawning stock, recruits, stock-recruitment, etc.)
- Other important concepts (distribution, migration, spawning, primary production, temperature, etc.)

10:15 - 10:30	Break (Dissection of a fish)	
10:30 - 12:00	Population Biology (cont.)	Dr. Steve Cadrin Capt. David Goethel

Monday, March 14 (cont.)

12:00 - 1:00	Lunch	NE Center Dining Room
1:00 - 2:30	Sampling, Statistics and Surveys	Dr. Steve Cadrin Capt. David Goethel

Goals: Introduce the basic tools of analysis used in stock assessment; Understand how stock surveys are conducted and how stock assessment generates models.

Key Concepts:

- The why and how of statistics and sampling
- Description and demonstration of sampling protocols
- Data bases
- Research vessel surveys

2:30 - 2:45	Break	
2:45 - 5:00	NMFS Survey Vessel approach	Dr. Steve Cadrin Capt. Dave Goethel
5:00 – 6:00	Question and Answer session	All presenters and participants
6:00 - 6:30	Break	
6:30 - 7:30	Dinner	NE Center Dining Room

Tuesday, March 15, 2005

7:00 - 8:30	Breakfast	NE Center Dining Room
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Goal: The main goal of Day 2 is to provide presentations designed to spur discussion and to cause participants to participate fully in the program.

8:30 - 10:15	Stock assessments and modeling	Dr. Steve Cadrin Capt. Dave Goethel
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Key concepts:

- The how and why of modeling
- Surplus production, VPA's
- Stock assessments

10:15 – 10:30	Break	
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Tuesday, March 15 (cont.)

10:30- 12:00	Stock Assessments and Modeling (cont.)	
	<ul style="list-style-type: none">• Biological Reference Points• Overfishing• SARC	

12:00 - 1:00	Lunch	NE Center Dining Room
1:00 – 2:15	Fishing Gear Operation Effects and Innovations	Dr. Chris Glass (Manomet)

Goal: For scientists, fishermen, and “others” to develop an understanding of fishing gear-types, their use, impact and recent innovations . Invite real world comparisons with fishermen's observations.,

Key concepts: Learn about gear operations and impacts and discuss commercial fishing operations, concerns and innovation

2:15 - 2:30	Break	
2:30 - 4:00	Fishing gear (cont.)	Dr. Chris Glass
4:30 – 5:00	Q and A	Dr. Chris Glass All participants
5:00 - 6:00	Break	
6:00 - 7:00	Dinner	NE Center Dining Room

Wednesday, March 16, 2005

7:00 - 8:30	Breakfast	NE Center Dining Room
8:30 – 10:00	The oceanography of the Gulf of Maine and Georges Bank and how it relates to species distribution patterns at different life stages.	Dr. David Townsend (UMO)

Goals: The main goals of this morning’s session are to:

- To develop participants understanding of the physical oceanography of the N.W. Atlantic, with a focus on the Gulf of Maine and Georges Bank, to enable better understanding of how fish communities are affected by the dynamics of their ecosystem.

Key concepts:

- Learn about spatial and annual patterns of distribution in the Gulf of Maine and Georges Bank

Wednesday, March 16, 2005 (cont.)

10:00 – 10:15	Break	
10:15 – 12:00	Gulf of Maine Oceanography (cont)	Dr. David Townsend
12:00- 1:00	Lunch	NE Center Dining Room
1:00 - 2:45	Science and Ecosystem-Based Management Panel and Participant Discussion <ul style="list-style-type: none">• What are the issues?• What do we need to know?• How is the research proceeding? Chad Demarest, John Williamson, David Goethel, John R. Coon, and Others	Dr. Mimi Larsen Becker Moderator
2:45 - 3:00	Break	
3:00 - 3:30	Collaborative Research	Captain Dave Goethel
	<i>Key concepts:</i> <ul style="list-style-type: none">• How collaborative research might better utilize the fishing industry.• What are the problems with current programs (from the perspective of the fishing industry participants)• How can fishermen be used in more meaningful ways (e.g. VPA, logs)?	
3:45 - 4:30	Fishermen's Questions to Scientists...	All Participants and Presenters
	<i>Goals:</i> To begin to bring knowledge and discussions of the first two days together to discuss fisheries science issues.	
	<i>Key Concept:</i> This portion of the morning devoted to questions and answer period between participants.	
	<ul style="list-style-type: none">• Engage participants in discussions to address fishermen's questions to scientists• What are the opportunities?	
4:30 – 4:45	Wrap-up, concluding remarks, evaluations.	Dr. Mimi Larsen Becker All participants and speakers

Monday, April 11, 2005 (cont.)

10:30 - 10:45	Break	
10:45 – 11:30	National Marine Fisheries Service (Continued)	Allison Ferreira
11:30 - 12:30	The New England Fisheries Management Council	Pat Fiorelli

Goals: The FMP process, including structure and participants in the process. Learn how to follow an Amendment/Framework/Adjustment

Key Concepts:

- How the NEFMC works
- Types of Council actions
- When are measures developed
- Roles of the Committees, Advisory Panels, and Plan Development Teams

12:30 - 1:30 Room	Lunch	N.E. Center Dining
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1:30 - 2:45	New England Fisheries Management Council (Continued)	Pat Fiorelli
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Goal: To learn how fishermen and scientists can best impact the management process.

Key Concepts:

- Improving stakeholder participation
- Know your state agencies and Council representatives
- Mailing lists, Advisory Panels, Industry groups, etc.

2:45 – 3:00	Break	
3:00 – 4:00	The Regulatory Process and submission of proposed regulations to NMFS	Allison Ferreira

Goals: The goal is to deliver an understanding of how legal compliance is achieved and the measures that must be taken to assure validity.

Key Concepts:

- “Black Box” review
- Compliance with legal requirements

- NEPA
- When measures are ineffective or have unintended results

Monday, April 11, 2005 (cont.)

4:00 - 5:00 Bringing It All Together Panel: Pat Fiorelli
Allison Ferreira

Moderator: Mary Beth Tooley

Goal: The goal is to put it the knowledge gained during the day together to explain and discuss real world issues - like why some fish stocks are low and what is being done about it.

Key Concepts:

- National standards and related issues
- Q and A and other issues raised by panel and module participants

7:00 *Dinner* *N.E. Center Dining*
Room

Tuesday, April 12, 2005

7:00 - 8:30 Breakfast N.E. Center Dining Room

8:30 – 9:30 Attending a Council Meeting John Williamson

Goal: To discuss council meetings from the perspective of a council member.

Key concepts:

- What you should consider NOT doing at a council meeting.
- Roberts Rules of Order (How to craft a motion, the power of the second, etc.)
- The Lingo: a glossary of Acronyms/Terms

9:30 - 10:15 Industry Trade Organizations Bonnie Spinazzola

Goals: To understand the roles played by industry trade organizations and how they can have a positive impact on the management process

Wednesday, April 13, 2005 (cont.)

12:15 – 1:00 Lunch New England Center Dining Room

1:00 – 1:45 The Role of Social Sciences in Fisheries Management Julia Olson

Goal: To provide an introduction to why Social Sciences are important to fishery management

- The social sciences study the ways that people live and work: who we are, and how we got that way.
- The social sciences are broad: looking at everything from how people use scarce resources for competing needs, how they organize themselves, to their knowledge, values, and ways of viewing the world.
- Fisheries management seeks to effect change in how people fish.
That's managing people, not fish!

1:45 – 2:30 The Role of Economics in Fisheries Management Eric Thunberg

Goal: To provide an introduction to Impact Analysis

- Overview of other applicable laws that apply to fisheries management:
 - Executive Order 12866
 - Regulatory Flexibility Act
- Types of Economic Analysis that these laws require:
 - Net National Benefit
 - Regional Effects
 - Port/Community Effects
 - Vessel/Business Effects
- Aspects of Economical Fishery Management
- A role for fishing communities

2:45 – 3:00 Break

3:00 – 4:00 Concepts in Fisheries Management Andy Rosenberg

Goal: Develop understanding of principles often debated in the context of fisheries management.

Key concepts:

- Common Property
- Precautionary Approach
- US Oceans Commission Report

- Ecosystem Based Management

Wednesday, April 13, 2005 (cont.)

4:00 – 4:30 <i>participants</i>	<p><i>Where do we go from here?</i></p> <p>Andy Rosenberg – Moderator</p> <p><i>Goal:</i> Begin to bring it all together with a panel discussion of fisheries management decisions, the management process (current and future)</p>	<p><i>All</i></p> <p><i>Chris Kellogg</i> <i>Frank Almeida</i> <i>LT Ryan Hamel</i> <i>John Williamson</i> <i>Mimi Becker</i> <i>Julie Olson</i> <i>Eric Thunberg</i></p>
	<p><i>Key concepts:</i></p> <ul style="list-style-type: none"> • “For the greatest overall benefit of the nation” • Short-term versus Long-term • What do fishermen want managers and scientists to know about the New England fisheries? 	
4:30	<p>Wrap-up, evaluations, certificates final words</p>	<p>MREP IT and Participants</p>

APPENDIX C: PARTICIPANTS

MREP Fall 2004 Science Module Participant List

Fishermen

Name	Address	Sector	Phone	Email
Casella, Charles	1 Pine Plain Rd Georgetown MA 01833	Rec/charter; tech	978-352 9617 cell 978-290-0705	chuckcasella@verizon.net
Casoni, David	134 Halfway Pond Plymouth MA 02360	Commercial Fishing/lobster	508-224-3038 cell:617-688-2214	lobsterteacher@hotmail.com
Dearborn, Micheal	6 Poplar Ct., Apt. 3, Gloucester, MA 01930	Commercial Fishing	978-282-0413 cell 978-985 8661	
Littlefield, George	10 Lamprey Road, Kensington, NH 03833.	Commercial Fishing	603-772-8326 Cell 603-216-7401	
Lussier, Bill	3 Pleasant Ave. Eliot, ME 03903	Northeast Charter Boat CO.	207-439-0990 Fax: 207-439-8385	bill@necaptians.com
Martin, Kurt	P.O. Box 65 South Orleans MA 02662	Commercial Fishing	508-240-1755	
Milligan, Rich	309 Mountain Ave., Revere, MA 02151	Charter Captian	617-678-9426	captrichmilligan@msn.com
Nolan, Laurie	PO Box 2124 Montauk, NY 11954	Commercial Fishing MAFMC	631-668-4520 fax (same)	tilefish1@optonline.net
Odell, Jackie	Northeast Seafood Coalition 30 Western Ave. Suite 213 Gloucester, MA 01930	Trade Group	978-283-9992 Fax: 978-283-9959	jackie_odell@yahoo.com jackie@northeastseafoodcoalition.org
Perry, Russell	2 Rita Terr. Lynn, MA 01902	Commercial Charter	781-599-1143	Rperry5443@aol.com
Rice, Dana	P.O. Box 57 412 Main Street Birch Harbor, ME 04613	Commercial Fishing	207-963-7600	drice@midmaine.com
Robbins, Steve III	P.O. Box 649 Stonington, ME 04681	Commercial Fishing	207-367-5517	lobstah@hypernet.com
Shrader, Deb	C/O CEDC 105 William St. New Bedford, MA	Shore support	508-979-4684 cell 508-951-2809	debondock@aol.com
Soule, Hank	Portland Fish Exchange 6 Portland Fish Pier Portland ME 04101		207-773-0017 ext 104 Fax 207-871-8013	hsoule@portlandfishexchange.com
Roberts Weidman, Melissa	210 E. Orleans Rd. North Chatham MA 02650	Cape Cod Com. Hook Fishermen's Assoc.	508-945-2432 x15 Fax: 508-945-0981	mweidman@ccchfa.org

Others

Name	Address	sector	Work Phone	Email Name
Fleming, Roger	Conservation Law Foundation 14 Main St. Brunswick, ME 04011	Attorney	207-729-7733 Ext. 12	rfleming@clf.org
Hamel, Ryan LT.	NortheastRegional Fisheries Training Center 5200 East Hospital Road Buzzards Bay, MA 02542	Commanding Officer,USCG	508-968-6603	rhamel@nrftc.uscg.mil
Pentony, Michael	One Blackburn Drive Gloucester, MA 01930-2298	NOAA Fisheries, Northeast Regional Office	978- 281-9283	michael.pentony@noaa.gov
Smith, Cindy	21 State House Station Augusta ME 04333	Maine DMR	207-624-6558 Fax 207-624- 6024	cindy.smith@maine.gov
Tasker, Karen	One Blackburn Drive Gloucester, MA 01930-2298	NOAA Fisheries, Northeast Regional Office	978- 281-9273	karen.tasker@noaa.gov

MREP Staff/Presenters

Name	Address	sector	Work Phone	Email Name
Becker, Mimi Larsen	UNH Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	MREP	603-862-3950	mlbecker@cisunix.unh.edu
Brown, Russell	NMFS 166 Water St. Woods Hole, MA 02543	Scientist/ Presenter	508-485-2380	russell.brown@noaa.gov
Cadrin, Steve	NMFS 166 Water St. Woods Hole, MA 02543	Scientist/Presenter	508-495-2335	steven.cadrin@noaa.gov
Coon, John	UNH – Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	Presenter	603-862-0654	jrcoon@cisunix.unh.edu
Fleeger, Bill	UNH – Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	MREP Coordinator	603-862-0654	wfleeger@unh.edu
Glass, Chris	PO Box 1770 Manomet, MA 02345	Scientist/Presenter	508-224-6521 Fax: 508-224-9220	glasscw@manomet.org
Goethel, David	23 Ridgeview Terrace Hampton, NH 03842-2071	MREP/Presenter	603-926-2165	egoethel@attbi.com
Overholtz, William	NMFS Science Center Woods Hole MA	Scientist/Presenter	508-495-2256	william.overholtz@noaa.gov
Tooley, Mary Beth	415 Turnpike Drive Camden, Maine 04843	MREP	207-763-4176 cell: 207-837-3537	ecpa@adelphia.net

Townsend, David	University of Maine Orono, Maine	Scientist/Presenter	207-581-4367	davidt@maine.edu
Williamson, John	201 Western Avenue Kennebunk, Maine 04043	MREP/Presenter	207-967-3847	jwilliamson@fishadvocate.com

MREP Fall 2004 Management Module Participant List

Fishermen

Name	Address	Sector	Phone	Email
David Bergeron	Massachusetts Fisherman's Partnership 2 Blackburn Ctr. Gloucester MA 01930		978 282-4847 888 282-8816 fax 978 282-4798	dbergeron@fishermenspartnership.org
Casella, Charles	1 Pine Plain Rd Georgetown MA 01833	Rec/charter; tech	978-352 9617 cell 978-290-0705	chuckcasella@verizon.net
Casoni, David	134 Halfway Pond Plymouth MA 02360	Commercial Fishing/lobster	508-224-3038 cell:617-688-2214	lobsterteacher@hotmail.com
Dearborn, Micheal	6 Poplar Ct., Apt. 3, Gloucester, MA 01930	Commercial Fishing	978-282-0413 cell 978-985 8661	
Kelly, Thomas	32 Clinton St. Portland ME 04103	Commercial Fishing	207-671-8984 Fax 207-879-0007	ajmarineinc@yahoo.com
Love, Mike	178 Haskell Road N. Yarmouth ME 04097	Commercial Fishing	207 829-2754	lovesfisheries@hotmail.com
Lussier, Bill	3 Pleasant Ave. Eliot, ME 03903	Northeast Charter Boat CO.	207-439-0990 Fax: 207-439-8385	bill@necaptians.com
Martin, Kurt	P.O. Box 65 South Orleans MA 02662	Commercial Fishing	508-240-1755	
Milligan, Rich	309 Mountain Ave., Revere, MA 02151	Charter Captian	617-678-9426	captrichmilligan@msn.com
Perry, Russell	2 Rita Terr. Lynn, MA 01902	Commercial Charter	781-599-1143	rperry5443@aol.com
Rice, Dana	P.O. Box 57 412 Main Street Birch Harbor, ME 04613	Commercial Fishing	207-963-7600	drice@midmaine.com
Robbins, Steve III	P.O. Box 649 Stonington, ME 04681	Commercial Fishing	207-367-5517	lobstah@hypernet.com

Roberts Weidman, Melissa	210 E. Orleans Rd. North Chatham MA 02650	Cape Cod Com. Hook Fishermen's Assoc.	508-945-2432 x15 Fax: 508-945-0981	mweidman@ccchfa.org
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Others

Name	Address	sector	Work Phone	Email Name
Brawn, Togue	Maine Department of Marine Resources P.O. Box 8 W. Boothbay Harbor ME. 04575	Maine Department of Marine Resources	207-633-9500 Cell:207-838-1490	togue.brawn@maine.gov
Gallant, Rachel	Northeast Consortium UNH, Morse 142, Durham, NH 03824	Northeast Consortium Fisheries Specialist	603.862.2276 Fax 603.862.7006	rgallant@unh.edu
Fleming, Roger	Conservation Law Foundation 14 Main St. Brunswick, ME 04011	Attorney	207-729-7733 Ext. 12	rfleming@clf.org
Hamel, Ryan LT.	NortheastRegional Fisheries Training Center 5200 East Hospital Road Buzzards Bay, MA 02542	Commanding Officer, USCG	508-968-6603	rhamel@nrftc.uscg.mil
Smith, Cindy	21 State House Station Augusta ME 04333	Maine DMR	207-624-6558 Fax 207-624-6024	cindy.smith@maine.gov
Tasker, Karen	One Blackburn Drive Gloucester, MA 01930-2298	NOAA Fisheries, Northeast Regional Office	978- 281-9273	karen.tasker@noaa.gov

MREP Staff/Presenters

Name	Address	sector	Work Phone	Email Name
Becker, Mimi Larsen	UNH Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	MREP/ Presenter	603-862-3950	mlbecker@cisunix.unh.edu
Boreman, John	Director, NMFS, Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543	Presenter	508 495-2233 (voice) 508 495-2232 (fax) 774 392-0221 (cell)	john.boreman@noaa.gov
Coon, John	UNH – Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	Presenter	603-862-0654	jrcoon@cisunix.unh.edu
Fleeger, Bill	UNH – Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	MREP Coordinator	603-862-0654	wfleeger@unh.edu

Fiorelli, Pat	NEFMC 50 Water St, Mill #2 Newburyport MA 01950	Presenter	978 465 0492 X 25 Fax: 978 465 3116	pfiorelli@nefmc.org
Goethel, David	23 Ridgeview Terrace Hampton, NH 03842- 2071	MREP/Facilitator	603-926-2165	egoethel@attbi.com
Howard, Paul	NEFMC 50 Water St, Mill #2 Newburyport MA 01950	Presenter	978 465 0492 X 25 Fax: 978 465 3116	phoward@nefmc.org
Olson, Julia	Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543	Presenter	508-495-2199	j.olson@noaa.gov
McGee, Sally	Environmental Defense 368 Noank Road Mystic, CT 06355	Presenter	860/572-0190 Fax:860/371-3708	smcgee@environmentaldefense.org
Pentony, Michael	One Blackburn Drive Gloucester, MA 01930- 2298	NOAA Fisheries, Northeast Regional Office	978- 281-9283	michael.pentony@noaa.gov
Bonnie Spinazzola	Atlantic Offshore Lobstermen's Assoc. 114 Adams Road Candia, NH 03034	Presenter	603 483 3030	bonnie@offshorelobster.org
Steele, Lori	NEFMC 50 Water St, Mill #2 Newburyport MA 01950	Presenter	978 465 0492 X 25 Fax: 978 465 3116	lstele@nefmc.org
Thunberg, Eric	Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543	Presenter	508-495-2272	e.thunberg@noaa.gov
Tooley, Mary Beth	415 Turnpike Drive Camden, Maine 04843	MREP/Facilitator	207-763-4176 cell: 207-837-3537	ecpa@adelphia.net
Williamson, John	201 Western Avenue Kennebunk, Maine 04043	MREP/Presenter	207-967-3847	jwilliamson@fishadvocate.com

**MREP Spring 2005 Science Module
Participant List**

Fishermen

Name	Address	Sector	Phone	Email
Ashbaugh, Gage	106 Greene St., Sabattus, ME 04280	herring/mackerel midwater trawl fisheries	207-671-0943,	gageprovidian@aol.com
Chaprales, Bill	P.O.Box 285 Marston Mills MA 02648	Commercial Fishing	508-420-3666 cell: 508-367-9658	ruebycorp@aol.com
Derek Gauron	PO Box 564 Hampton, NH 03843	Commercial Fishing	cell 603 502-4884	derekgauron@yahoo.com
Hebert, Tom	36 Liptack Rd. Groveland MA 01834	Recreational Fishing	978-372-6667	thomas.hebert@agfa.com
Hesse, Eric	53 Meadow Lane West Barnstable MA 02668	Commercial Fishing	508-362-8462	e.hesse@comcast.com
Ketchopulos, Dusty	54 Stockholm Ave Rockport MA 01966	Commercial Fishing; Groundfish	978-815-1544	
Leary, Mike	3 Orchard Drive Hampton Falls NH 03844	Commercial Fishing	603-772--6207 Cell:603.234.3399	cbat@comcast.net
Love, Mike	178 Haskell Road N. Yarmouth ME 04097	Commercial Fishing	207 829-2754	lovefisheries@hotmail.com
Zack Klyver	257 Mud Creek Road Lamoine, ME 04605	Recreational and commercial fishing	207 667-1136 (home) 207 288-2386 (office) 207 288- 4393 (fax)	zackklyver@yahoo.com
Nieuwkerk, Knoep	177 Maguire Road Kennebunk ME 04043	Commercial Fishing	207 985-7535	nieuwkerk@gwi.net
Swicker, Scott	241 Essex Ave Gloucester, MA 01930	Commercial Fishing	Home: 978 281- 1278 boat: 508 320- 7007	
White, Jeffrey	74 Birch Hill Road York ME 03909	Commercial Fishing	207/363-9751	

Name	Address	sector	Work Phone	Email Name
Holt Cline, Amy	UNH Costal Observing Center Morse Hall Durham NH 03824	Education/Research	603-862-3680	Amy.cline@unh.edu
Cowperthwaite, Hugh S.	Coastal Enterprise, Inc. 2 Portland Fish Pier Suite 201 Portland, ME 04101	FISHTAG Co- ordinator	207 772 5356 Fax: 207 772 550	hsc@ceimaine.org
Frei, Don	60 pigeon hill rd. Rockport MA 01966	NMFS fisheries management specialist	978-281-9221	don.frei@noaa.gov
Ruccio, Mike	47 High St Rockport MA 01966	NMFS Management Specialist	978-281-9104.	michael.ruccio@noaa.gov
Sanderson, Melissa	210 E. Orleans Rd. North Chatham MA 02650	Cape Cod Com. Hook Fisherman	508-945-2432 x15 Fax: 508-945-0981	sanderson@ccchfa.org
Tinker, Lisa LTJG	Fifth Coast Guard District 431 Crawford Street Portsmouth, VA 23704	U.S. Coast Guard Office of Law Enforcement	757-398-6662 Cell: 757-636- 2423	ltinker@lantd5.uscg.mil

**MREP Spring 2005 Management Module
Participant List
Fishermen**

Name	Address	Sector	Phone	Email
Ashbaugh, Gage	106 Greene St., Sabattus, ME 04280	herring/mackerel midwater trawl fisheries	207-671-0943,	gageprovidian@aol.com
Bouchard, Carl	PO Box 219 Exeter, NH 03833	Commercial Fishing	tel 603 772-5047 fax 772-5370	cpbouch@aol.com
Chaprales, Bill	P.O.Box 285 Marston Mills MA 02648	Commercial Fishing	508-420-3666 cell: 508-367-9658	ruebycorp@aol.com
Hebert, Tom	36 Uptack Rd. Groveland MA 01834	Recreational Fishing	978-372-6667	thomas.hebert@agfa.com
Hesse, Eric	53 Meadow Lane West Barnstable MA 02668	Commercial Fishing	508-362-8462	e.hesse@comcast.com
Leary, Mike	3 Orchard Drive Hampton Falls NH 03844	Commercial Fishing	603-772--6207 Cell:603.234.3399	cbat@comcast.net
Derek Gauron	PO Box 564 Hampton, NH 03843	Commercial Fishing	cell 603 502-4884	derekgauron@yahoo.com
Klyver, Zack	257 Mud Creek Road Lamoine, ME 04605	Naturalist Whale Watch/ Education/ Herring Mgmt	207 667-1136 (home) 207 288-2386 (office) 207 288- 4393 (fax)	zackklyver@yahoo.com
Nieuwkerk, Lucinda	177 Maguire Road Kennebunk ME 04043	Commercial Fishing	207 985-7535	nieuwkerk@gwi.net
Swicker, Scott	241 Essex Ave Gloucester, MA 01930	Commercial Fishing	Home: 978 281-1278 boat: 508 320-7007	
Odell, Jackie	Northeast Seafood Coalition 30 Western Ave. Suite 213 Gloucester, MA 01930	Trade Group	978-283-9992 Fax: 978-283-9959 Cell: 978-836-7999	jackie_odell@yahoo.com jackie@northeastseafoodcoalition.org
Porter, Kristan	PO Box 233 Cutler, ME 04626	Dragger and lobster fishing	tel 207 259-3306 cell 207 460-0560	kbporter@maineline.net
White, Jeffrey	74 Birch Hill Road York ME 03909	Commercial Fishing	207/363-9751	jqlnncle@aol.com

	Address	sector	Work Phone	Email Name
Holt Cline, Amy	UNH Costal Observing Center Morse Hall Durham NH 03824	Education/Research	603-862-3680	Amy.cline@unh.edu
Cowperthwaite, Hugh S.	Coastal Enterprise, Inc. 2 Portland Fish Pier Suite 201 Portland, ME 04101	FISHTAG Co- ordinator	207 772 5356 Fax: 207 772 550	hsc@ceimaine.org
Frei, Don	60 pigeon hill rd. Rockport MA 01966	NMFS fisheries management specialist	978-281-9221	don.frei@noaa.gov
Ruccio, Mike	47 High St Rockport MA 01966	NMFS Management Specialist	978-281-9104.	michael.ruccio@noaa.gov
Sanderson, Melissa	210- E Orleans Rd. North Chatham MA 02650	Cape Cod Com. Hook Fisherman Assoc.	508-945-2432 x15 Fax: 508-945- 0981	sanderson@ccchfa.org
Tinker, Lisa LTJG	Fifth Coast Guard District 431 Crawford Street Portsmouth, VA 23704	U.S. Coast Guard Office of Law Enforcement	757-398-6662 Cell: 757-636- 2423	ltinker@lantd5.uscg.mil

Others

MREP Staff/Presenters

Name	Address	sector	Work Phone	Email Name
Almeida, Frank	Deputy Director NMFS, Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543	Presenter	508 495-2000 (voice) 508 495-2258 (fax)	frank.almedia@noaa.gov
Becker, Mimi Larsen	UNH Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	MREP Presenter	603-862-3950	mlbecker@cisunix.unh.edu
Ferreira, Allison	NOAA Fisheries, Northeast Regional Office One Blackburn Drive Gloucester, MA 01930-2298	Presenter	978- 281- 9300	allison.ferreira@noaa.gov
Fleeger, Bill	UNH – Dept. of NR 215 James Hall 56 College Rd. Durham, NH 03824	MREP Coordinator	603-862-0654	wfleeger@unh.edu
Fiorelli, Pat	NEFMC 50 Water St, Mill #2 Newburyport MA 01950	Presenter	978 465 0492 X 25 Fax: 978 465 3116	pfiorelli@nefmc.org
Hamel, Ryan LT.	NortheastRegional Fisheries Training Center 5200 East Hospital Road Buzzards Bay, MA 02542	Commanding Officer, USCG	508-968-6603	rhamel@nrftc.uscg.mil
Chris Kellog	NEFMC 50 Water St, Mill #2 Newburyport MA 01950	Presenter	978 465 0492 X 25 Fax: 978 465 3116	ckellog@nefmc.org
McGee, Sally	Environmental Defense 368 Noank Road Mystic, CT 06355	Presenter	860/572-0190 Fax:860/371- 3708	smcgee@environmentaldefense.org
Olson, Julia	Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543	Presenter	508-495-2199	j.olson@noaa.gov
Rosenberg, Andy	Ocean Process Analysis Lab UNH Morse Hall Rm 142 Durham NH 03824	MREP/Presenter	603-862-2020	andy.rosenberg@unh.edu
Bonnie Spinazzola	Atlantic Offshore Lobstermen's Assoc. 114 Adams Road Candia, NH 03034	Presenter	603 483 3030	bonnie@offshorelobster.org
Thunberg, Eric	Northeast Fisheries Science Center 166 Water Street, Woods Hole, MA 02543	Presenter	508-495-2272	e.thunberg@noaa.gov
Tooley, Mary Beth	415 Turnpike Drive Camden, Maine 04843	MREP	207-763-4176 cell: 207-837-3537	ecpa@adelphia.net
Williamson, John	201 Western Avenue Kennebunk, Maine 04043	MREP/Presenter	207-967-3847	jwilliamson@fishadvocate.com

Appendix D
Meeting Evaluations
Marine Resource Education Project
Science Module, November 10-12, 2004

New England Center
University of New Hampshire
Durham, NH

Science Module Evaluation Summary

Please complete this evaluation to let us know:

1. How well the workshop goals were met;
2. The extent that you benefited, and
3. What we can do to make the next Science Education Module better.

For the questions scaled 1 – 10, please **CIRCLE** the scale number that best reflects your opinion. For other questions, place an “**X**” next to your choice(s) and/or provide written comments. Your opinions are extremely valuable to the MREP Board of Directors and Implementation Team and will be used to make the program better for future participants.

1. On the basis of the stated goals (as set forth in your AGENDA), to what extent do you feel that workshop goals were met? CIRCLE your choice for each
 - a. The Monday morning presentation on Concepts in Population Biology helped you understand the fundamentals of fisheries science.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
2 3 3 4 5

Comment:

“Good presentation, some formulas used in the ppt presentation would benefit from variable identification within the slides.”
“Bill did a great job.”

- b. The Monday afternoon session helped you understand the basic tools of stock assessment, including how stock surveys are conducted.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
5 7 4

Comment:

“Presentation was informative and adequately explained why science continued use of outdated methods to maintain data consistency.”
“Best presenters.”
“Bill does a great job.”

- c. The Tuesday morning session helped you to understand the how and why of modeling, surplus production, biological reference points and the process for reviewing assessments.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

1 6 2 6 2

Comment:

“ good presentation. Questions from fishers increased my understanding of the concerns of stakeholders in the modeling process. Some external modeling examples (outside fisheries) to solve for sought variables”

“ This is a very confusing topic. Bill did a good job, but a lot of folks had difficulty with some of the details. Keeping some of the details out of the talk might be helpful.”

“This presentation pulled together Monday’s discussion.”

“ I think I get it, but will have to study the GARM, SAW and SARC documents to know.”

- d. The presentation by Dr. Chris Glass Wednesday morning helped you understand about fishing gear effects and innovation and the role of fishing gear innovation on by-catch reduction.

Not very well 1....2....3....4....5....6....7....[8....9....10 Extremely well

3 13

Comment:

“Dr. Glass’ presentation was excellent and informative. Differing format and presentation aids added to presentation effectiveness.”

Chris presented this info perfectly. The videos were wonderful and effective.”

“Very interesting and give hope that we can address by-catch problems.”

- e. The question and answer session on late Wednesday afternoon helped to increase your understanding of the material presented during the first 2 ½ days.

”A picture is worth a 1000 words.”

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

1 1 2 2 2 2

Comment:

“Questions and concerns from both science/fisher perspectives increased knowledge of concerns and understanding of presented information.”

“Excellent presentation.”

“Didn’t do much.”

- f. Dr. David Townsend’s presentation about the oceanography of the Guld of Maine and George’s Bank helped you to understand the physical and environmental factors

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

1 2 4 8

Comment:

“Dave presented complex info in a easy to understand format. His real life examples were super.”

“Great science and information. Additional relationships b/w fishery and presented information would increase value”

“Excellent presentation—possibly integrate how the oceanography affect pelagic fishery.”

“Very good, but I’ve taken a couple of classes in oceanography. I wonder about the others.”

- g. The sessions devoted to research to obtain data needed to gain a better understanding of ecosystem-based resource management on the afternoon of day 3 of the science module helped me to understand the information needs and how I might contribute to this new approach to fisheries management information..

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

2 2 3 2 3 3

Comment:

“Good discussions, though I am unclear as to where this EBR is headed to the future and what it means with respect to future regulation/ mgmt.”

“Although I don’t have a much greater understanding of this information needs, I think our discussion that ensued was very valuable.”

“Needed more focus. Distinguish b/w EBM fisheries vs others

“ EBM seems.....but it must be attempted.”

“Much more discussion needed. The class brought up some good pts, but I didn’t feel like the fishermen participated enough.”

- h. The sessions devoted to collaborative research projects on the afternoon of day 3 of the science module helped,me to better understand how collaborative research utilizes the commercial fishing industry and how I might participate..

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

2 2 3 2 3 3

Comment:

“ As a law enforcement professional I understand but likely will not add much to the research leg/effort”

“ I would like to participate—how cn I as afishermen collect data so my.....fishery in a quick, accurate and precise manner?”

“ Much more funding needed and we have to figure out how to address NMFS concerns re fish mortality.”

- i. Overall, the three-day science module helped to increase my understanding of fisheries science and how scientists gather date and use it to generate models and recommendations.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

2 3 2 8

Comment:

“My goal was to understand the stock assessment process/ models and I think I got it!”

“Significantly increased knowledge”

jOverall, after participating in the three-day science module, your understanding of how fishermen and scientists can cooperate in the future has...

Decreased 1...2...3...4...5...6...7...8...9...10 Increased
 1 1 2 1 3 6

Comment:

“I already know they can work together...I rely on them.”

2. How active were you in discussions and in the exchange of information and ideas?

Not very active 1...2...3...4...5...6...7...8...9...10 Extremely active
 N=15 1 1 2 2 3 1 2 2 1

Comment:

“Most of my questions were directed to increase my understanding “.... Add significant information to the group through personal science experience.”

“I was not particularly active in the discussions but I gained a much better understanding of fisheries science.”

“Having not been active in the ground fisheries, I felt that I did not have enough background to participate.”

3. How well were you able to communicate with other participants so your questions and concerns were heard?

Not very well 1...2...3...4...5...6...7...8...9...10 Extremely well
 N=15 1 6 4 5

Comment:

“The few questions I had were answered.”

“During dinner breaks.”

“Most of my concerns were discussed at the dinners.”

4. How well were your own questions answered, discussed or considered?

Not very well 1...2...3...4...5...6...7...8...9...10 Extremely well
 N=15 7 5 4

Comment:

“Questions were answered as asked.”

5. If you are a fisherman, how much did you learn about the scientific processes that impact decisions made about New England fisheries?

Nothing 1...2...3...4...5...6...7...8...9...10 A lot
2 1 3 5

Comment:

6. If you are a fisherman, did your attendance at the science module have any impact on how you perceive the scientific processes that are used to make assessments of species populations and distributions in the New England fisheries? After your attendance do you believe that the scientific processes in use are more credible or less credible than before you attended?

Less credible 1...2...3...4...5...6...7...8...9...10 More credible
1 2 2 3 3

Comment: “Always thought it was very credible.”
“didn’t change.”

7. If you are a scientist or manager, how much did you learn about fishermen’s concerns and perspective regarding the scientific processes used to assess and predict fish populations and species distribution in the New England fishery? After your attendance, do you understand the concerns of fishermen better than before you attended?

I didn’t learn much 1...2...3...4...5...6...7...8...9...10 I learned a lot
1 2 1 2

Comment:

“I appreciated candid responses and gained further understanding of questions with the science.”

“ These fishermen didn’t ask many questions. I talk with lots of fishermen all the time.”

“ The comments I heard were that this was a fairly “quiet” meeting. Group didn’t express too many concerns.”

8. What kind of follow-up information or action would be useful to you? (Your name, please, if you want specific information)

“None. I received many questions from fishers regarding law enforcement efforts/practices within New England.”

Would be very interested in helping to organize a similar session just for fisheries reporters. “ [Melissa Weidman]

“ A tune up session, possibly two years from now to update my knowledge.”

“ Get the people who have taken this over the past few years to get together to discuss ecosys. Management.”

9. Please rate the accommodations, food and service at the New England Center during your stay.

Unsatisfactory 1...2...3...4...5...6...7...8...9...10 Excellent
17

Comment:

“Excellent Throughout.”
“Food was terrific.” Accommodations excellent.”
“GREAT”

10. Please rate your overall experience at the science module:

Unsatisfactory 1...2...3...4...5...6...7...8...9...10 Excellent
1 5 10

Comment:

10. General Comments (Here’s where you can put anything that may be of interest or concern to you. Take your time and let us know how we can improve the program. Feel free to use the other side of the paper as well.)

“As is normal at many conferences, many of the most enlightening and thought provoking questions and discussions were brought forth during group lunches/dinners. A great mix of people, greatly increased the value of the conference. Truly appreciated the opportunity to be present as a member of the USCG. Increasing the understanding of the science & management aspects greatly increases my ability to answer difficult questions and accurately provide information to individual boarding officers responsible for enforcing federal regulations.”

“Excellent Program: though a bit of information overload does hit home after awhile. Overheads on first day were hard to read. Overholtz is a bit too low key. Cadrin and Brown were the best presenters and the highlight for me. But most important is the rare opportunity for us all to interact and get to know each other better. Would be helpful if on the first night there was some kind of specific social “ice-breaker” activity. Looking forward to the Management Module. Thanks for inviting me..”

“Please use a clear copy for handouts.”

“All of the sessions were excellent. The manual was an excellent tool to prepare for the sessions.”

“This is a good course.”

Marine Resource Education Project Management Module Evaluation Form

(Dec 6-8, 2004)

Please complete this evaluation to let us know:

1. How well workshop goals were met
2. The extent to which you personally benefited
3. What we can do to make the next Management Education Module better

*For the d questions scaled 1-10, please **CIRCLE** the scale number that best indicates how you feel. For other questions place an "X" next to your choice(s) and/or provide written comments.*

1. On the basis of our stated goals (refer to the Agenda if you wish), to what extent do you feel that workshop goals were met? CIRCLE your choice for each.

How well did the workshop sessions:

a. Help you obtain a clear view of what organizations have responsibility for managing commercial marine fisheries, (e.g., NMFC, NMFS, NEFMC), and what their jurisdictions and legal authority are and how they work in the New England Region?

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well.
1 1 3 2 4 5 Mean: 8.37

Comments:

Already knew this

b. Provide you with a better understanding of the role of the National Marine Fisheries Service and its obligations under federal law.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well.
3 4 5 5 Mean: 8.7

Already knew this

c. Provide you with a better understanding of the New England Fisheries Management Council, its responsibilities, structure and operations.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
2 3 7 5 Mean: 8.7

Already knew this

d. Provide you with better understanding of how the N.E. fisheries management decision process works, including how you and other stakeholders can be more effective participants

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 1 1 8 5 Mean: 8.93

Already knew this

e. Provide you with a better understanding of the role of Congress in making fisheries management policy, including how you can be effective in making your concerns known to your elected representatives.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 3 3 6 3 Mean: 8.37

Already knew this

f. Help to clarify the role and opportunities associated with industry trade organizations and the services they might provide to improve the effectiveness of fishermen's participation and/or input into fisheries management decisions

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
2 2 1 5 4 1 Mean: 7.66

Already knew this but very important for fishermen to know

Need explanation of specific steps fishermen and scientist to take to engage with coop research. Have consortium staff member come explain the RFP cycle and how they can get onto the band wagon. Maybe this should fit into the science module

g. Provide you with a some ideas to better equip fishermen and other stakeholders to engage in problem solving and negotiations to develop more timely, clearer and focused recommendations for submission to the NEFM decision makers.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 2 2 2 7 2 Mean: 7.56

Excellent points. Already knew this

h. Improve your understanding of what is required to achieve sustainable fisheries and how you can play an appropriate role in efforts to achieve this goal?

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 3 1 4 4 3 Mean: 7.93

Knew this

i. Gain a better understanding of the role the precautionary principle can play in addressing areas of uncertainty relative to ecosystem-based fisheries management.

Not at all 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Very Much Better
1 1 2 4 6 2 Mean: 7.56

Knew this, but I struggle with ecosystem management like we all do

This is a big buzz word (precautionary principal) and it wasn't talked about enough.

Was this ever talked about? Paul only talked about taking the numbers and playing with them not necessarily being more cautious. More details How does NEFMC use this or not?

j. Identify issues for further exploration and/or negotiation skill development.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 2 4 6 2 Mean: 8.06

very very excellent

Mimi's talk was not applied to what we were supposed to do in negotiation or how to negotiate better in the exercise.

k. Provide you with some foundation and an understanding of the social and economic impact assessment process and how such analysis is used to inform decisions regarding fisheries research and management.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 1 1 6 2 2 1 2 Mean: 6.68

Social- economic assessment is clear as mud. Suggest having it on the first day after Mike P. and biol.

Speakers talked to long and discussion was sequestered.

l. Give you some insight into the regulatory process, including NEPA compliance that must be met in FMP and other decisions.

None 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 A lot
2 3 3 5 3 Mean: 8.12

Also excellent, just because it makes the "complainers learn something about the various statutes and high level standards they have to meet.

m. Give you a better understanding of various evolving concepts in fisheries management, such as Eco-system based management, adaptive governance and significant public participation.

None 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 A lot
1 1 3 4 4 1 2 Mean: 7.12

Knew this

Missing: area management, sector allocation and others

Was good but had to rush due to time constraints

j. Did you gain a better understanding of the role of the USCG and issues surrounding the enforcement of fisheries regulations? (CIRCLE ONE)

YES	NO	I need more information
15	1	

Comment:

I had good understanding prior to the class but liked the presentation

Knew this

I already had a good understanding of the CG role.

This was well presented.

2. How active were you in discussions and exchange of information?

Not very active	1.....2.....3.....4.....5.....6.....7.....8.....9.....10	Extremely Active
	3 1 2 1 2 2 3 3	Mean: 5.64

3. How well were you able to communicate with other participants so your questions and concerns were heard

8 **Very Well** 5 **Fairly well** 3 **Somewhat** 1 **Poorly** 0 **Not at all**

Little discussion because speakers talked too much. Discussion is the important part because what the participants care about comes out

4. My question concerns were specifically discussed or considered.

10 **Very Well** 3 **Sort of** 1 **Poorly** 0 **Not at all** 3 **I didn't raise anything specific**

5. If you are a fisherman, how much did you learn about the roles of marine fisheries agencies, and how the marine regulatory and decision processes work?

Very little	1.....2.....3.....4.....5.....6.....7.....8.....9.....10	A lot
	1 1 1 4 5	Mean: 9.63

6. If you are a fisherman, to what extent do you feel better equipped to participate in the decision process than you felt before you participated in the workshops?

No better	1.....2.....3.....4.....5.....6.....7.....8.....9.....10	A lot better
	1 2 2 3 4	Mean: 8.58

NMFS,USCG in mission areas with respect to fisheries regulation formulation and enforcement.

May be worthwhile to invite a state law enforcement (MMEP, MADEM) speaker to the final day depending on the audience.

Appreciate the opportunity to be engaged throughout the duration of the program. The course was valuable to me both for the information passed during class and the specific discussions outside the classroom.

I wish the binder was full of handouts before the start of the class. It is hard to take notes on the pages you do not have. Also wish to have list of participants at the first few hours to track points of views. Thank you for the diversity of the modules and the number of participants.

This is an excellent program. Get as many fishermen involved as possible

Could you send me a list of former participants in this program? I am working on creating an industry coalition and anyone who has been through this is a strong candidate for first outreach.

The management module was less useful for me because of my background. I do think it is really important to get people to understand the importance of getting involved, forming coalitions.

I found this 3-day meeting extremely informative. For the most part, I thought the presentations effectively filled in the holes in my knowledge of fisheries management. While finding additional time may be difficult, I think this module [was] a little rushed and would benefit from additional time devoted to certain topics. Additionally, I found the negotiation exercise very enlightening. I would suggest allowing participants more time to read and process the second packet of information (overnight).

All sessions were equally good. However, some of the speakers were able to hold my attention more than others. Lake Washota was a very good exercise.

The meals were a good opportunity to voice my concerns on a one to one basis. Thank you for the opportunity to attend.

How come we didn't hear from Pat K.?

I generally observe at these types of meetings that they are better if the talks are short and the agenda times are stuck with. When presenters speak to much, there is little time for Q and A and discussion. But this is the interesting part and it keeps the participants engaged. This was done fairly well, but the afternoon of the 3rd day was hard to stay with. How about putting the Lake Washota exercise on the 3rd day? It was great to have Eric and Julia. We rarely get to hear from NMFS staff that are lower down the ladder.

Biased views of USCOP recommendations were presented. How about having a commissioner of staff come?

USCOP recommendation on federal level not addressed well. Should have had a USCOP staff come speak. It wasn't represented well.

I thought Paul Howard was a bit disappointing. He seems to mischaracterize some significant components of the report recommendations (vs his opinion of them). I don't know how useful that

is to fishermen. I wonder if having an NGO component might be useful.

Follow-up course to update

The negotiation helped show us what people who try to get consensus are up against.

I would like to see more information on economics, more presentation on cooperatives and other controversial concepts. Evaluate property rights in the open air in a forum in which the presenter will actually have time to explain the principles before being stoned to death. Although I know many people won't/ don't agree with the conclusions, I think it's atrocious that people politicize it so much no one will even examine it (yeah OK, I'm biased). It would also be grat to have a super green group (Oceania?) present their views and take questions.

**Marine Resource Education Project
Science Module, March 13-16,2005**

New England Center
University of New Hampshire
Durham, NH

Science Module Evaluation

Please complete this evaluation to let us know:

4. How well the workshop goals were met;
5. The extent that you benefited, and
6. What we can do to make the next Science Education Module better.

For the questions scaled 1 – 10, please **CIRCLE** the scale number that best reflects your opinion. For other questions, place an “**X**” next to your choice(s) and/or provide written comments. Your opinions are extremely valuable to the MREP Board of Directors and Implementation Team and will be used to make the program better for future participants.

5. On the basis of the stated goals (as set forth in your AGENDA), to what extent do you feel that workshop goals were met? **CIRCLE** your choice for each
 - i. The Monday morning presentation on Concepts in Population Biology helped you understand the fundamentals of fisheries science.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
1 4 5 2 3 Mean: 8.13

Comment:

Need more fisheries input.

Cadrin was a good speaker however the graphs were somewhat confusing. Penny exercise was good.

Was a lot of info to process over a short period of time but it was explained very well.

Steve is a great teacher, interesting, never boring even though dealing with technical data. A+ for everything.

Dr. Cadrin was an excellent speaker.

Reinforced previous education in population dynamics.

Not here!! Groundfish committee meeting.

Dr. Cadrin did an excellent job in turning a 3 credit course into just a few hours. The presentation was well spoken and clear.

Having handouts of powerpoints is very helpful. Sometimes he had a hard time translating to commonly used language but overall very good.

- j. The Monday afternoon session helped you understand the basic tools of stock assessment, including how sampling is done, statistics derived and stock surveys conducted.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
1 3 4 5 4 Mean: 8.47

Comment:

Again Fisherman input crucial

Lot of info

Great on sampling/stats not as clear on stock surveys

Very technical, should be in common language.

It was understood because I had a prior background. The topic always takes time to understand.

- k. The Tuesday morning session helped you to understand the how and why of modeling, surplus production, biological reference points and the process for reviewing assessments.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
2 1 2 7 2 3 Mean: 7.88

Comment:

Better understanding now.

Would like more time on stock assessments. Rushed through, particularly reviewing assessments which is the most important for stakeholder understanding.

More time needed for this difficult subject.

Again, very technical in nature biological reference points didn't capture the why of what is done.

The modeling was a bit foggy for me but I understand the concepts. Biological references points were helpful but he moved quickly through them.

Complex, so many variables but explained well.

- l. The presentation by Dr. Chris Glass helped you understand about fishing gear effects and innovation and the role of fishing gear innovation in by-catch reduction.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

5 3 8 Mean: 9.5

Comment:

Seeing the actual gear in operation video!

Fantastic video data

Excellent! Ties together real world observations

Video was excellent

Interesting but hard to see connection to larger science picture. Could have been shorter.

Tremendous potential; industry need to step up!

Very informative.

I learned a lot about how fish were caught and the visual aids were excellent.

Would have liked to see more movies of gear and more examples of who were using what nets. I didn't know if they were all still research or if used actively in the fishery.

It would be good to tell fishermen how they can fish nets/gear to minimize bycatch. Great examples of research by Chris but how do we take this to the next step and get them into use.

m. The question and answer session on late Tuesday afternoon helped to increase your understanding of the material presented during the first 2 ½ days.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well

1 1 1 2 3 2 4 Mean: 7.42

Comment:

Effective.

Don't recall a Q and A session.

No real Q and A happened.

Learned a lot about the fishermen in general. This period helps bring the fishermen and scientist together. Promoted excellent open discussion.

From what I remember, there was not enough time for a through discussion.

I think Q and A works best if you address them as the material is presented. Waiting until the end loses the energy and timeliness of the topic.

- n. Dr. David Townsend's presentation about the oceanography of the Gulf of Maine and George's Bank helped you to understand the physical and environmental factors that impact the fishery in the region.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
 2 1 4 11 Mean: 9.3

Comment:

Understanding where nutrients come from.

Humorous and interesting. Good crash course.

It was very informative information

Brilliant! The best talk on Oceanography I have ever heard and he has keen interest to work with fishermen which is a plus.

Sheds new light on the subject. Excellent speaker.

Excellent, although could be focused more on fisheries, larval transport etc.

All of us are amateur oceanographers-would like more of this kind of information.

Difficult topic to do in a morning session.

Outstanding session.

I have taken oceanography but on a large scale. Several fishermen commented on their interest in this topic.

Dave is always great at describing the ecosystem!

Enjoyed very much, small scale examples were helpful to understand larger scale processes.

- o. The session devoted to research to obtain data needed to gain a better understanding of science and ecosystem-based resource management in this science module helped me to understand information needs and how I might contribute to this new approach to fisheries management information.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
 2 1 1 3 3 3 2 2 Mean: 6.82

Comment:

Chad is a dynamic guy but he tried to cover too much too quickly. I also felt that the presentation was[not] geared for us but for the policy people in his department at NEFMC who know his jargon. I would have rather heard a talk about ecosystem management in the other countries-case studies for us to think about. Chad knows his info but it was too technical and broad and he jumped around too quickly. He should slow down.

First time I heard this topic. Very confusing. Chad is a great speaker there was just too much information.

Ecosystem based discussion was thought provoking but didn't illustrate how to get involved.

Cloudy, the future is. This will be much easier in retrospect.

Very important topic well worth a complete day on this subject.

I know that it is very important for me to understand as much as I can about the different pieces in order to create a coherent puzzle.

I didn't think this was addressed at all (new approaches)

- p. The final question and answer session helped me to better understand some of the challenges to and opportunities for scientific research as well as how science contributes to our understanding of fisheries dynamics and identified some opportunities for collaborative fisheries research.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
1 1 1 2 4 2 2 Mean: 7.07

Comment:

This was a good session! I think we should have taken one species group, for example ground fish and defined all the parameters and identified all the factors that play into the ecosystem management of ground fish. This would be practical to fishermen and real world.

Didn't happen

Yes, this was productive. A round robin was a good idea as well to get at all voices.

- q. Overall, the three-day science module helped to increase my understanding of fisheries science and how scientists gather data and use it to generate models and recommendations.

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
1 5 4 5 Mean: 8.86

Comment:

Very informative. Enjoyed meeting experts in other fields.

Missing the recommendation part.

It is difficult for the recreational sector to relate or more to the point be involved at this level with the information presented.

Very useful, needs to be expanded and more fishermen and managers come together.

- r. Overall, after participating in the three-day science module, your understanding of how fishermen and scientists can cooperate in the future has...

Decreased 1....2....3....4....5....6....7....8....9....10 Increased
 1 1 3 3 2 5 Mean: 8.26

Comment:

It is important that fishermen and scientist cooperate into the future

Providing everyone can communicate and state their objectives clearly.

Didn't see the connection of how the info provided will increase cooperation.

I know faces, I have email addresses- a passion for the profession should complete the picture.

I think there was too much talking at fishermen than fishermen sharing but that depends on the overall goals of the meeting and what outcomes you hope to come from this.

There was not a lot of focus on how to get fishermen and scientist to work together.

6. How active were you in discussions and in the exchange of information and ideas?

Not very active 1....2....3....4....5....6....7....8....9....10 Extremely active
 3 1 1 2 1 3 1 4 Mean: 6.37

Comment:

I am new to this arena, I just sat back and observed.

Need more discussion time.

Like a bad date

I concentrated on the information and listened to the fishermen and scientist. My understanding is with the mid- Atlantic and I learned an extreme amount about the northeast fishery.

7. How well were you able to communicate with other participants so your questions and concerns were heard?

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
 1 1 4 1 2 4 3 Mean: 7.12

Comment:

Both in the bar and out. Perhaps you should have a barbecue.

Mostly very well. I had other questions that were not able to get to.

8. How well were your own questions answered, discussed or considered?

Not very well 1....2....3....4....5....6....7....8....9....10 Extremely well
 2 3 3 7 Mean: 8.2

Comment:

Not applicable because I didn't raise any specific questions _1____

Nobody got dissed.

Some were understood by the people asked. Some of my questions were not understood.

I learned a lot from the presentations. Much of the other discussions outside of class among the fishermen were hard for me (personally to follow). I have not spent much time with fishermen who target ground fish. So I did pick up information but it was hard for me to contribute to a conversation.

9. If you are a fisherman, how much did you learn about the scientific processes that impact decisions made about New England fisheries?

Nothing 1....2....3....4....5....6....7....8....9....10 A lot
1 1 1 1 5 Mean: 8.88

Comment:

I knew a little already, now I'm dangerous.

10. If you are a fisherman, did your attendance at the science module have any impact on how you perceive the scientific processes that are used to make assessments of species populations and distributions in the New England fisheries? After your attendance do you believe that the scientific processes in use are more credible or less credible than before you attended?

Less credible 1....2....3....4....5....6....7....8....9....10 More credible
1 1 1 2 1 1 2 Mean: 7.22

Comment:

There are more variables upon variables than I had thought.

History show's that the survey data and the catch rate is accurate.

My perception they aremore scary (assumptions!)

11. If you are a scientist or manager, how much did you learn about fishermen's concerns and perspective regarding the scientific processes used to assess and predict fish populations and species distribution in the New England fishery? After your attendance, do you understand the concerns of fishermen better than before you attended?

I didn't learn much 1....2....3....4....5....6....7....8....9....10 I learned a lot
1 3 2 3 Mean: 7.8

Comment:

This was huge for me. Just being able to talk with and be party to their discussions at dinner helped me understand their perspective. Great program.

Wasn't a lot of time for concerns to be brought out. Most of the discussion was focused around clarifying concepts.

Was aware of the fishermen's concerns as I was one for many years.

General discussions at meals or at breaks were great.

I think I understand their general concerns and I heard some of their local concerns more through hall/lunch conversations but this meeting focused more on content: how decisions are made rather than their concerns.

I definitely understand more about fishermen's concerns but addressing their concerns does not appear to be any clearer. There are so many variables and assumptions.

12. What kind of follow-up information or action would be useful to you? (Your name, please, if you want specific information)

Looking forward to next module.

Great accommodations.

Larger powerpoint slides/digital version. A lot of the graphs/charts are useless so small. Would like a forum to continue discussions/ clarify future questions (MREP bulletin board).

Alumni newsletter- a way of keeping all class members and past class members informed of what we are doing today. This would keep this forum going in our lives when we go home.

A publication list for the presenters-it would keep us abreast of their work.

I am interested in how public outreach should take place if more people are supposed to understand the issues in order to be better informed and possible change their actions.

13. Please rate the accommodations, food and service at the New England Center during your stay.

Unsatisfactory 1....2....3....4....5....6....7....8....9....10 Excellent

1 2 13 Mean: 9.75

Comment:

Superb

Dangerous. My arteries are just plugged. I'll have to revert (unhappily) to my wife's food to save myself.

Food excellent, snacks great, accommodations fair.

Amazing! Industry would be hard pressed to imitate it.

Very well fed and comfortable.

10. Please rate your overall experience at the science module:

Unsatisfactory 1...2...3...4...5...6...7...8...9...10 Excellent
1 7 8 Mean: 9.81

Comment:

Lovely accommodations

Learned some new concepts, reviewed old knowledge with a GOM focus.

The cookies were delicious.

I am glad to be involved. Understanding the decision making process is essential to explaining it to others. There must be tangible ways to get this info out to more people and wider audiences.

14. General Comments (Here's where you can put anything that may be of interest or concern to you. Take your time and let us know how we can improve the program. Feel free to use the other side of the paper as well.)

What a wonderful learning experience and it help give me a working knowledge of how fishermen and managers may interact together. (I am optimistic).

I learned a great deal in a short period of time and I am glad I participated.

This was an amazing program and I look forward to the next session.

Frank discussions.

Power point display to small and the handouts are really too small and will not be useful as reference material.

Good food but too much! Naptime needed or more interactive/ discussions during dry sleepy sessions.

Thank you.

A general intro to how NOAA is structured (ie. who does what) council structure etc.. May be covered in management module. More NEFSC staff assessment biologist should attend (if they haven't done so previously).

Overall, great body of content covered. I would have liked to have heard more from fishermen. I am curious if these 3 days are meeting the MREP original goals and are those in line with the fishermen's individual expectations or goals. Too much sitting; not enough small/large discussions even though information has been great.

I think it's great that this is an all expenses paid experience. I appreciate the opportunity to participate and not worry about expenses etc. Thanks to the NEC and those who put the program together.

Marine Resource Education Project Management Module Evaluation Form
(April 10-13, 2005)

Please complete this evaluation to let us know:

1. How well workshop goals were met
2. The extent to which you personally benefited
3. What we can do to make the next Management Education Module better

*For the d questions scaled 1-10, please **CIRCLE** the scale number that best indicates how you feel. For other questions place an "X" next to your choice(s) and/or provide written comments.*

1. On the basis of our stated goals (refer to the Agenda if you wish), to what extent do you feel that workshop goals were met? CIRCLE your choice for each.

How well did the workshop sessions:

- a. Help you obtain a clear view of what organizations have responsibility for managing commercial marine fisheries, (e.g., NMFC, NMFS, NEFMC), and what their jurisdictions and legal authority are and how they work in the New England Region?

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well.
1 3 4 2 4 Mean: 8.35

Authority vs responsibility not addressed

- b. Provide you with a better understanding of the role of the National Marine Fisheries Service and its obligations under federal law.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well.
1 3 5 5 Mean: 8.71

Very informative presentation

- c. Provide you with a better understanding of the New England Fisheries Management Council, its responsibilities, structure and operations.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 2 4 3 4 Mean: 8.5

Interesting; multi faceted

- d. Provide you with better understanding of how the N.E. fisheries management decision process works, including how you and other stakeholders can be more effective participants

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 2 1 1 7 2 Mean: 8.21

I enjoyed learning how to get questions/comments answered/resolved

Need more on how to participate

e. Provide you with a better understanding of the role of Congress in making fisheries management policy, including how you can be effective in making your concerns known to your elected representatives.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
 2 2 1 6 3 Mean: 8.14

Still seems like a very slow moving intimidating process

f. Help to clarify the role and opportunities associated with industry trade organizations and the services they might provide to improve the effectiveness of fishermen's participation and/or input into fisheries management decisions

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
 1 2 1 3 6 1 Mean: 7.78

A fantastic wealth of information

g. Provide you with a some ideas to better equip fishermen and other stakeholders to engage in problem solving and negotiations to develop more timely, clearer and focused recommendations for submission to the NEFM decision makers.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
 2 3 5 2 2 Mean: 7.92

Need info on how to get to negotiation phase-how to get to the table, the right participants.

h. Improve your understanding of what is required to achieve sustainable fisheries and how you can play an appropriate role in efforts to achieve this goal?

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
 1 1 3 5 2 2 Mean: 7.78

Didn't get this covered well enough.

i. Gain a better understanding of the role the precautionary principle can play in addressing areas of uncertainty relative to ecosystem-based fisheries management.

Not at all 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Very Much Better
 1 1 2 4 2 4 Mean: 8.21

j. Identify issues for further exploration and/or negotiation skill development.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well

1 1 2 5 2 3 Mean: 7.92

We did this?

k. Provide you with some foundation and an understanding of the social and economic impact assessment process and how such analysis is used to inform decisions regarding fisheries research and management.

Not very well 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely well
1 2 2 2 3 2 1 Mean: 6.84

Too lectury, dry-needed examples/ discussion

l. Give you some insight into the regulatory process, including NEPA compliance that must be met in FMP and other decisions.

None 1....2....3....4....5....6....7....8....9....10 A lot
3 6 4 1 Mean: 7.78

A bit confusing

m. Give you a better understanding of various evolving concepts in fisheries management, such as Eco-system based management, adaptive governance and significant public participation.

None 1....2....3....4....5....6....7....8....9....10 A lot
3 6 2 2 Mean: 8.07

j. Did you gain a better understanding of the role of the USCG and issues surrounding the enforcement of fisheries regulations? (CIRCLE ONE)

YES NO I need more information

Comment: 14

Fantastic presentation.

The "process" is overwhelming-each session could comprise a credit level course! It is a lot to teach in 3 days. Having the materials in the form of handouts before the presentation is extremely helpful.

2. How active were you in discussions and exchange of information?

Not very active 1.....2.....3.....4.....5.....6.....7.....8.....9.....10 Extremely Active
1 1 1 4 1 4 1 1 Mean: 6.64

2 Role of Congress in Fisheries Mgt. 1 Precautionary Principle & Ecosystem-base Management

 2 Where do we go from here?

Liked them all

Negotiation for mutual gains really not useful to the group in attendance. Needed more applicable presentation. [Liked] Lake Washota negotiation however presentation before it was awful.

Good lesson on consensus. Invaluable experience on how to give and take to negotiate.

[Industry Initiatives] More examples please! Right way, wrong way [Social and economic impact assessment] Critical to understand when discussing rights based management

[Lake Washota] These are extremely valuable skills to have in the “process”. The discussion and exercise were very helpful.

[NEFMC] Prepared me to participate in the mid-Atlantic council meeting. Also the role of science in management cleared and corrected several issues discussed in the science module.

10. What kind of follow-up information or action would be useful to you? (Your name, please, if you want specific information)

General Comments:

A lot of information in a short period of time. The last day the most interesting speakers didn't have much time. Maybe next time a shorter presentation by Ms. McGee would free up more time for the other speakers.

Very happy to have been invited to participate and also to receive instruction. Everyone was extremely polite what a wonderful experience. The accommodations were just perfect. I love the tree house feel of the hotel. Acorn restaurant muy sabroso!

The material is dry, complicated and often inconclusive as to its effectiveness. It would spice up the presentations if presenters included more “real world” anecdotes of (A) how the process they are discussing works and (B) parallel processes that also work. Examples that demonstrate creativity and industry consensus would be especially helpful and would enliven the presentations. The process is the track the train is supposed to run on but were all here to be a part of laying the track- so discovering where we want to end up should have more emphasis.

For discussions and exchange of information, I found intimate and small group discussions worked better for me. I benefited most by learning through listening to others around me. This program was excellent and has encouraged me to pursue a masters in living Marine Resource management.

Presentations need to be more interactive, less scholarly/lecture style. Presenters should have a better grasp on what was previously covered so we don't have a lot of repetition.

APPENDIX E:

MREP

Program Impact Assessment

Program Assessment
Marine Resource Education Project: 2001-2005
By
Mimi Larsen Becker, Ph.D. and William F. Fleeger, M.S.

Introduction

There is nearly universal agreement that fishery management requires collaboration of managers, scientists, and fishermen to be effective. However, the history of fisheries management in the New England region is one of distrust and frustration between regulators and the affected community. The process for crafting fishery regulations is procedurally complex and depends upon scientific assessments that are often not trusted by fishermen. Fishermen frequently find the management arena intimidating and confusing, and those who attempt to participate, often fail to engage it effectively. The Marine Resource Education Project (MREP) was initially funded by the Northeast Consortium in 2000 as a program to help bridge the gap between fishermen, scientists and managers. The program was designed to promote mutual learning and encourage dialogue and positive interactions between the participants in the fisheries management process. This report provides an assessment of the MREP programs' effectiveness in achieving its goals during the operating period of 2001-05. This report first begins with a brief overview of the MREP program and describes the methodology used in the development and implementation this assessment. Second, this report provides a summary of the results obtained from a survey of participants in the MREP program. Lastly this report provides recommendations and conclusions based upon survey data and experience with the program over the past four years.

Program Overview

The methods and approach of MREP focused on involving participants from the commercial fishing industry, conservation and nonprofit organizations, and state and federal government bi-annual six-day intensive seminars on the science and management of the fisheries resource in New England. Each six day seminar was divided into two three day modules generally held within 3-4 weeks of each other in both the spring and the fall. The first three day "science module" focused on the science fisheries management including conservation engineering and ecosystem dynamics. The following "management module" focused on how the management system works and how participants can most effectively, monitor, influence and guide fisheries management policy.

The Science Module

The science module covers the 'nuts and bolts' of fisheries science including: terminology, data collection and the methodology underlying fisheries population dynamics, stock assessments, statistics and modeling. The goal was to equip all participants with a common scientific language and understanding that facilitates later discussions. Presentations by scientists from NMFS Northeast Fisheries Science Center provide important material and information to participants in the short time allowed. The

second day continued the discussion on fisheries science and also included a half day presentation by Dr. Chris Glass from Manomet (no Director of the Northeast Consortium) on the science and current research in the field conservation engineering and by-catch reduction. On the morning of third day, Dr. David Townsend from the University of Maine instructed participants on the oceanography of the Gulf of Maine. The afternoon included presentations on ecosystem-based management, cooperative research as well time for general questions and open discussion between all participants and presenters. David Goethel, a fisherman and NEFMC member served as a translator/facilitator for the science module.

The Management Module

The management module provided fisheries managers the opportunity to discuss the roles played by their respective agencies and participants the opportunity to gain skills they could apply to participate more effectively in the fisheries management process. Mary Beth Tooley, a fishing industry representative and facilitator for the management module began the first day with an overview of how the various jurisdictions and regulations interact to manage the commercial fishing industry. This was followed by representatives of the NEFMC and NMFS discussing the role of their agencies in the management process and how fishermen can effectively participate and have their voices heard. The morning of the second day of the management module included presentations on attending a NEFMC meeting, the importance of participating in Trade Associations and the role of Congress in the fisheries management process. On the afternoon of the second day participant learned about alternative dispute resolution methods and engaged a mock negotiation to address a complex multi-party fisheries management issue. The third day of the management module opened with a presentation by the leadership of the NEFMC on current issues in fisheries management followed by a presentation from a USCG representative on the role of the Coast Guard in Fisheries enforcement. Later, representatives from the NMFS Science Center explained how biological, social and economic sciences are integrated into the fisheries management and policy process. The final afternoon of the management module concluded with a wide-ranging moderated discussion with presenters, panelists and participants discussing current management issues along with future issues and concerns.

Assessment Methodology

The design of this survey was based on the five major objectives of the MREP program (Table 1). Impact indicators were developed for each program objective and survey questions were designed to allow respondents to assess, from their own individual perspective, the extent to which participation in the program impacted them related to each specific indicator.

Table 1: Program Objectives and Indicators of Impact	
Program Objective	Indicators of Impact
To bring fishermen, scientists and managers together in a neutral setting, to build confidence in successful interaction between the disciplines.	<ul style="list-style-type: none"> • Increased sense of trust among participants • Improved working relationships • Increased levels of interdisciplinary interaction
To increase the number of individuals at work in New England fisheries who are comfortable navigating the fishery data and management systems.	<ul style="list-style-type: none"> • Increased understanding of scientific methodology and data used in fishery management • Increased understanding of management and policy processes • Increased participation in policy process
To deepen the familiarity of policy and science professionals with the workings of the fishing community.	<ul style="list-style-type: none"> • Increased understanding of fishing community issues • Improved working relationships with members of the fishing community • Increased sense of trust and cooperative relationships
To encourage participants to define a level of professionalism in commercial fisheries and to prepare individuals for leadership.	<ul style="list-style-type: none"> • Increased sense of professionalism among participants • Increased participation in policy and management processes • Number of participants who serve in leadership positions or increase in willingness to serve in leadership positions
To foster an atmosphere in which conservation engineering becomes part-and-parcel of the innovative drive in daily fishing operations.	<ul style="list-style-type: none"> • Increased sense of personal responsibility for achieving management objectives • Improved understanding of the concepts and practice of ecosystem based management • Increased understanding of the relationship between sustainable fish populations and sustainable fishing operations
To promote collaborative research.	<ul style="list-style-type: none"> • Increased awareness of collaborative research opportunities • Increased understanding of the value of cooperative research in fisheries management

Sample

The survey was designed and delivered by using the internet based survey tool surveymonkey.com. A request to participate in the survey was emailed to 145 of the 182 total participants (including presenters) in the program for which current and valid email addresses were available. Participants were presented with a URL link within the email request allowing them to access and complete the survey online. Only one response per participant was allowed and respondents could access and change their responses at any time during the six week period in which the survey was open. Responses to the initial survey request was low but after two additional reminders were sent, online survey participation increased to a total of 60 respondents (41 %) at the end of the six week

period. At this time, the online survey was closed and a paper copy of the survey was mailed to 58 participants who had either not responded by email or were not included in the online survey because they lacked an email address or their email address was invalid. Eleven additional responses (19 %) were received from the mailed survey. Because current contact information was incomplete or out of date for some participants, 163 of the 182 total program participants were invited to participated in the survey with a total response rate of 43 % (n=71).

Summary of Results

The data is summarized according to seven categories contained in the survey. Those included basic demographic and background information and data collected to assess the impact of each of the six specific program objectives previously listed in Table 1. The category corresponding to the six MREP program objectives contained both five point Likert scale and opened ended questions.

Demographic Characteristics

Survey participants represented the diverse interests involved with fisheries issues in the New England region. Respondents’ professional roles are depicted in Table 2. Respondents who indicated their profession as “other” included law enforcement, naturalists, educators, Northeast Consortium staff, consultants and graduate students. Almost half (48%) of the respondents were fairly new to their positions (five years or less) and slightly less than one quarter (21%) of respondents reported being in their positions for 20 or more years.

Table 2: Professional Roles*
Commercial Fishing (37%)
Fisheries Manager or Scientist (35%)
Other Professions (21%)
Trade Associations (11%)
Conservation Organization (9%)
Recreational Fishing (3%)
*Total does not =100% because 9 respondents identified as belonging to 2 or more categories.

The largest percentage of respondents resided in Massachusetts. There were also four respondents who were from states outside the New England region (Figure 1.).

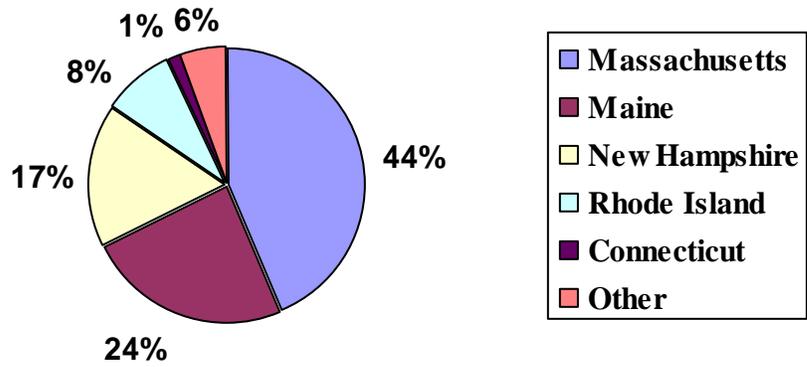


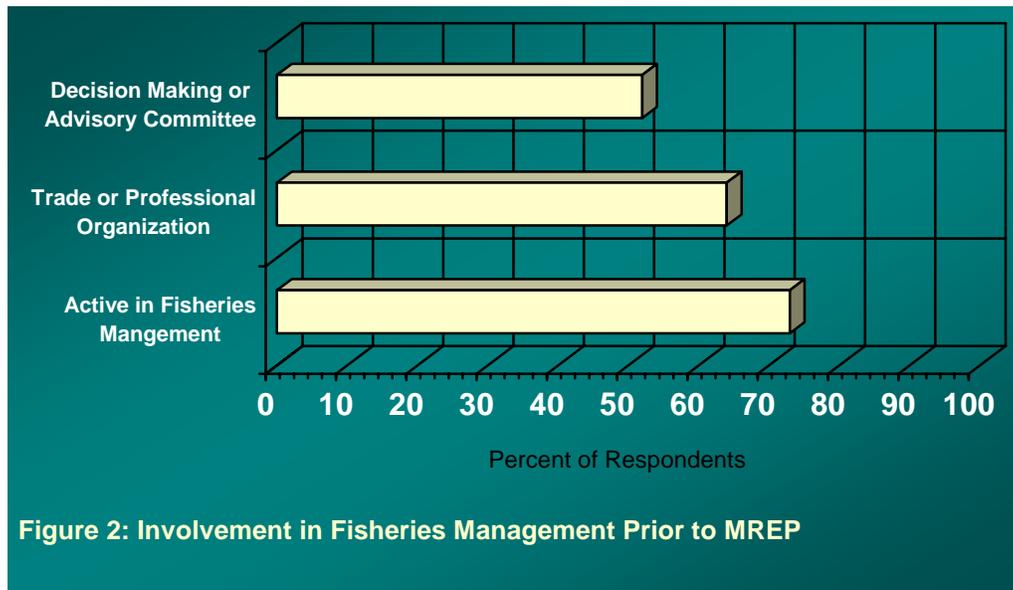
Figure 1: Percentage of respondents by state

Of the 71 total respondents, a large majority were involved in the program primarily as participants. There were a smaller percentage of individuals who were involved in the program as both a participant and a presenter or as participant and resource expert. This was due to the fact that some fishermen and agency personnel (NMFS and USCG) attended as participants and some later returned as presenters in the program. Participant roles in the program are shown in the left side of Table 3. Respondents also indicated that an interest in learning about fisheries science and meeting others involved in fisheries issues were the most important reasons for their participation. Respondents' reasons for participation are shown on the right side of Table 3.

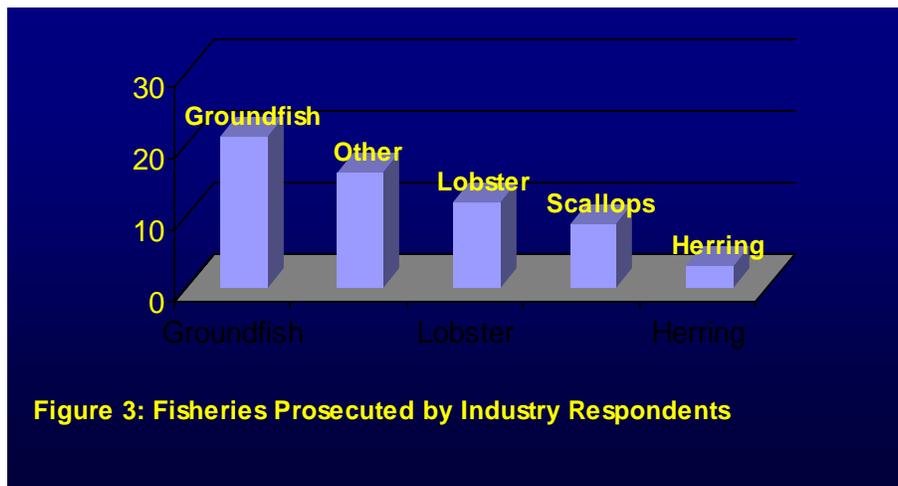
Table 3: Participant Roles and Reasons for Participation	
Participant Roles*	Reasons for Participation*
Participant (73%) Participant and Presenter (14%) Presenter (9%) Participant and Resource Expert (6%)	Learn more about fisheries science (61%) Meet others involved in fisheries issues (59%) Learn more about fisheries management (52%) Interested in fisheries management (34%) Other reasons (18%) Required by employer (9%)
*Total does not =100% because some respondents are listed in 2 or more categories.	

The respondents to the survey tended to be actively engaged in the fisheries management process. Almost three quarters of respondents indicated that they were actively involved in fisheries management issues prior to their participation in MREP and slightly less than two thirds were a member of one or more trade or professional organizations. Additionally, more than one half of respondents had served as a member

of a decision-making of advisory committee for New England fisheries related institutions (Figure 2).



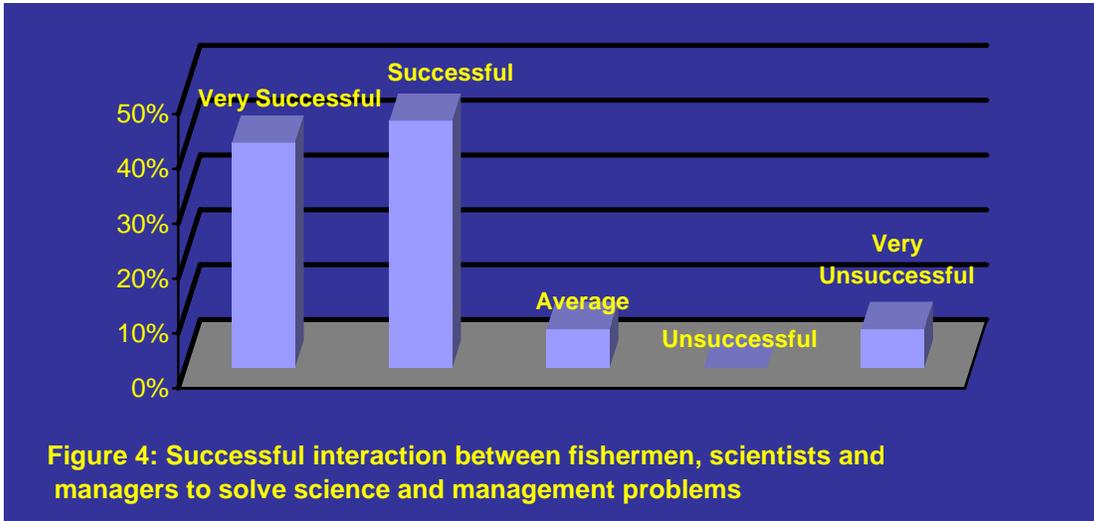
Finally, respondents representing the commercial or recreational fishing sectors prosecuted a diverse range of fisheries in the New England region. Just under half of commercial and recreational fishermen were involved in two or more fisheries (Figure 3).



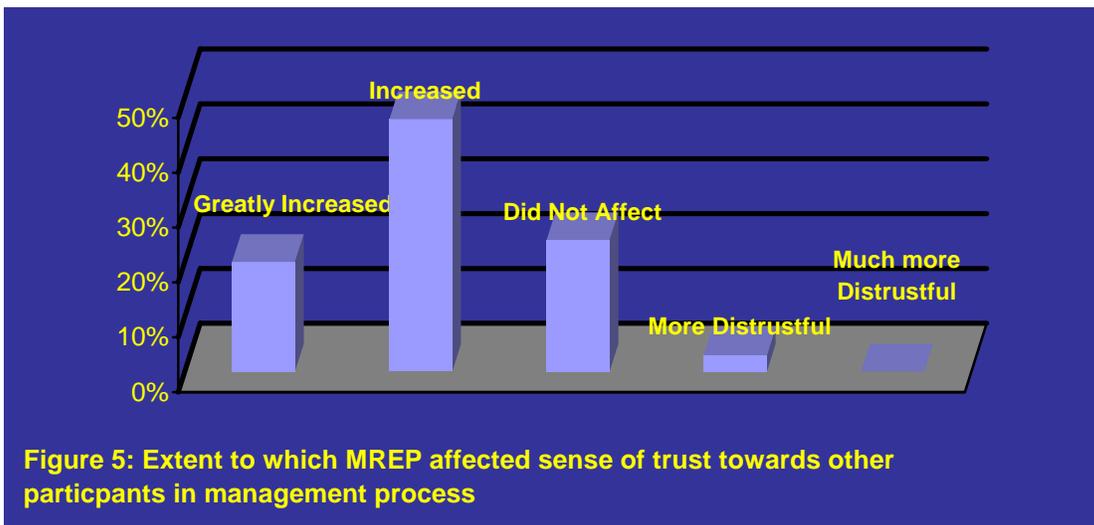
Program Objective 1. *To bring fishermen, scientists and managers together in a neutral setting and build confidence in successful interaction between disciplines.*

Bringing diverse groups from the fisheries industry together and allowing them to interact and get to know each others viewpoints was a key objective for the program.

Eighty-six percent of the respondents' indicated that the program was successful or very successful in meeting this objective (Figure 4). Only five respondents reported that they did not feel MREP was successful in achieving this goal.

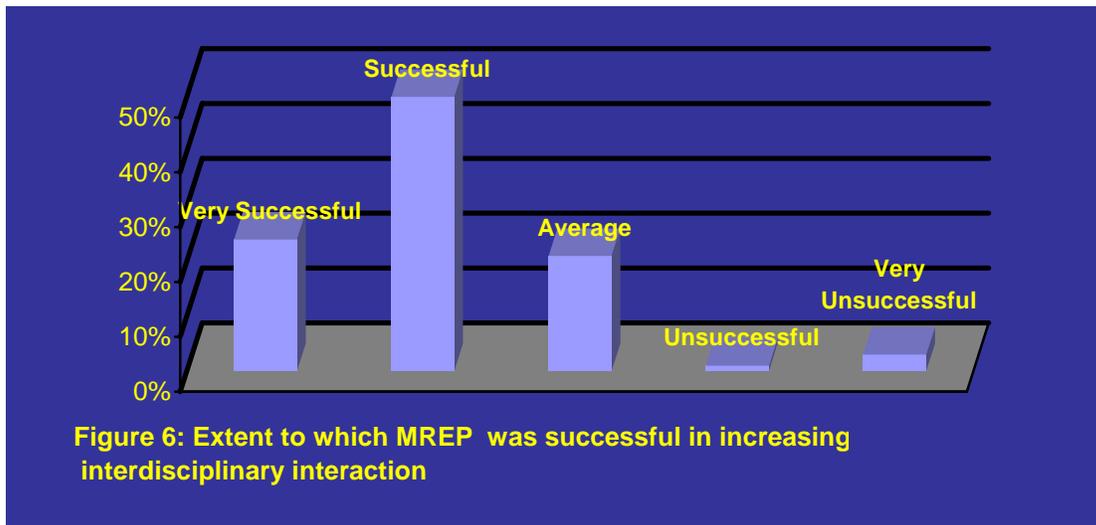


Respondents were asked to evaluate whether or not their level of trust towards others who held different roles and perspectives from theirs and almost two-thirds reported that their trust level increased as a result of participation in the program. The remaining 1/3 felt their trust level did not change except for two people who felt it was worsened by the experience (Figure 5).



When asked if their working relationships with others in the fisheries management process had improved as a result of their MREP experience, the majority of respondents, (61%,) said “yes” and another 23 % indicated that their relationships had “somewhat” improved. Ten respondents (15%) indicated that their working relationships did not

improve as a result of MREP. Respondents were also asked the extent to which the program increased their interaction with people working in different sectors of the fishing industry, different disciplines or different areas of the policy or management process. Almost 3/4 of respondents program rated the program as successful or highly successful in this regard while 15 respondents (21%) rated the program as average for this indicator. Only 3 respondents felt the program was unsuccessful or very unsuccessful in this regard (Figure 6).

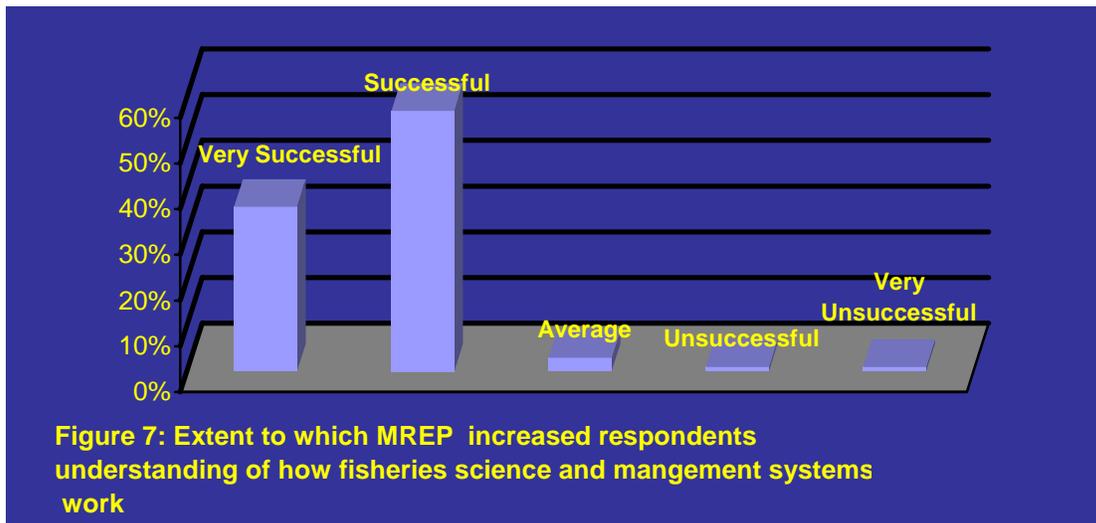


In an open-ended question related to this objective, 29 respondents provided additional comments relating to this program objective. Many of these comments spoke to the value of the program in providing an opportunity for more casual and informal interaction outside of the formal planning and regulatory process. According to one respondent, “I believe the “neutral setting” (as opposed to at a Council meeting) was imperative for more open, honest dialogue. And of course some of the most interesting and useful dialogue occurred at “happy hour” and over meals.” Another respondent appreciated the opportunity to meet others with whom they might not normally interact. “It was an outstanding opportunity to bring together people who otherwise might not be introduced or talk.” Other respondents noted that while the program was generally successful, the scope and scale of the issues associated with fisheries management are difficult to fully address in the condensed timeframe provided by the program. “I think that the program is very successful in bringing fishermen, scientists, and managers together in a neutral setting for the purposes of educating everyone involved about the different aspects of fisheries and differing viewpoints...I don't think that we got to the point of solving any problems except for the overall problem of lack of knowledge and understanding about fishing, science, and the management process. Of course, this is a big problem!” Another respondent pointed to the difficulty of overcoming the mistrust that has characterized the process in the past, “I found the dialogue excellent and the group setting very productive. I still sensed there was distrust by members of the fishing community of NMFS science even after the discussions. People had a better appreciation for the individuals doing the science, but still didn't trust NMFS.” The issue of mistrust of the fisheries management process was also extended to the MREP program with one

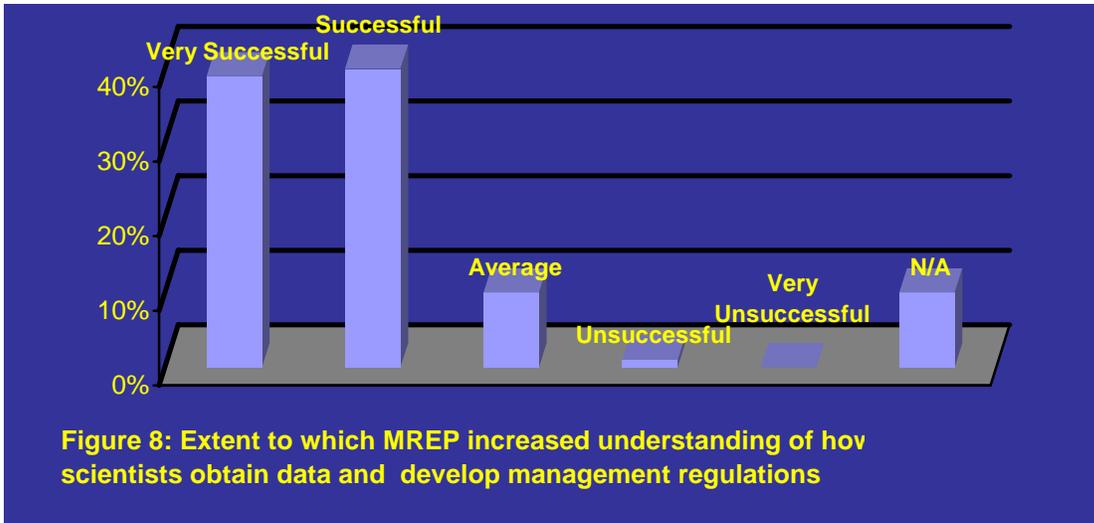
respondent saying that, “the idea that the setting was neutral is fiction. Nothing that is politically driven and/or has hidden individual or group motives can be neutral. People were manipulated to give the allusion of inclusive participation.”

Program Objective 2: *To increase the number of individuals at work in New England fisheries who are comfortable navigating the fishery data and management systems.*

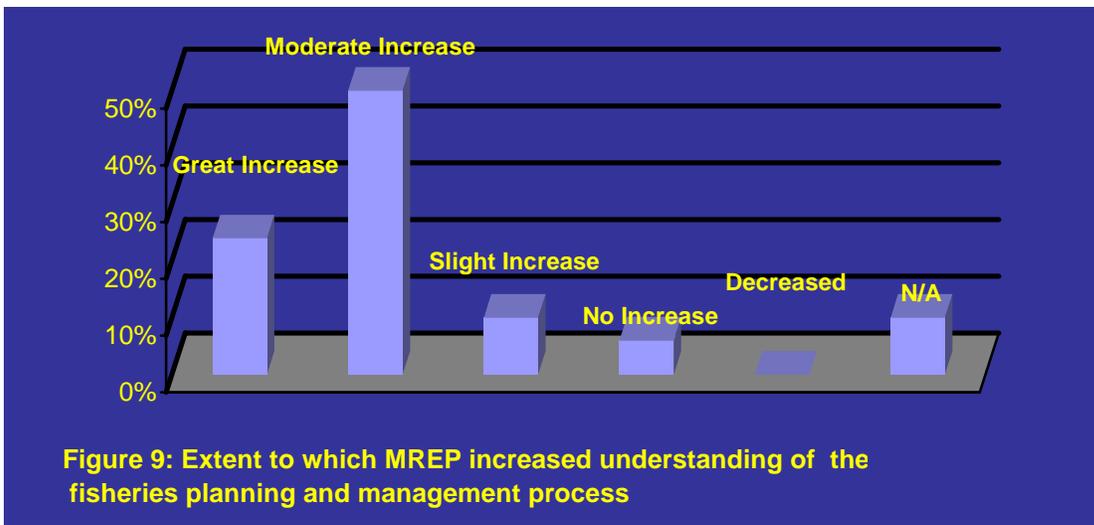
Navigating the complex fisheries management system can sometimes be a difficult task and increasing stakeholders’ knowledge of how scientific information is collected and used to manage fisheries in New England was an important goal of the program. When asked about how successful the MREP program was in helping them to become familiar with how fisheries science and management systems work, 93% of respondents rated the program as successful or very successful in meeting this objective. Only 2 respondents felt that the program was unsuccessful in meeting this objective (Figure 7).



Related to this objective is the importance of understanding how scientists estimate fish populations (biomass) and how those estimates are used to manage fishing effort (harvest). When asked how successful the MREP program was in increasing their understanding of how fisheries scientists obtain their data and use it to develop management regulations, 79% of respondents rated the program as successful or very successful for this indicator. An additional 10% rated the program as average and only 1 respondent indicated that the program was unsuccessful. The remaining 10% indicated this question did not apply to them (Figure 8).



Another indicator for this objective was the extent to which the program increased participants’ understanding of how the fisheries planning and regulatory process works. Slightly less than three quarters of respondents said that the understanding of the planning and regulator process was moderately or greatly increased by their participation in the program. Another 10% said that their understanding was slightly increased and 6 respondents said their understanding was not increased. Seven respondents (10%) indicated that this question was not applicable to them (Figure 9).

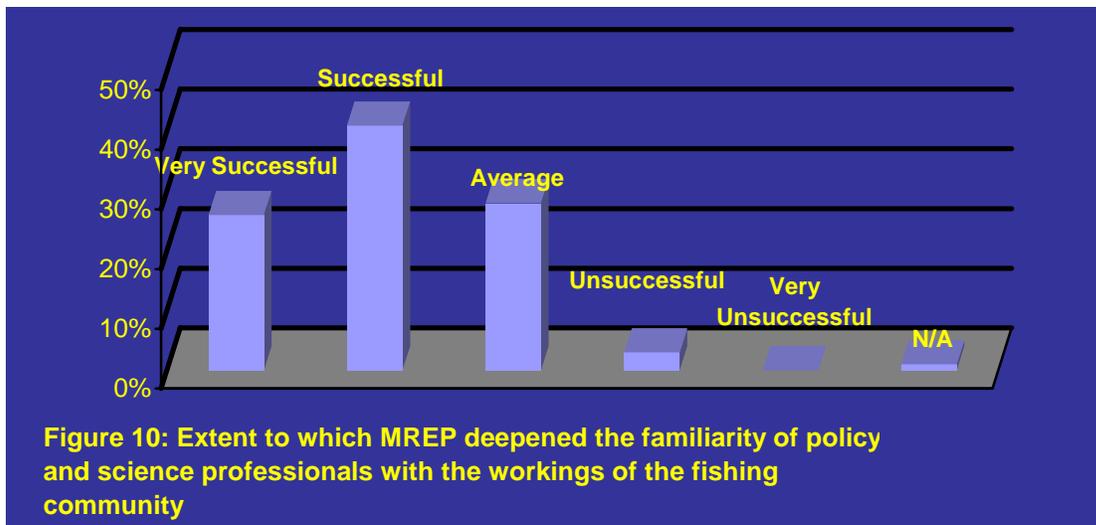


In open ended comments relating to this objective, most participants felt this portion of the program was especially valuable. One participant reported that the sessions on fisheries science “has helped me understand the process much more concretely.” Other respondents spoke to the difficulty of presenting such complex scientific information. For example, one respondent noted “there was a lot of information to absorb in a short period of time. Even with a background in science and policy, there were still times I lost track of the discussion.” Another felt that having a

diverse group of participants aided their understanding of the material. “I think that having the program open to fishermen and many other people with different jobs that interact with fishermen helped to make some sense out of the subject. It can get overwhelming pretty quickly and hearing many points of view based on peoples profession and background was great.”

Program Objective 3: To deepen the familiarity of policy and science professionals with the workings of the fishing community.

In order to improve the management of New England fisheries it is not only important for those involved in the fishing industry to have a better understanding of the science and management process but also for scientist and managers to have a reciprocal understanding of the concerns and perspectives of the fishing community. When asked how successful the MREP program was in deepening the familiarity of policy and science professional with the working of the fishing community, over two thirds of respondents felt that the program was successful or very successful in achieving this objective. Only two respondents (3%) felt the program was unsuccessful in achieving this objective (Figure 10).

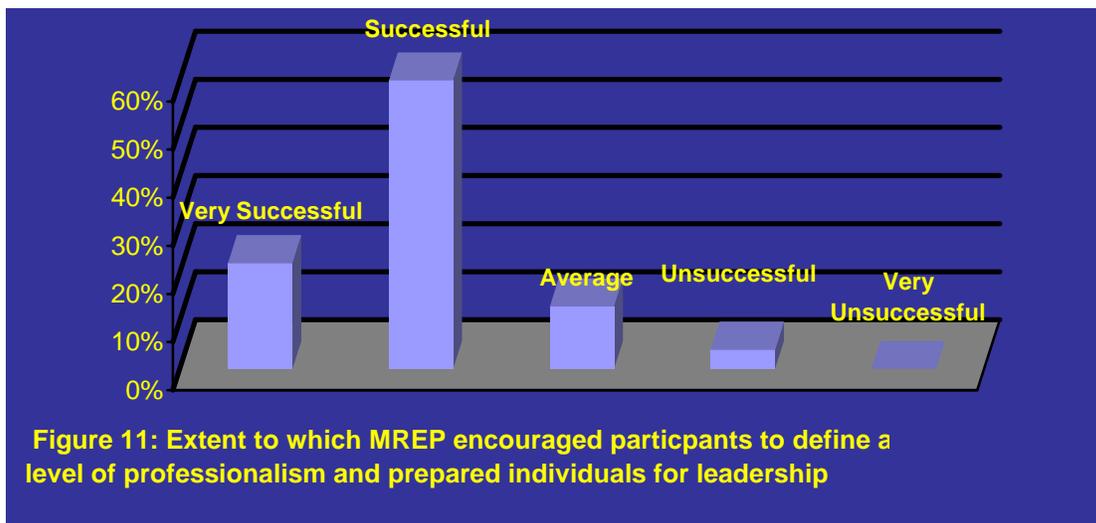


To further explore the success of the program related to this objective, scientists and managers were asked to evaluate the extent to which their MREP experience increased their understanding of the perspectives and issues of concern for the fishing community. While 39% of respondents indicated that this question was not applicable to them, 49% indicated that their understanding was substantially increased while 12 % indicated little or no increase. It is interesting to note that although this question was directed towards scientist and managers, many commercial fishermen also responded. When the results were filtered to examine only those respondents who indicated their only profession was as a scientist of manager, 81% of respondents reported that there that their understanding had substantially increased while the remaining 19% indicated little or no increase in their understanding of the perspectives and issues of concern for the fishing community.

In open ended questions related to this objective, several members of the fishing industry questioned whether the program was structured to specifically accomplish this objective. For example one fisherman stated; “All of the presentations were focused on scientists or policy-involved people telling us about how they do their work and answering questions from the audience. Fishermen were not up at the podium presenting on how they do their work; they were in the audience.” A representative of a trade association also commented, “I believe that social interaction will always improve understanding between these sectors, but I’m not sure that MREP had a focus that directly linked increasing knowledge of policy and science professionals with the workings of the fishing community. Almost all presentations were linked in the opposite direction.” However, some respondents involved in fisheries science or management commented that they did benefit from their interaction with fishermen during their MREP experience. One respondent stated, “I have a greater sensitivity to the needs of fishermen regarding their input and how I ask them to provide information.” Another respondent involved in fisheries law enforcement also commented that “Though I feel that I understood much of the perspective of fishermen through law enforcement interaction, the neutral ground allowed a free discussion of thought and ideas allowing my range of understanding to deepen.”

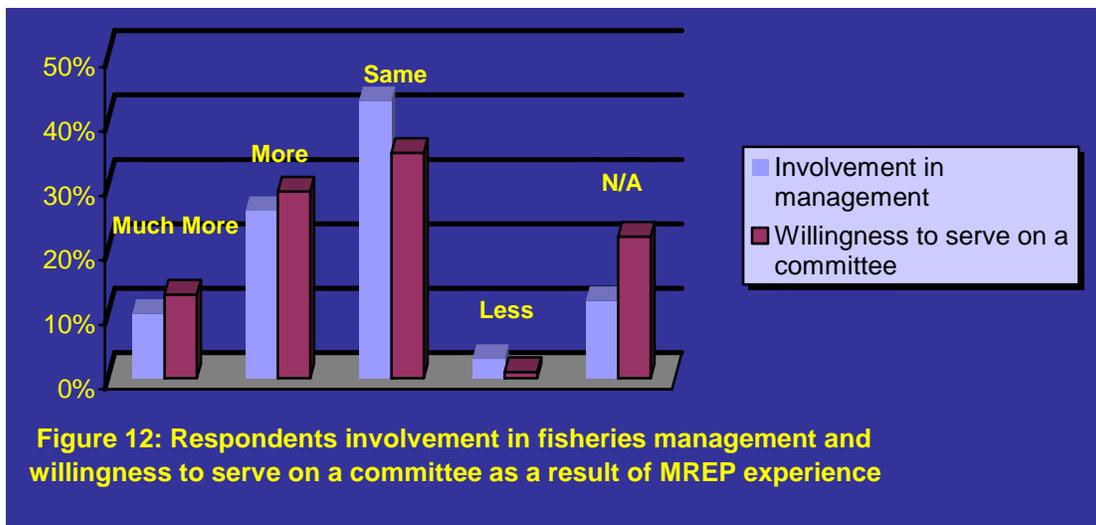
Program Objective 4: To encourage participants to define a level of professionalism in commercial fisheries and to prepare individuals for leadership.

Developing leadership within the fishing community and defining a level of professionalism necessary to successfully solve problems in New England fisheries and engage in the management process was an identified outcome of the program. When asked how successful the MREP program was in achieving this objective, 82% of respondents said that the program was successful or very successful in achieving this objective. Only 3 respondents felt that the program was unsuccessful in this regard (Figure 11).



One indicator of this objective was an increased ability to communicate with others in addressing fisheries management issues. When asked if the MREP experience improved their ability to communicate, 90% of respondents reported that their ability to communicate with others about fisheries management improved as a result of their MREP experience and only 3% said that their abilities improved very little or not at all.

Two other indicators for this objective are increased participation in the fisheries management process and an increased willingness to serve as a member of an advisory or decision making committee. When asked to describe their level of involvement in the fisheries management process since their participation in MREP, 36% of respondents said they were more or much more involved, 43% said they had the same level of involvement and only 2 respondents indicated they were less involved now than prior to MREP. Similarly, when asked to describe their willingness to participate as a member of an advisory or decision making committee as a result of their MREP experience, 32% of respondents indicated they were more or much more willing, 35% said their willingness was the same and only 1 respondent indicated being less willing to serve as a result of their MREP experience (Figure 12).

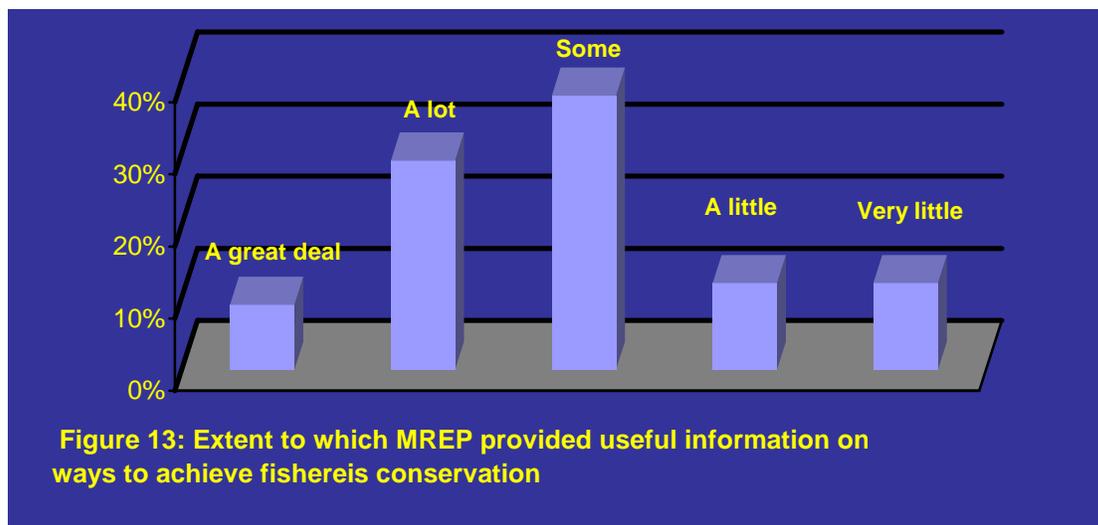


Respondents' answers to open-ended questions related to this objective indicated substantial learning and willingness to that interact in the management process in new and different ways. For example, when asked how their participation in MREP has changed they act in the policy process, one fishermen respondent stated "I am more patient and understanding of problems" and another "I'm more aggressive but less adversarial." A third fisherman stated that "I have learned through MREP that this is a political process where alienation of decision makers is not always going to help me win the war." Others emphasized an improved understanding of the process and the ability to more effectively communicate with managers. "I have a better handle on who to talk to regarding specific issues. I am also more sympathetic to managers who have policies and guidelines to follow, whether they make sense or not." Another felt that "I understand

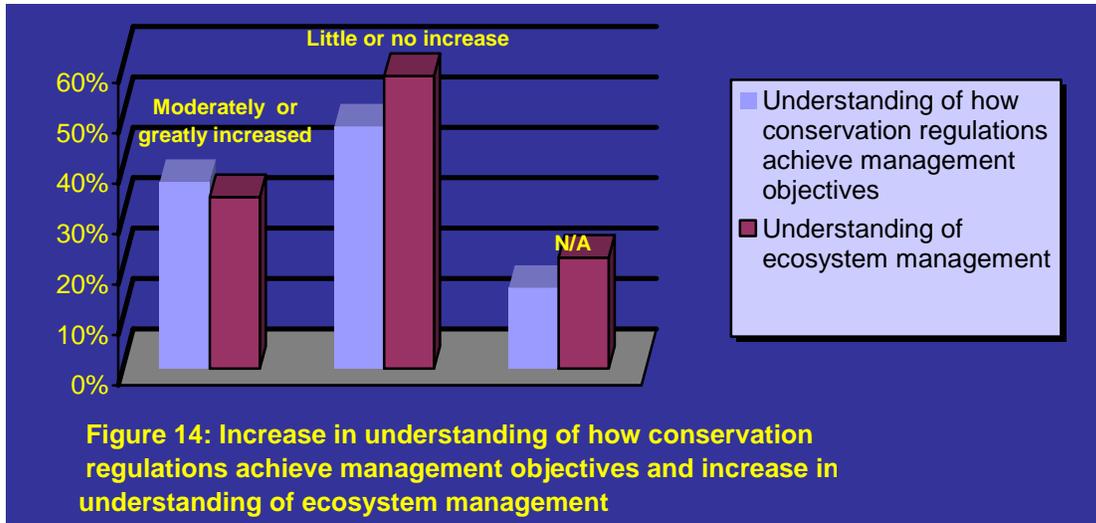
the science that managers depend on much more thoroughly than I did before. Hopefully, that makes my work on fisheries issues more effective.”

Program Objective 5: To foster an atmosphere in which conservation engineering becomes part-and-parcel of the innovative drive in daily fishing operations.

The MREP program appears to have been less successful in fostering an atmosphere in which conservation engineering becomes part and parcel of daily fishing operations than for other program objectives. Due to an error, the question asking participants to evaluate the success of the program in achieving this objective was omitted from the survey. However, participants were asked to rate the extent to which the MREP program provided them with useful information about ways to achieve fisheries conservation. Just slightly more than 1/3 of respondents felt that they received a lot to a great deal of information. While 38% of respondents felt that they received some information and almost 25% felt they received only a little or very little information about ways to achieve fisheries conservation (Figure 13).



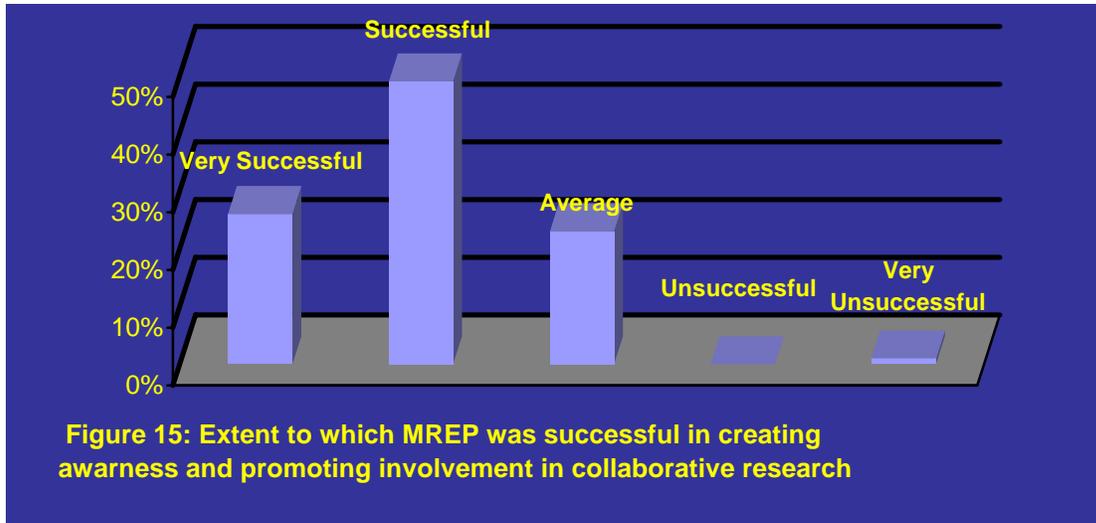
When asked if the MREP program increased their understanding of the connection between compliance with conservation regulation and the achievement of fisheries management objectives or whether the program increased their understanding of the principles and practice of ecosystem based management, just slightly more than 1/3 of respondents said that their understanding was moderately or greatly increased. The majority of participants indicated that they experienced little or no increase in their understanding related to these two questions (Figure 14).



Responses to open-ended questions related to this objective were also mixed. Several respondents questioned whether conservation engineering was even covered within the MREP program with one respondent saying that “this did not stand out as an objective to me.” Another participant stated, “I don't recall conservation engineering being a primary focus of the MREP program.” Although some respondents referenced the presentation on research on trawl gear modifications to improve selectivity one respondent stated that “I don't think fishermen... see a connection between conservation technology - "gear modifications to improve selectivity" and compliance with conservation regulations or ecosystem based management.” However, a few respondents reported that the program did effectively address the issue and one suggested that the mixed response to this objective may be due, in part, to the resistance of fishermen. “Many fishermen are skeptical of gear modifications for any purpose (selectivity or habitat goals). They are often superstitious about considering change...examples of success gets many of them thinking of ways to improve the efficiency and selectivity of the gear.” Another respondent had a different explanation, “It did demonstrate that conservation engineering was possible to integrate in daily ops. Unfortunately, NMFS is very slow to develop this area.”

Program Objective 6: To promote collaborative research.

The final program objective was to encourage fishermen scientist and managers to work together to improve fisheries science and management by engaging in collaborative research. When asked how successful the MREP program was in creating awareness and promoting involvement in collaborative research, 3/4 of respondents felt that the program was successful or very successful while just under 1/4 felt the program average in this regard. Only one respondent felt that the program was very unsuccessful in meeting this program objective (Figure 15).



However, it is important to keep in mind that when asked if they had participated in collaborative research, the majority of participants (59%) said they had already been involved in collaborative research projects prior to their participation in the program. Another 27% of respondents, some of which had indicated involvement in collaborative research prior to the program, also said they were involved in collaborative research after participation in the program. Four respondents (6%) said that they had not been involved in cooperative research and another 10 (15%) said they were not involved but were interested in becoming involved in collaborative research projects.

In response to an open-ended question relating to this objective, one respondent stated that MREP was instrumental in promoting involvement in cooperative research, “The fishing industry interest increased after 3 or 4 of your classes had completed the MREP program. More fishermen wanted to do cooperative research.” Another respondent echoed this sentiment “I think this was one of the biggest successes. I have seen numerous MREP participants listed on research projects.” Only one respondent was skeptical of the collaborative research program, “there is now more money available to institutions to study the fishing industry than ever before, and that will keep some fishermen in business fishing for research. Of course, that doesn't mean the information will actually be used in the process of making new more effective regulations.”

A final open-ended question asked participants if there was anything else they would like to tell us about their MREP experience. A few respondents offered suggestions for curriculum improvement and others made comments about specific program sessions. However, the overwhelming majority of responses (n=27) offered enthusiasm, praise, and support for the program. Some examples of comments are listed below:

“MREP is extremely valuable for all of those involved or impacted by the fisheries management process. I not only learned a great deal from these sessions but also developed relationships with those involved in fisheries.”

“The opportunity to attend the MREP at UNH was something I will always remember. The opportunity to learn about the management and science which affects our industry has never been offered before. It was not only the chance to learn, but the opportunity to meet and spend time with other fishermen and members of the industry that are interested in the future. I have still kept in contact with some of the people I met and have recommended that some of the leaders in our port apply to attend.”

“It's a great program, and one that is necessary in order to bring forth better understanding and awareness to all parties involved.”

“I think that it is a wonderful educational program that all new Council members and as many fishermen as possible should take advantage of. The more educated people in the process, the more successful the process will be.”

“Thank you for allowing me to participate. I learned a lot of information and what was not new was clarified. I also appreciated hearing the variety of speakers although I don't think my opinion changed on many topics it just became more informed.”

“The MREP program helped me to understand conflict resolution, and gave me the confidence to look at other participants as equals.”

“It was a fantastic experience!”

Conclusions

The relative success of the MREP program in achieving its six program objectives based upon the survey responses provided by program participants is shown in Table 4. Overall, respondents believed the MREP program was most successful at increasing the number of individuals at work in New England fisheries who are comfortable navigating the fishery data and management systems. Respondents also indicated that the program was successful in bringing fishermen, scientists and managers together in a neutral setting, to build confidence in successful interaction between the disciplines. This objective also had the highest number of respondents indicating that the program was very successful in achieving this goal. Similarly, most respondents described the program as being successful or very successful in encouraging participants to define a level of professionalism in commercial fisheries and preparing individuals for leadership and three quarters of respondents rated the program as successful or very successful in promoting collaborative research. Just over 2/3 rated the program as successful or very successful in improving the familiarity of policy and science professionals with the workings of the fishing community. However, this improved to over 80 % when responses to this question were filtered to include only respondents who indicated

Table 4. Relative success of MREP in achieving program objectives	
Program Objective	% Successful or Very Successful
To increase the number of individuals at work in New England fisheries who are comfortable navigating the fishery data and management systems.	57% Successful 36% Very Successful 93% Total
To bring fishermen, scientists and managers together in a neutral setting, to build confidence in successful interaction between the disciplines.	45% Successful 41% Very Successful 86% Total
To encourage participants to define a level of professionalism in commercial fisheries and to prepare individuals for leadership.	60% Successful 22% Very Successful 82% Total
To promote collaborative research.	49% Successful 26% Very Successful 75% Total
To deepen the familiarity of policy and science professionals with the workings of the fishing community.	41% Successful 26 % Very Successful 67% Total
To foster an atmosphere in which conservation engineering becomes part-and-parcel of the innovative drive in daily fishing operations	(Question not included)

their profession was as a scientist of manager. This suggests that fishermen viewed the program as being less successful in achieving this objective than did scientists and managers. Due to an error, a question asking participants to evaluate the success of the program in fostering an atmosphere in which conservation engineering becomes part-and-parcel of the innovative drive in daily fishing operations was omitted from the survey. However, based upon responses to other questions related to this objective it is reasonable to conclude that the program was least successful in this objective. For example, just over 1/3 of respondents felt that the program provided them with a lot or a great deal of useful information about ways to achieve fisheries conservation or indicated that the program moderately or greatly increased their understanding of how compliance with conservation regulations was connected the achievement of overall fisheries management objectives.

Recommendations

Based upon participants' responses to survey questions the MREP program achieved a high level of success in most of its stated program objectives. This section provides three recommendations for maintaining and improving the quality of the MREP program. This assessment found that participants felt that most aspects of the MREP were well performed. Therefore, the first recommendation is to maintain and reinforce the current format, structure and curriculum of the program. This includes the emphasis on dialogue and informal interaction as well as the content of the science and management modules that are most valued by participants. The program was the least successful in the fostering an atmosphere in which conservation engineering becomes part-and-parcel of the innovative drive in daily fishing operations. Thus a second

recommendation is for future program offerings to focus on strengthen the understanding of how individual actions and day-to-day operations can play an important role achieving conservation goals and objectives. This might include more discussions of how changes in gear types or methods of fishing might provide benefits to those fishermen that adopt them. A high percentage of respondents to this assessment and participants in the MREP program tended to be already active in issues of fisheries management prior to their MREP experience. A third and final recommendation is to develop outreach and recruitment methods that target those groups and individuals who are not already engaged in the fisheries management process. This might include advertising, presentations or other such methods designed to reach those individuals who tend to be less familiar, aware or involved in issues of fisheries management.