Foreword

National Oceanic and Atmospheric Administration

U.S. DEPARTMENT OF COMMERCE

NOAA Fisheries Service
Northeast Cooperative Research Partners Program

The National Marine Fisheries Service (NOAA Fisheries Service), Northeast Cooperative Research Partners Program (NCRPP) was initiated in 1999. The goals of this program are to enhance the data upon which fishery management decisions are made as well as to improve communication and collaboration among commercial fishery participants, scientists and fishery managers. NOAA Fisheries Service works in close collaboration with the New England Fishery Management Council's Research Steering Committee to set research priorities to meet management information needs.

Fishery management is, by nature, a multiple year endeavor which requires a time series of fishery dependent and independent information. Additionally, there are needs for immediate short-term biological, oceanographic, social, economic and habitat information to help resolve fishery management issues. Thus, the program established two avenues to pursue cooperative research through longer and short-term projects. First, short-term research projects are funded annually through competitive contracts. Second, three longer-term collaborative research projects were developed. These projects include: 1) a pilot study fleet (fishery dependent data); 2) a pilot industry based survey (fishery independent data); and 3) groundfish tagging (stock structure, movements and mixing, and biological data).

> First, a number of short-term research projects have been developed to work primarily on commercial fishing gear modifications, improve selectivity of catch on directed species, reduce bycatch, and study habitat reactions to mobile and fixed fishing gear.
>
> Second, two cooperative research fleets have been established to collect detailed fishery dependent and independent information from commercial fishing vessels. The original concept, developed by the Canadians, referred to these as "sentinel fleets". In the New England groundfish setting it is more appropriate to consider two industry research fleets. A pilot industry-based survey fleet (fishery independent) and a pilot commercial study fleet (fishery dependent) have been developed.
>
> Additionally, extensive tagging programs are being conducted on a number of groundfish species to collect information on migrations and movements of fish, identify localized or subregional stocks, and collect biological and demographic information on these species.

For further information on the Cooperative Research Partners Programs please contact:

National Marine Fisheries Service (NOAA Fisheries Service)
Northeast Cooperative Research Partners Program

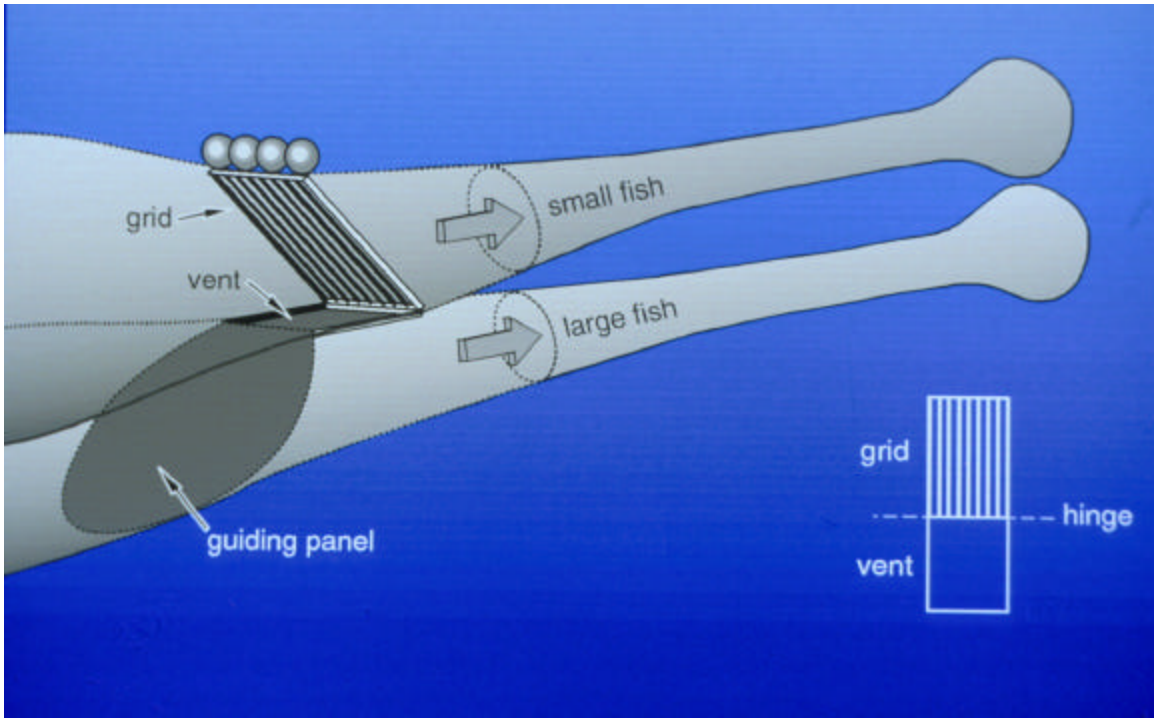
(978) 281-9276 – Northeast Regional Office of Cooperative Research
(401) 782-3323 – Northeast Fisheries Science Center, Cooperative Research Office, Narragansett Laboratory

www.nero.noaa.gov/StateFedOff/coopresearch/

Final Report

Proceedings of a series of port meetings with the fishing industry (New England 2001)

Bycatch, Discard & Conservation Engineering Issues



Submitted February 26, 2002

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To

NOAA/NMFS Cooperative Research Partners Program
Northeast Region
&
New England Fisheries Management Council, Research Steering Committee

Prepared by Dr. Christopher Glass
Manomet Center for Conservation Sciences

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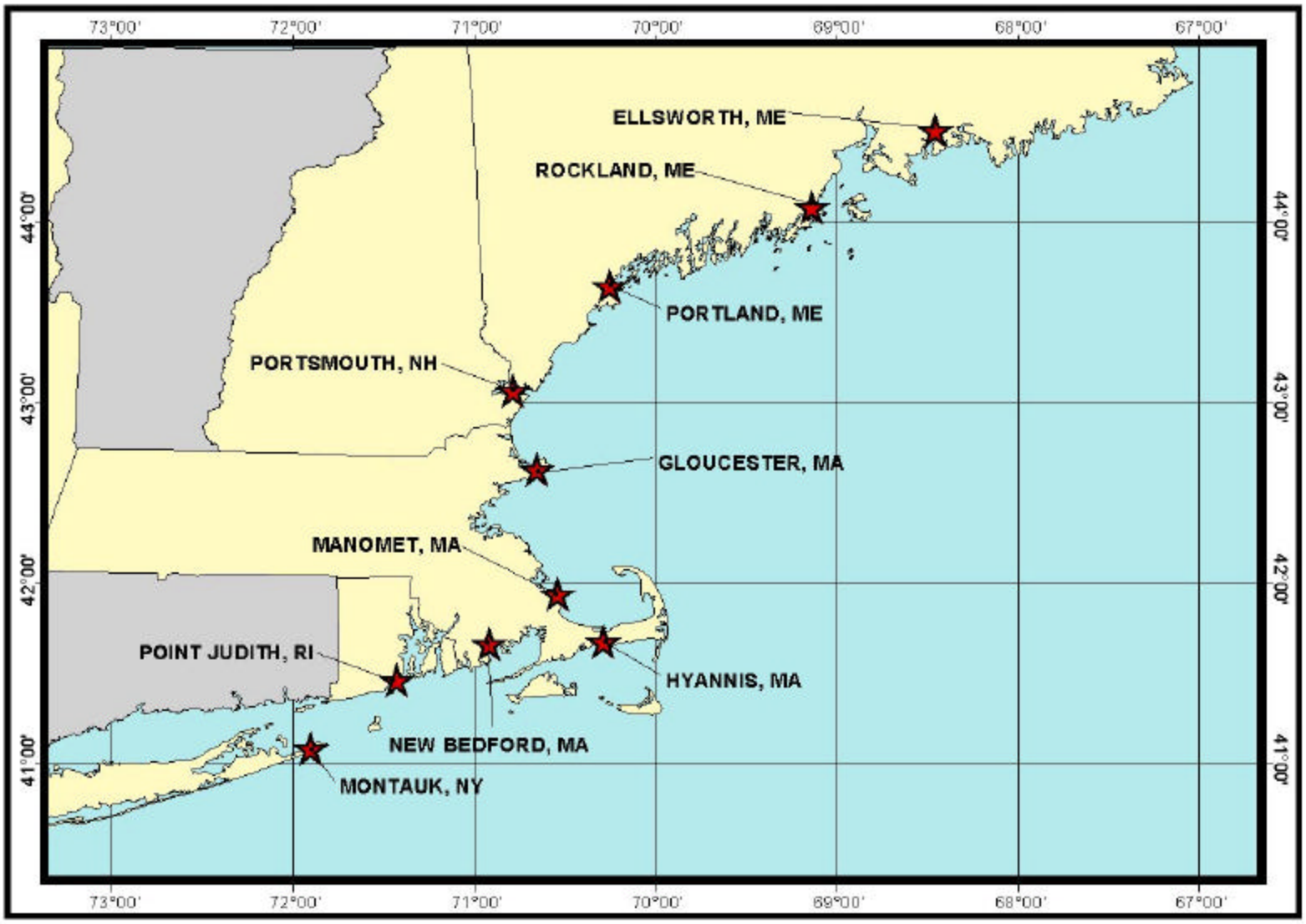

Location of Bycatch and Discard Scoping Meetings, January to March, 2001

Executive Summary

Manomet Center for Conservation Sciences (MCCS) was commissioned by the National Marine Fisheries Service, N.E. Region's Cooperative Research Partners Program to conduct a series of day-long workshops with the fishing industry in early 2001 to discuss issues relating to bycatch, discard and conservation engineering strategies.

The specific aims of this series of meetings were; to discuss and document issues of concern to fishermen of the New England Region with respect to bycatch, discard and conservation engineering technologies; to bring fishermen's unique experience and expertise more directly into the science and management framework; to help develop partnerships between fishermen, scientists and managers; to encourage commercial fishermen/vessels to participate in cooperative research and development of selective gear technologies; and perhaps most importantly, to help set local and regional research priorities aimed at mitigating bycatch and discard and improving selectivity of fishing gears.

A total of 10 meetings were held in Ellsworth ME, Rockland ME, Portland ME, Portsmouth NH, Gloucester MA, Plymouth MA, New Bedford MA, Hyannis MA, Point Judith, RI and Montauk NY. A meeting scheduled for Connecticut was held concurrently with the meeting in Rhode Island.

Despite extension and widespread advertising, meetings were in general poorly attended. This may have been due to the large number of meetings that were scheduled for late 2000 – early 2001 but may also reflect the fact that many in the industry feel a sense of disillusionment with current management practices and institutions. However, despite the low attendance, meetings were highly productive. It is unlikely that any additional issues would have been identified with higher attendance by fishermen.

Although each port identified problems or concerns specific to that area, there was a remarkable consistency across all ports in the issues and concerns expressed.

In general there was a great deal of frustration with fisheries management both at the Council level and with NMFS. This general disillusionment had a tendency to be expressed at every stage of meetings and had the effect of deflecting energy and attention from the main agenda items. However, it seems there was a clear need for these views to be expressed and documented.

Some participants explored creative approaches to specific issues but in general there was a surprising lack of futuristic thinking. One of the major aims of this series of scoping meetings was to encourage commercial fishermen/vessels to identify particular issues and concerns and to use the forum as a platform to develop ideas and explore potential solutions. The final step was to seek scientists and/or Institutions to partner with. However, a common and disappointing theme was the suggestion that what the industry needed was for the scientific community to identify a problem and to approach the fishing industry to get the projects carried out. This seems to be at odds with the rationale and intent of the whole process of collaborative research. Perhaps once successful research projects that truly involve fishermen as equal partners are demonstrated widely this attitude will change but at the present time this prevalent attitude could be a major hurdle to effective use of appropriated funds. However,

fishermen by nature are uniquely creative and innovative. Lack of discussion on innovative bycatch reduction techniques may simply be a reflection of unwillingness to make a good idea common knowledge in advance of a competitive proposal process. The same could be said of the scientific community.

Stewardship and changing practices was another hot issue. Industry and fishermen at each meeting were very firmly of the opinion that fishermen should be acknowledged for all the efforts that they make on a daily basis. Fishermen do not want to discard fish so they move to a different area, or modify their gear, or don't fish at all. They also wanted to put on record that attitudes have changed and that there is a greater sense of stewardship now than ever before. Fishermen feel they actively protect the fish for the future and the days of just catching everything (if they ever existed) are long since gone.

A wide range of topics was discussed during the meetings. Each issue raised was considered sufficiently important to be raised in the first place. We have therefore avoided condensing issues or assessing priorities. We draw attention to the information in Tables 1 through 7 and the flipchart summary, as the true substance of this series of meetings. However, we have attempted to generate broad category recommendations that may be of use in setting research priorities. We believe the recommendations are supported by the general discussions.

The recommendations include;

- Improve monitoring of bycatch/discard levels
- Implement **coordinated** programs to address bycatch/discard in key fisheries
- Document reaction behavior of key species
- Address gear selectivity issues
- Implement studies to understand mortality of discards
- Develop outreach and education programs coordinated with bycatch reduction research programs

We further recommend that the lists of species and issues of concern outlined in the body of this report be addressed in a systematic manner.

Overall meetings were extremely productive. We hope this document will provide background material and tools for all those interested in making collaborative research a success. Furthermore it is our perception that the process has helped build bridges between some scientists, fishermen and managers and will undoubtedly help future research programs be more effective. Additionally, and perhaps more importantly, we believe the transcripts and audio recordings provide a remarkable snapshot of the thoughts, concerns, ideas, enthusiasm and philosophy of the fishing industry in the New England region. In time the transcripts may become a valuable document relating to the state the fishing industry in New England 2001.

NMFS and the NEFMC research steering committee deserve great credit for supporting and financing this program.

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Introduction

In early 2001, Manomet Center for Conservation Sciences (MCCS) was commissioned by The National Marine Fisheries Service (NMFS), to conduct a series of day-long workshops with the fishing industry to discuss issues relating to bycatch, discard and conservation engineering techniques. The background to and rationale for this series and other related meetings are laid out in the foreword.

The specific aims of this series of meetings were; to discuss and document issues of concern to fishermen of the New England Region with respect to bycatch, discard and conservation engineering technologies; to bring fishermen's unique experience and expertise more directly into the science and management framework; to help develop partnerships between fishermen, scientists and managers; to encourage commercial fishermen to participate in cooperative research and development of selective gear technologies; and perhaps most importantly, to help set local and regional research priorities aimed at mitigating bycatch and discard and improving selectivity of fishing gears.

Workshops were held in the following ports:

Point Judith RI (including CT)*	18th January
Hyannis MA	22nd January
Ellsworth ME	8th February
Rockland ME	9th February
Portsmouth NH	15th February
Portland ME	16th February
Gloucester MA	20th February
New Bedford MA	22nd February
Manomet MA	23rd February
Montauk NY	9th March

* A meeting was scheduled to be held in Connecticut but industry leaders from Connecticut requested the meeting in Rhode Island be a joint Connecticut/Rhode Island meeting.

The scoping meetings followed a common format in all locations. In general, the four broad categories of discussion were as follows;

- $100k Challenge:
- Bycatch/Discard and Conservation Engineering Issues:
- "What works?":
- Program and project development:

$100k Challenge

Prior to the first meeting, a press article featuring fisherman Luis Ribas of Provincetown MA appeared in a major local newspaper. Luis had been a recipient of a $100,000 research grant (in conjunction with the Massachusetts Division of Marine Fisheries, MaDMF) to develop a trawl net capable of reducing bycatch and discard of cod. The newspaper article focused on many positive aspects of the work which included amongst other things, successful reduction of cod bycatch, true cooperative research in action, and a member of the fishing industry taking responsibility for improving fisheries in his local area. This seemed to encapsulate the true essence of collaborative research. Building on this example, each meeting was opened by posing the question; ***What is the key issue you would address in this region if you were the recipient of a $100,000 research grant?*** This was designed to identify and document key local area concerns. Discussion was directed towards but not restricted to bycatch, discard and conservation engineering strategies.

Bycatch/Discard and Conservation Engineering Issues

As an introduction to discussion of bycatch and discard issues a brief presentation of global bycatch reduction initiatives, both current and historical, was given by Chris Glass of Manomet Center for Conservation Sciences. The aim was to stimulate creative thinking in terms of bycatch reduction strategies and to illustrate the type of methodology that might be applicable to fisheries within the New England region. An extensive bibliography relating to bycatch, discard and selective gear research is included in Appendix 3. It is hoped this will provide a resource to members of the fishing industry (and others) who are interested in developing cooperative research programs. Electronic copy can be made available on request.

"What works?"

Discussion of bycatch and discard issues has a tendency to focus on negative aspects of the subject. However, individual fishermen regularly change fishing practices, move to a different fishing area or modify gear in response to distributions of non-target species. Furthermore, many changes have been made in the region either on a voluntary basis or through direct management initiatives. Fishermen and industry representatives requested that a list of bycatch reduction devices and fishing practices that are or have been used within each area (What works) be documented. In general this proved to be the most active session at each meeting. A long list was produced at each meeting and included examples such as the Nordmore grate, raised footrope trawl, days at sea regulations, closed areas, pingers on gillnets, weak links on risers in trap fisheries and fishing for lower quantity of better quality product. See Appendix for other examples from each port. We have chosen not to list or tabulate all the examples here but acknowledge the many techniques, changes in practice and bycatch reduction devices in common use throughout the region.

Program and project development

Prioritization exercises

In addition to identifying key research projects and bycatch /gear concerns, participants at some meetings were asked to prioritize issues. Prioritization techniques varied from meeting to meeting but usually consisted of participants casting votes (by attaching colored adhesive dots) beside the issue of concern on the flipchart summary of the

meeting. The results of these prioritization exercises are documented in the Flipchart summaries (Appendix 1). The priorities reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Proposal/project development
One of the major aims of this series of scoping meetings was to encourage commercial fishermen to participate in cooperative research and development of selective gear technologies. Meetings therefore also included a short session directed towards assessment of project priority levels, project development and proposal development. An exercise involving a 2x2 matrix analysis technique was used to demonstrate how topics of particular importance can be identified from a list of potential candidates. This technique can also be used to identify projects that, although important, may be too expensive or too difficult to achieve. Projects can be categorized into 4 separate categories based on cost/degree of difficulty and potential payoff. The categories can be defined as follows; low hanging fruit (easy to achieve and inexpensive but with low payoff); tough nut to crack (difficult and expensive with a high potential payoff – just do it); not worth the effort (difficult and expensive with little potential payoff); quick hit (easy and inexpensive to do with high payoff). Details and examples are included in the flipchart summaries (Appendix 1). As above, priorities identified by this technique reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations. The main aim of the exercise was to demonstrate how priorities may be identified and to provide a set of tools with which to set such priorities.

Meeting logistics
Meetings were advertised extensively in local area press, through New England Fisheries Council mailings, by personal invitation, through the registered dealer network, by posters and by word of mouth. Over 2,200 personal invitations were mailed to members of the fishing industry. In one port (Portsmouth, NH), meeting notifications were even included with fishermen's pay-checks prior to the meeting. In addition, a key member of the fishing industry was contracted in each port to act as a liaison officer both in terms of logistics and to help encourage support and attendance by local fishermen. A list of meeting participants is outlined in Appendix 2.

Despite the extensive and widespread advertising, meetings were in general less-well attended than anticipated. This may have been due to the large number of meetings that were scheduled for late 2000 – early 2001 but may also reflect the fact that many in the industry feel a sense of disillusionment with current management practices and institutions. However, despite the low attendance, meetings were highly productive. It is unlikely that any additional issues would have been identified with higher attendance by fishermen.

Pre-printed contact sheets were distributed at each meeting for industry representatives to re-distribute amongst fishermen in their home ports. These sheets allowed individuals who were either unable or unwilling to attend meetings to have their viewpoints recorded and documented. Comments recorded on returned forms are included in the flipchart summary (Appendix 1) of the appropriate port.

In order that a true and accurate record of proceedings was obtained, all meetings were recorded on audio-tape and subsequently transcribed. Full verbatim transcripts have been lodged with NMFS. The outcome of the discussions and issues raised at each meeting are summarized in Appendix 1.

The following narrative attempts to summarize the major issues raised and discussed in this series of meetings. Examination of Appendix 1 shows that each meeting provided a vast array of information on a wide range of topics. In the interest of providing an overview, this document does not address every specific issue or concern raised. However, we have attempted to capture the major common themes as well as drawing attention to local area concerns where they exist. **For a full understanding of the issues and concerns of the industry in New England, there is no substitute for complete examination of issues documented in Appendix 1.**

Editors Foreword

Many participants expressed concern that a series of meetings should be focused on bycatch and discard issues. The terms ***bycatch*** and ***discard*** were felt to have negative connotation. Industry representatives felt that bycatch and discard are in general imposed on fishermen and the issue therefore is a management issue not an industry issue. Fishermen agreed to follow the agenda laid out for the meetings but wished it to be known that the problems facing industry as regards bycatch and discard are imposed by regulators, not in general created by poor fishing practices.

Four *verbatim* excerpts from meeting transcripts are included here to underscore the importance of this issue. Identities of individuals have been removed and comments have been edited for brevity.

Comment recorded at the Manomet Meeting

> *" I've got listed two things here that really bother me about this whole way that we look at and evaluate the significance of bycatch and evaluate potential solutions to bycatch. My first is this, is that we have what I call "a command and control system," where somebody in authority makes a decision, and then people in the gear technology field have to scurry around and find remedies that this management dictate creates. And I give you two case studies.*
>
> *Case Study One is the Gulf of Maine cod limit where the Council set a bycatch limit for cod to try to keep the fishery within a TAC. And immediately, as limits became more and more restrictive and invoked a firestorm of protests that we're discarding. You know, and we shouldn't be discarding. Now we're bad people because we're discarding.*
>
> *And I argue that maybe we shouldn't be having to put out this brush fire because it was not one of the fishermen's making. It was an artifact of management. And there should be a feedback loop into this whole system where gear technologists say, Hey, look, we can develop a system that will weed out some codfish, i.e. a square mesh escape panel, you know, Luis Ribas' escape panel, but we can't necessarily get you down to zero cod from the catch. So let's be reasonable here and say, There's got to be some give and take in this.*
>
> *The absurdity came when we were going progressively lower. We went from, in one year, 200 pounds to 100 pounds to 30 pounds of cod without any regard to gear selectivity hoping that would solve the problem. In my take, it just papered over the problem and turned economically valuable catch into an economically worthless discard with probably not much change in mortality.*
>
> *Case Study Two is they give us a bunch of different-sized flatfish: We have a 12-inch with of flounder; We have a 13-inch yellow tail; We have a 14-inch dab and a 14-inch grey sole, and one mesh size, and say, Hey, you guys have a discard problem. Fix it. Well, you know, it's hard to fit different-sized fish through the same hole and get the same selection curve out of it. So that's beef one that I have with the system. There needs to be some reality check on some of the missions that they send us on in the first place.*
>
> *Beef Number Two is I think there needs to be a better bycatch standard. Now, the hard and fast rule for exempted gear is 5 percent bycatch. If you have more than 5 percent bycatch you're bad; if you have less than 5 percent bycatch you're good. Well, you know, how do you measure this? Do you measure it tow by two? So if you have one two that's more than 5 percent, you fail and you're a dismal derelict as a gear technician. Or do you average out tows over time? And if so, how many tows? You know, well, that's never been published. So we do that by a case-by-case basis -- I know that whole issue of the raised foot rope whiting trawl and its efficiency raised that as an issue. Secondly, regarding the 5 percent bycatch, 5 percent of what? Is it 5 percent of 100 tons of herring? Or is it 5 percent of 100 pounds of scallops that put you over the threshold of evildoer? You know, you could be 1 percent of a hundred tons of herring and kill more fish than you would if*

you were 5 percent to a hundred pounds of scallop. So again, that whole definition needs to be refined and quantified in a better. So those are my two caveats.

All I did was throw this out before we began the discussion because it really colors where you go. I'm all for having a net that produces nothing but economically valuable catch. But I realize that that's difficult to do because we have not only regulatory discards, but economic discards to consider. But I just want a level playing field, you know. I just don't want to have to be spending huge amounts of resources and time, as we have had to do, solving problems that are created by management."

Comment Recorded at Point Judith

"….. if you want to give me 30 seconds or a minute, I might be of help. People are on different frequencies here. You're a gear technologist and a fish behavior specialist. The mindset of the leadership in the Agency -- to a certain extent all fishery management bodies, whether it's states, Atlantic States, or the Council, is addressing this problem of bycatch and discard thinking that it's purely one of gear selectivity. I think that one of the things that would be very useful if you looked at some of these issues and said wait a minute, this is not a gear selectivity issue, this is a political issue, either because the science is inadequate and therefore the trip limits and the quotas and the thresholds are incorrect, please don't try to solve this problem with gear selectivity. On the fluke issue there's a perfect example. Should we really be trying to teach New York and Connecticut fishermen to catch fewer fluke because their quotas are so low and because the system cheated them terribly? So, if in the process of asking the industry's cooperation on cleaner methods of fisheries, which we're happy to give, there also has to be a recognition that there are other bigger problems that can't be done with that. So, if you take the message back that I'm suggesting, hey leadership, you've got to look at other issues besides beating on commercial fishermen for bycatch and discards, because you're causing half of it."

Comment Recorded at Portland

" I have a little technicality of -- I've always had a little problem with the whole term of "bycatch." And that term in itself seems to lay all the blame on us. And I can show you record after record, most of the discards that we have now are regulatory discards. And so I think there's blame to be shared, so . . . I know that through the years of battling and battling with environmental groups and everything else, a slight term like this can turn the tide of general public perception. And while, most of us have tried to find ways to reduce bycatch, the whole term of regulatory discards can't be overlooked. And again, like it has been pointed out, we're catching -- we still catch some 13-inch grey sole that are a perfectly marketable product, but the law says 14. The law was made because that seemed like a good thing to do at the time, but not on biological terms."

Comment Recorded at Point Judith

" You just said something about sticking with the current management regime of National Marine Fisheries Service. If you're not willing to recognize that National Marine Fisheries Service and their opinions and the way they manage things now that they don't need a complete overhaul, then anything you do in my opinion is destined to failure, because most of the problems you have with discard issues involve the National Marine Fisheries. Sticking to the agenda - I find it very difficult to do that when the current agenda of the National Marine Fisheries Service is the major cause of most of the discards."

Summary of issues raised at meetings

As stated previously each meeting provided a vast array of information on a wide range of topics. We make no attempt to list each issue here, simply to summarize the outcome of the series of meetings. Summaries are based on the flipcharts prepared at each meeting (Appendix 1) and from the transcripts. The issues and concerns from all 10 meetings can be separated into 7 separate categories outlined in Tables 1 through 7. These categories can be defined as follows:

- Species of concern
- Bycatch and discard issues
- Separation by species
- Assessment of bycatch and discard levels
- Selectivity issues
- Mortality issues
- Other fisheries and management related issues

In the account that follows we have made no attempt to discuss every issue contained within the Tables. We have however, attempted to provide an overview of the salient points contained within each category.

Species of concern

For each port, Table 1 lists the species and broad categories that were raised in discussion. Some were raised at species specific level, others either generically (such as skate or squid) or at higher levels (for example, marine mammals). The number of ticks per box represents the number of different topics discussed for that particular species. Discussion of some species occurred repeatedly within a given meeting and across all meetings (dogfish). These clearly represent a common, region-wide, concern. Others were raised at only one meeting, for example, sea bass bycatch was an issue at Montauk, urchin bycatch in lobster fisheries was identified in Rockland, and mussels and mahogany clams were identified as issues at Ellsworth. These clearly fall into the category of issues of local concern. We make no attempt here to assess the overall importance of local or region-wide concerns, merely to illustrate the geographical range of concern for each species.

Bycatch and discard issues

At each meeting participants discussed bycatch and discard issues at length. Discussion ranged from the need to change bycatch regulations and/or management strategies, to identification of specific areas where conservation engineering techniques could be utilized to help reduce bycatch and discard. Here we report only on discussion of potential conservation engineering approaches to reducing bycatch. Other issues are reported under the heading, other fisheries and management related issues.

Table 2 outlines those species and fisheries identified in each port where participants felt research efforts should be made to reduce bycatch and discard. Where discussion was specific about either a fishery or particular aspect of bycatch and discard for that species, comments are included in parenthesis. For example, bycatch and discard of dogfish was raised in 8 out of 10 port meetings. At three of the ports (Manomet, Montauk

and Portsmouth) it was identified as a general issue. At one port (Gloucester) participants felt the issue of regulatory discard of dogfish should be addressed while participants at 4 other ports were more specific; hook, trawl and gillnet fisheries were identified at Hyannis, the groundfish fishery at Portland, the tuna bait fishery at Rockland and gillnet fisheries were identified by participants in Ellsworth. As with Table 1, multiple ticks represent the number of different discussions on a particular topic. Fuller details of discussions are outlined in Appendix 1.

Much of Table 2 is self-explanatory. It identifies species of major concern, provides a geographical context and should form the basis of encouraging research efforts to address each specific issue. As above, we make no attempt to assess absolute priorities.

However, there are a number of very obvious issues of concern. Examination of Tables 1 and 2 show that there are bycatch and discard concerns region wide concerning cod, dogfish, monkfish and to a lesser extent yellowtail flounder. Cod is obviously of concern in part due to the emergency rolling closure regulations but also due to reports of large aggregations of small fish in certain locations. It is fair to say that development of fishing gear that would allow fishing on other stocks, without catching cod, would alleviate many of these concerns. Dogfish is another apparently region wide concern. Dogfish appear as a bycatch in almost every gear type (sometimes in great numbers), have little or no market value, can cause damage to gear and can be time consuming to remove. In some cases appearance of dogfish can force fishermen to move to different areas or stop fishing altogether. Although this is likely to be a difficult task, industry would welcome development of bycatch reduction devices for dogfish. Similarly monkfish bycatch and discard has been identified as a topic of concern not only in scallop trawls but in other trawl fisheries as well. Monkfish is a valuable resource but fishing gears as currently designed are poor size selectors for monkfish. As with dogfish, development of size selective fishing gears that reduce discard of small monkfish is likely to be difficult but demands to be addressed.

By drawing attention to these region wide concerns does not imply the other issues outlined in Table 2 are lesser priorities. There were calls to reduce bycatch and discards of all the species included in this list and each is a valid and important concern.

Separation by species

Management of fish stocks is a complex science. At any point in time, some stocks may be in recovery, others in decline. Furthermore the relationship may vary both by location and season. For fishermen the result is uncertainty in the composition of catch and potential for unpredictable bycatch. One very specific subset of the field of conservation engineering is the potential to develop strategies for separation of fish species underwater. This is an area of considerable interest to the fishing industry. Strategies that allow fishermen to be species-specific would allow them to fish on target species while avoiding species of concern with respect to bycatch and discard.

Table 3 summarizes the separation issues raised at each meeting. Participants identified the need to develop strategies to separate cod from haddock, cod from any other fish, grey sole from American plaice, pollock from cod and haddock, striped bass from bluefish and weakfish and whiting and redfish from other groundfish. The other major category identified in 6 meetings was the need to develop sex-selective strategies or fishing practices for dogfish. This almost certainly reflects the peculiar management

regime for dogfish and may be one very specific case where aspects of bycatch and discards could be resolved by simple change in regulation. Nevertheless it is an issue of considerable importance that demands attention.

Assessment of bycatch and discard levels

At virtually every meeting, industry representatives called for more and better information on bycatch and discard levels. Some challenged the assertion that bycatch and discard were significant problems, others that information was incomplete at best and non-existent at worst. A number of fisheries were identified where no real baseline information existed and where a need for assessment of bycatch/discard levels was identified as an urgent requirement (see Table 4).

Selectivity issues

Discussion of selectivity of fishing gears formed a major component of each meeting. In general there were two main components of discussion,

- the need to assess the absolute selective efficiency of fishing gears currently in use
- the need to improve size and species selectivity in most fisheries

Table 5 summarizes the issues by port. Almost universally, there were calls for a coordinated program to identify selectivity parameters for all fishing gear types and to assess area and seasonal changes in selective efficiency. In addition, there was vigorous debate regarding the need to assess effectiveness of proposed gear changes in advance of changes in regulation. Industry members recognize that such a requirement could lead to long delay in implementation of say an increase in mesh size, but were strongly supportive of coordinated proactive-programs to assess selectivity of a wide range of mesh sizes and types.

Some very specific selective gear issues were identified at each meeting and are summarized in Table 5. However, a number of these specific issues should be highlighted simply because they seemed to rise above the more normal approach of further development of conventional methods. One suggestion involved shifting focus from the codend of trawl gears to identifying methods of modifying the front of the net to improve selectivity. Improving selectivity at the front of the net would have the added benefit of releasing fish much sooner in the capture process and therefore intuitively in better condition with a better likelihood of survival. Fishermen in Point Judith were particularly interested in this concept and strong calls were made to demonstrate how such a net could be made to operate. Other groups of fishermen called for development of lobster traps designed to select against large lobsters, one of the few comments from trap fishermen at any meeting. And finally, there was interest in investigating whether herring fisheries could be enhanced by utilizing acoustic herding techniques. Emphasis on these issues does not imply any prioritization merely that these displayed a degree of lateral or tangential thinking, components that have been shown to be important in development of novel and effective fishing gears.

Mortality issues

The issue of mortality was raised directly at four meetings but hinted at in many others (see Table 6). The issue of whether fish survive the discard process is fundamental to the whole process of developing more selective fishing gears. There is little point in developing more effective gears if the fish which are expelled do not survive. It is also clear that this is one particular area where basic information within the region is almost

non-existent. There is strong industry interest in ensuring that basic scientific studies be encouraged and that mortality or survivability information be more widely available. There is also interest in learning from survivability studies that have been conducted elsewhere and assessing the applicability of those studies to the New England region.

A separate aspect of mortality was raised at the Rockland meeting. There was a strong call to control fishing mortality rates in the Gulf of Maine. This is a management issue not a fishing issue but is nonetheless an important aspect of mortality within a fisheries context.

Other fisheries and management related issues

As stated elsewhere in this report, one of the most obvious themes of the series of meetings is that fishermen and the fishing industry are still greatly frustrated with fisheries management both at the Council level and with NMFS. This general disillusionment had a tendency to be expressed at every stage of meetings and had the effect of deflecting energy and attention from the main agenda items. In general, efforts were made to stick to the agenda but it appeared there was a clear need for these views to be expressed and documented. Comments that were not strictly related to agenda items were nonetheless documented and form an important part of this report. Table 7 outlines many of the more important or most regularly voiced comments. Two messages in particular were articulated at virtually every meeting.

The first and perhaps most strongly felt was the need for better more effective stock assessments. Fishermen believe that conventional stock assessments are flawed and that there are often more fish in the sea than the stock assessments would have them believe. In addition, there is a widely held belief that basic biological, behavioral and ecological information for our important commercial species is lacking or non-existent. This lack of basic information could greatly hinder future research initiatives and the industry highlighted the need to implement basic data gathering programs immediately.

Secondly, there was a universal feeling that the experimental permitting process must be revised. This issue beyond any other provoked universal sentiment. Fishermen see an apparent willingness at the highest level, to support cooperative research programs. They feel a deep sense of frustration when faced with seemingly interminable delays before knowing whether or not permits will be issued to allow the work to proceed. Industry representatives were also concerned that in order to gain the maximum benefit from the work, the research needs to be conducted at the appropriate time and place and on the appropriate distribution of fish. It serves no logical purpose to permit fishing where there are no fish or to postpone research through cumbersome bureaucracy. Additionally, there is strong sentiment against the requirement to use days at sea for scientific research programs. Fishermen believe they should not be penalized for conducting scientific research by loss of valuable commercial opportunity.

Furthermore, there is a perception within industry that the nature of permits (when issued) correlate to the abilities of the scientists/fishermen writing the application. More importantly, there is a feeling that lack of understanding of the process can lead to less favorable permits being issued. As an example, some feel they are pressured into use of days at sea for scientific programs while others are allowed to opt out of days at sea regulations for other research programs. The general feeling is that whatever system is in place should treat all equally. This thorny issue could be resolved by a simplification of the permit application process. This allied with formalization of information required on

the permit application and publication of clear guidelines governing the decision making process would alleviate much of the uncertainty and go a long way to streamlining the process.

It was emphasized many times that collaborative research is vital to the future of New England fish stocks. The clear message is that this may be one of the most significant hurdles to implementation of truly collaborative projects. One fisherman voiced his concern by imploring that we follow the Canadian example and issue permits where warranted in 6 not 60 days.

Other issues included calls to reinstate “the running clock”, allow fish transfer at sea as a means of reducing waste of the resource, implement real time monitoring of bycatch and discard levels in all fisheries, and redirect fishing effort to other economically viable fisheries (for example neon squid).

The narrative above summarizes the substance of the series of meetings. However, as with any meeting, there are often sub-plots or common issues that do not speak directly to the formal agenda but are nevertheless important within the context of assessing the real issues. In the narrative that follows we have attempted to document some of these issues we considered to be important, that were formulated either directly or implied during the course of meetings. We believe the true essence of the meetings would be lost without at least passing reference to these issues.

Habitat impact

At virtually every meeting concerns were expressed, often indirectly, regarding the issue of habitat impact. Surprisingly, these concerns were addressed at a number of different levels. Many felt that gear impact on habitat would become increasingly important and in the future could dictate where fishermen would be allowed to fish or, more importantly, not fish. Others focused on the need to quantify levels of impact and to demonstrate whether or not such impacts are significant.

In general, despite recent high-profile initiatives suggesting the contrary, participants felt that good quality information is truly lacking in this area. Consensus was that better information on physical habitat, bottom topography, oceanography and species distribution should be gathered as a matter of some importance. More specifically, there were calls to assess degree of impact in a wide variety of fisheries including scallop, urchin and mussel drags and in general to establish methods to lessen gear contact with the bottom in all fisheries.

In addition, some felt that industry should become proactive with this issue and publicize those developments that reduce habitat impact. Examples discussed include the raised footrope trawl and the sweepless raised footrope trawl, both of which allow target catches to be maintained but dramatically reduce contact with the sea-floor.

Education and outreach

There is a clear and pressing need for a program of education and outreach on conservation engineering techniques. If this series of meetings is to form the basis of future research and development programs then all interested parties should be aware of what work has been conducted elsewhere and more importantly to be aware of what works and what does not. Furthermore, there is an acknowledgement that collaborative programs involving both fishermen and scientists have the potential to create divisions

and suspicion between different groups. It is important that partners approach collaborative programs with common expectations and that scientists and fishermen make allowance for the specific needs of the other. This can only be achieved by dialogue and a willingness to approach situations with an open mind.

Alternative management strategies
Virtually every meeting explored the possibility of alternative management strategies. Fishermen do not like to discard fish and many participants felt that bycatch and discard could be removed altogether by changing the regulations that forced discarding. Others called for adoption of 100% retention strategies. Such strategies would provide better information for management purposes (everything that was caught would be accounted for) and would help reduce waste in fisheries region wide. *(Eds note; It is interesting to note that an initiative is currently underway, under the auspices of the ASFMC, to discuss potential methods to reduce the level of so-called regulatory discards.)* Many argued that by simply allowing fishermen to keep more of the fish they caught, fishing effort would actually decrease as fishermen would steam home once they made a days pay. Otherwise they would keep fishing and discarding until they made the level of catch required to make a living. Others highlighted the safety implications of this practice which encourages fishermen to stay on the water in marginal weather conditions instead of catching enough fish and steaming back to port.

Long term support and funding
Industry representatives acknowledged that collaborative research is vital to the future of the fishing industry. However, there are concerns that failure by major institutions to make long-term commitment to these programs would further damage relationships between industry and others. There is a clear sentiment that all parties should do their utmost to ensure continued funding and support for these programs.

With regard to funding of research there is an obvious dichotomy within industry. Some view recent funding as emergency relief while others see it as supporting scientific investigations to improve overall management of resources. Whatever the intent, all agree with the need to ensure funding for the future. Participants at the Manomet meeting explored what a model for future funding might look like. Consensus was that industry would like to move beyond so-called “disaster status” and try to develop funding sources that did not rely on governmental input. The conceptual model (see Appendix 1) envisions support coming from all sectors including NOAA/NMFS, industry, NGO’s, Foundations and the public. In addition, appropriate use of agency fees or industry levy’s could help fund particular programs as could, in some cases, TAC set-asides.

This is one particular area that would benefit from strategic long-term planning by a group of qualified interested parties. NMFS and industry representatives are to be encouraged to explore innovative funding strategies to maintain the impetus generated by initial collaborative research programs.

Vessel compensation
A current and recurring concern to those involved in collaborative research is the issue of vessel compensation. Daily compensation rates will vary with vessel, season and work demands. However, there is a need to devise compensation strategies that are widely accepted and which provide sensible and equitable treatment for all. This issue has potential to create divisions within both fishing and scientific communities and whatever strategies are devised should encourage industry participation but avoid unfair

advantages for some at the expense of others. This issue is of sufficient importance to the success of the entire collaborative research program that it warrants careful consideration by key industry, scientific and management parties.

Non-fishing-industry impacts
Some meetings, especially those in areas where substantial inshore fisheries exist (for example, Ellsworth, Point Judith, Portsmouth) identified the need to document and assess the degree of non-fishing-industry impacts on habitat and stocks. Pollutants originating from land-based, non-point sources (for example, run off from golf-courses, thermal discharge from power plants, chlorine) were considered to have major effects on recruitment and survivability of juvenile fish as well as affecting distribution and abundance of other organisms. Little attempt has been made to document the nature or extent of such processes although the effects are considered by many to be substantial. There is strong fishing industry support for initiating programs to identify and monitor such impacts.

An additional impact issue concerns recreational fisheries. At least two port meetings identified the need to assess the true nature of the impact of recreational fishing on fish stocks. There were calls to improve monitoring of recreational fisheries and to incorporate this information more effectively into stock assessment programs.

Timely use of data
Fishermen expressed the need for data from collaborative programs to be conducted in a timely fashion. The current time lag between data collection and utilization at the management level is one of the industries strongest criticisms of the scientific community. If collaborative research programs are to be truly successful there must be emphasis placed on making the data widely available and to encourage more timely incorporation into the decision making process at a management level. Fishermen should also be encouraged to be more closely involved in analysis of data and in particular the process of drawing conclusions.

Seize the opportunity
Finally, there is an overwhelming belief that we are all (fishermen, scientists and managers) at a crucial juncture. Many collaborative programs are currently in initial stages and there is a strong feeling of optimism. Most feel this is the beginning of a new age of fisheries research and management. However, there is a real and palpable fear that failure to make the most of this opportunity could have the reverse effect of that intended. The onus is firmly on the shoulders of those who want to make collaborative research successful to ensure that it is.

Specific recommendations

Recommendations and comments contained within previous sections of this report and outlined in Tables 1 through 7 reflect sentiments expressed during workshops. We believe the information contained within the Tables and the meeting summaries in Appendix 1 are a complete account of the specific comments offered during the series of meetings. There are clear common themes as well as site-specific local area concerns. Meetings had many similarities but each was also unique. Here we attempt to synthesize multiple ideas from multiple meetings and to provide an overview of the meetings as a whole. We have attempted to generate specific recommendations that may be of use in setting research priorities. We believe the recommendations are supported by the general discussions but are acutely cognizant of the changing nature of fish stocks. What is a problem today may not be a problem tomorrow. We are also aware of the pressures on fisheries managers and that management priorities can change rapidly. In this light we submit the following recommendations. The recommendations are not prioritized.

- Improve monitoring of bycatch/discard levels

In many cases, the true level of bycatch and discard within a fishery is poorly known. In some cases, bycatch is perceived by the public or managers to be a problem, but may not in fact exist. Before any systematic attempt can be made to reduce bycatch the true nature of the problem must be defined. There is also a need to ensure all studies split bycatch and discard by category. For example, regulatory discards are different from market based discarding practices and the fishing industry is firmly of the opinion that any discussion of bycatch and discard should draw attention to these differences. Definition of levels of bycatch and discard will help assess priorities and almost certainly help define management strategies. Additionally, better background information will allow scientists and fishermen to focus on the problem. Many bycatch reduction studies are reduced in effectiveness by resources being deflected towards quantifying bycatch and discard levels. If such information was available, energies could be devoted to developing new gears and or strategies that actually work.

- Implement **coordinated** programs to address bycatch/discard in key fisheries

Experience has shown that bycatch reduction devices tend not to be generally adopted into wide-scale industry use. Within the New England region there are at least three major exceptions to this argument (mesh size increases, the raised footrope trawl and the Nordmore grate) but many other promising developments have simply disappeared. In order to be truly successful in reducing bycatch and discard within the region, the approach should be systematic and coordinated and should address local area concerns as well as region wide big picture projects. This more than almost anything else would help to promote the process of collaborative research and would encourage buy-in by all sectors of industry. The systematic and coordinated approach should be based initially on the information outlined in Tables 1 through 7 but there should be periodic reassessment of bycatch issues region wide.

During the series of scoping meetings there was some exploration of creative approaches to specific issues but in general there was a surprising lack of futuristic thinking. Studies that demonstrate a radical approach to the subject of bycatch reduction should be encouraged. Most recent studies have focused on refinement of

existing gears and or technologies. Perhaps futuristic approaches may deliver a greater impact in the long term.

- Document reaction behavior of key species

An understanding of the behavior of fish to fishing gears is fundamental to development of bycatch reduction devices (BRD,s) and strategies. The few BRD,s that have been widely adopted in fisheries worldwide have been based on using differences in behavior between target and non-target animals. The Nordmore grid and raised footrope trawls are perfect examples of this. At present, very little information exists about the behavior patterns of key species within the region (for example, cod, yellowtail flounder, monkfish, dogfish, redfish). Systematic, coordinated studies of behavioral reactions to fishing gears should be encouraged.

- Address gear selectivity issues

Much of the information on the selectivity of fishing gears is extrapolated from historical studies on much smaller mesh sizes. There is a pressing need to implement systematic studies to assess the selectivity of currently used fishing gears of all types. Furthermore, selectivity is known to change with season. We recommend that seasonal aspects of selectivity of currently used fishing gears be addressed. There was also a strong message from industry representatives that there should be a proactive approach to selectivity studies and mesh sizes greater than those currently in use should be examined. From an industry perspective it is important that mesh size increases should not be implemented without proper investigation of the selectivity of the proposed configurations. Studies on selectivity should be encouraged to include economic analyses of gear changes.

- Implement studies to understand mortality of discards

Development of bycatch reduction strategies and devices is of little utility if fish expelled by such devices do not survive the process. There is strong interest within industry to address this issue. Studies that address survivability of fish discarded from **commercial** fishing operations should be implemented as a matter of some urgency. It is important that the focus should be on commercial operations as studies elsewhere have shown survivability values from research platforms are in some cases at odds with values obtained from fishing boats.

- Develop outreach and education programs coordinated with bycatch reduction research programs

Many potentially effective bycatch reduction strategies or devices have failed to gain acceptance. This is in part due to lack of understanding of the potential benefits such approaches can bring. A clear message came out from the series of meetings that there is a need for information to be made widely available. Without such programs of outreach and education, successes within the field of bycatch reduction will continue to be sporadic.

Table 1.
Summary of key species and broad categories of organisms that were raised in discussion at each meeting. Results are presented for each separate meeting and alphabetically by species or group. Some appear at species level (for example cod) others at higher levels of classification (for example skate, marine mammals) each classification reflecting the level at which discussion occurred. The occurrence of a tick denotes discussion of this species and the number of ticks in a box denotes the number of separate and different issues raised for that species at that particular meeting.

Species	Montauk	Pt. Judith	New Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth	Total Nº. of comments	Total Nº. of ports
American plaice						✓	✓				2	2
Cod			✓✓	✓	✓✓	✓	✓✓	✓✓✓	✓✓	✓	**14**	**8**
Dogfish	✓	✓	✓	✓✓✓	✓✓	✓✓	✓	✓	✓✓	✓	**15**	**10**
Fluke	✓	✓	✓	✓		✓					**8**	**5**
Grey sole						✓		✓✓			3	2
Haddock					✓				✓		2	2
Hake									✓		1	1
Halibut					✓						1	1
Herring									✓✓		2	1
Horseshoe crab					✓						1	1
Lobster						✓				✓✓✓	4	2
Mackerel									✓		1	1
Mahogany clam									✓		1	1
Marine mammals										✓✓	2	1
Monkfish	✓	✓	✓		✓	✓	✓✓	✓	✓		**9**	**8**
Mussel										✓	1	1
Pollock									✓		1	1
Redfish						✓		✓✓	✓	✓	5	4
Scallop			✓							✓	2	2
Scup	✓	✓	✓	✓		✓					5	**5**
Sea bass	✓										1	1
Skate			✓	✓	✓✓	✓			✓		**6**	**5**
Squid	✓	✓	✓								3	3
Striped bass	✓										1	1
Turtle					✓						1	1
Urchin								✓	✓	✓	3	3
Weakfish	✓										1	1
Whiting	✓					✓	✓	✓✓			5	4
Winter flounder	✓				✓						2	2
Yellowtail flounder	✓	✓	✓	✓	✓	✓					**6**	**6**

Table 2.
Outline of those species and fisheries identified in each port where participants felt research efforts should be made to reduce bycatch and discard. Where discussion was specific about either a fishery or particular aspect of bycatch and discard for that species, comments are included in parenthesis. For example, bycatch and discard of dogfish was raised in 8 out of 10 port meetings. At three of the ports (Manomet, Montauk and Portsmouth) it was identified as a general issue. At one port (Gloucester) participants felt the issue of regulatory discard of dogfish should be addressed while participants at 4 other ports were more specific; hook, trawl and gillnet fisheries were identified at Hyannis, the groundfish fishery at Portland, the tuna bait fishery at Rockland and gillnet fisheries were identified by participants in Ellsworth. As with Table 1, multiple ticks represent the number of different discussions on a particular topic. Fuller details of discussions are outlined in Appendix 1.

Reduce bycatch & discards of	Montauk	Pt. Judith	N. Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth
American plaice							✓ *(groundfish trawl)*			
Cod			✓ (flounder fishery)		✓✓ *(Georges Bank & GOM flatfish fishery, hook fishery)*	✓	✓		✓	✓
Dogfish	✓			✓ (hook, trawl and gillnet)	✓	✓ (regulatory discards)	✓	✓ (groundfish fishery)	✓ (tuna bait fishery)	✓ (gillnet)
Finfish			✓ (scallop trawl)							
Flatfish (small)								✓ *(shrimp fishery)*		
Fluke	✓		✓✓✓ (scallop dredge, conch fishery, regulatory)			✓				
Grey sole								✓ (< 13")		
Haddock					✓ (GOM)					
Halibut					✓					
Horseshoe crab					✓					

Table 2 cont Large mammals										✓ *(gillnet)*
Lobster						✓ *(trawl)*				
Loligo squid	✓									
Mahogany clams									✓ (fisheries from Ellsworth east)	
Monkfish (small)	✓ (ground fish trawl)		✓		✓	✓ (ground fish trawl)	✓✓ (ground fish trawl)	✓ (ground fish trawl)		
Non-economic species							✓			
Redfish						✓		✓ (shrimp fishery)	✓ (whiting fishery)	✓ (large mesh & shrimp trawls)
Scup			✓ (squid fishery)	✓ (squid fishery)		✓ (squid fishery)				
Sea bass	✓									
Skate			✓	✓	✓✓ (barndoor skate, grey sole & American plaice fishery)	✓			✓ (flatfish fisheries)	
Urchins									✓ (Lobster fishery)	
Whiting (small)	✓ (squid fishery)					✓ (shrimp fisheries)	✓ (shrimp fisheries)	✓ (shrimp fisheries)		
Winter flounder	✓				✓ (Georges bank)					
Yellowtail flounder	✓ (SNE region)		✓ (scallop dredge)	✓ (square & diamond mesh)	✓ (NE & mid Atlantic)					
Minimize bycatch & discard in small mesh fisheries								✓		

Table 3. Summary of the separation issues raised at each meeting. Participants identified the need to develop strategies to separate cod from haddock, cod from any other fish, grey sole form American plaice, pollock from cod and haddock, striped bass from bluefish and weakfish and whiting and redfish from other groundfish. The other major category identified in 6 meetings was the need to develop sex-selective strategies or fishing practices for dogfish.

Develop methods to separate	Montauk	Pt. Judith	New Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth
Cod from haddock						✓	✓	✓		
Cod from non-cod				✓						
Dogfish from non-dogfish				✓						
Dogfish sex selection		✓	✓	✓	✓	✓			✓	
Grey sole from American plaice								✓		
Pollock from cod/haddock									✓	
Striped bass/ weakfish from bluefish	✓									
Whiting/redfish from cod/other groundfish								✓		

Table 4.

Participants identified a number of fisheries where no real baseline information exists and where a need for assessment of bycatch/discard levels was identified. These ranged from the need to quantify turtle bycatch and discard in the southern part of the region to assessing degree of bycatch in mussel and urchin fisheries in downeast Maine.

Assess degree of bycatch in / of	Montauk	Pt. Judith	New Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth
Cod / other groundfish in trap fishery								✓		
Herring fishery								✓		✓ (mammal)
Juvenile cod bycatch in tub trawl fishery			✓							
Mackerel bycatch									✓	
Mussel & urchin fisheries								✓ (urchin trap)		✓
Turtle bycatch can be problem in southern part of region					✓					

Table 5.

Summary of selective gear issues raised at each port. Almost universally, there were calls for a coordinated program to identify selectivity parameters for all fishing gear types and to assess area and seasonal changes in selective efficiency.

Selective gear issues	Montauk	Pt. Judith	New Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth
Assess effectiveness of 6" mesh for fluke fishery		✓								
Determine area & time specific selectivity for key species		✓			✓	✓	✓	✓		✓
Assess gillnet mesh selectivity >6"										✓
Define selectivity parameters for various mesh sizes/shapes for		✓ (Scup)		✓	✓	✓	✓	✓ (all species)	✓ (all species)	
Develop new grate for shrimp fishery								✓		
Develop scallop drag that does not catch lobsters										✓
Develop size selective gear		✓ (monkfish & yellowtail flounder)	✓ (scallop trawl)						✓ *(To select max. & min. size for groundfish)*	✓ (trap for larger lobster)
Develop methods to keep squid with 3" mesh		✓								
Improve selectivity for									✓✓ (monkfish in trawl & gillnet, and hake)	
Look at the selectivity of the main body of trawl		✓								
Make nets more selective for all areas and times						✓				
Method to enhance herring catch by acoustic technique									✓	
Need to match mesh size with MLS for all species			✓ (all species)			✓✓✓ (American plaice, Yellowtail flounder & grey sole)				
Use of larger ring sizes in scallop drags										✓

Table 6.

The issue of mortality was raised directly at six meetings but hinted at in many others The issue of whether fish survive the discard process is fundamental to the process of developing more selective fishing gears. Table 6 summarizes mortality issues raised by meeting. In general there were strong calls to determine survival rates for all species and all fisheries.

Mortality issues	Montauk	Pt. Judith	N. Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth
Decrease juvenile fish mortality in hook fishery				✓						
Reduce impact of Nordmore grid to lobster										✓
Improve survivability of small fish in shrimp fishery										✓
Needs to control fishing mortality rate in GOM									✓✓ *(cod & haddock)*	
Assess survivability	✓✓ (fluke & discards)	✓	✓✓ *(fluke & discards)*		✓					

Table 7.

Comments that were not strictly related to agenda items were nonetheless documented and form an important part of this report. Table 7 outlines many of the more important or most regularly voiced comments.

Other Issues	Montauk	Pt. Judith	N. Bedford	Hyannis	Manomet	Gloucester	Portsmouth	Portland	Rockland	Ellsworth
Address resource allocation issues		✓						✓		
Allow fish transfer at sea							✓			
Assess relationships between removal of one species on other non fished species					✓					
Concern regarding loss of bait (herring) in lobster fishery									✓	
Demand of lobster bait force redirection of fishing effort, effect to bycatch and discards								✓		
Determine strategies for fishing in GRAs without catching scup	✓									
Monitor changes in species composition for management								✓		
Need better stock assessment, ecological & behavioral data		✓	✓	✓	✓	✓	✓	✓	✓	✓
Permitting process need to be improved and streamlined	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Re-instate the running clock							✓			
Real time monitoring of discards										✓
Redirect fishing effort to economically viable fisheries (e. g. neon squid)			✓							

Appendix 1: Summary of Issues Raised at Meetings

- Point Judith RI (including CT) 18th January
- Hyannis MA 22nd January
- Ellsworth ME 8th February
- Rockland ME 9th February
- Portsmouth NH 15th February
- Portland ME 16th February
- Gloucester MA 20th February
- New Bedford MA 22nd February
- Manomet MA 23rd February
- Montauk NY 9th March

$100k Research Project Challenge

- Prove how many fluke (summer flounder) there are between Hatteras and the Hague Line
  - Fishermen see many more than NMFS surveys suggest
- Institute more comprehensive surveys using industry boats
  - (For example – Survey proposed by RI Commercial Fishermens Association)
    - Identify proportions of catch that is discarded/kept
    - Identify portion of catch discarded by regulation
- Gather real-time area-specific catch data
- Establish parallel surveys
  - Industry boats fishing alongside NOAA/NMFS survey boats
  - Expanded number of stations
- Gather more comprehensive data on scup distribution and stock size
- Determine proper mesh selectivity characteristics for scup
- Carry out gear selectivity studies on appropriate commercial boats
- Address VTR (vessel trip report) issues
- Conduct calibration of survey and commercial trawl efficiencies
- Identify mesh selectivity factors to protect small fish
  - To protect resource rather than allocate resource
- Implement 6” mesh for directed fluke fishery
- Look at selectivity at the front end of the net (using large mesh netting) as opposed to codend selectivity
  - May have application for fluke and whiting
- Determine ways to capture squid with 3” mesh requirements
- Develop sex selective fishing gears for dogfish
- Develop size selective gears
  - Monkfish
  - Yellowtail flounder

Bycatch and discard Issues

- Determine proper mesh selectivity characteristics for scup
- Implement 6” mesh for directed fluke fishery

- Look at selectivity at the front end of the net as opposed to codend selectivity – for whiting and fluke fisheries
    - This would make a good demonstration project
- Determine ways to capture squid with 3" mesh requirements
- Develop sex selective fishing gears for dogfish
- Develop size selective gears
    - Monkfish
    - Yellowtail flounder

Issue Prioritization Exercise

Look at selectivity at the front end of the net as opposed to codend selectivity.	**********
Determine proper mesh selectivity characteristics for scup	****
Develop size selective gears for Monkfish	***
Determine ways to capture squid with 3" mesh requirements	***
Implement 6" mesh for directed fluke fishery	**

Note: Participants were asked to prioritize the list of bycatch and discard issues by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Discussion on solutions to selected bycatch/discard issues

- **How to reduce bycatch and discard in Monkfish fishery?**
    - Issue is complicated by the diverse nature of the fishery
        - 11" tail allowed in Northern part of range
        - 14" tail allowed in Southern part of range
    - Monkfish are caught in
        - Directed fishery
        - Mixed groundfish fishery
        - Small mesh fisheries
    - There is a very basic lack of background on
        - Biology
        - Ecology
        - Distribution
        - Physiology
        - Behavior
    - Large square mesh (12") in wings may help to prevent "hanging"

- **Potential problems?**
    - If mesh sizes are increased to be more selective for monkfish – other marketable fish may be lost
    - Grids and other mechanical sorters may be ineffective due to the size and shape of monkfish

Additional comments

- Establish appropriate levels of component catch for all species
    - Differentiate between bycatch/component catch
- Amend SFA (Sustainable Fisheries Act)
- Gather fisheries information from all available sources
    - Make it available through internet access
- Fishermen were in general reluctant to explore bycatch discard issues as there was concern that raising issues would impact them at a later stage
- Safety issues are of concern
    - There is a need to catch small amount of non-target species to make money and return to port
    - Discarding imposed by regulation forces prolonged fishing trips and temptation to fish in bad weather
- Vessels should be adequately compensated for involvement in research cruises
    - Industry should choose participating vessels
- Any bycatch reduction devices developed should
    - Be easy to use
    - Be durable
    - Be inexpensive to manufacture/rig/repair
- Quotas should be based on overall length of boat
- General lack of faith with current assessments for
    - Fluke
    - Whiting
    - Squid
    - Scup
- There is a need for a detailed analysis of effect of management strategies on stocks through displacement of effort from one fishery/area to another

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences

Walter Anoushian - NMFS
Bob Morris - FV Living Waters
Nick Anderson - NMFS
Chris Zanni - NMFS
Eric Smith - CTDEP
Angela Caporelli
John Gadzik
Kristi Otterbach
Ed Everich - RIDEM
Jerry Carvalho
Arnold Carr - MADMF
April Valliere - RI Div. Of Fish and Wildlife
Mike Foley - FV Cara Lyn
Frank Blount, Sr.
Jim O'Grady - FV Rhonda Denise & FV Intrepid
Fred Mattera - FV Travis & Natalie
Dean Pesante
Craig Huntley - FV Laura Tern
Paddy McGlade - FV Enterprise & FV Perserverance
Philip Ruhle, Jr. - FV Seabreeze
Bruce Knight - FV Cathrine & Gloria
Harold Loftes - FV Mary Elena
Chas Zeman - AOC
Glenn Goodwin - FV Relentless
Jim O'Malley - ECFF

Total Attendees **29**

$100k Research Project Challenge

- Need for strong conservation measures
  - To maintain the fishing industry for the future
  - Relates to all species
- Help to maintain industry and stocks
- Step back from multi to single species gear
  - Current management system encourages multi-species gear
- Management is by lowest common denominator – that is the stock with the lowest component effects fisheries for other species – need to develop a different way of managing
- Need better data
  - Calibrate surveys
  - Supplement surveys with industry based surveys
- Trust is low between industry and NMFS – needs to be repaired
  - Log-book data is inaccurate
- Fishermen take a $ hit for every change in management
  - In future – recognition should be made of this and someway should be developed to reduce $ impact of management changes
- Need more comprehensive fisheries data
  - Develop independent observer program across all gear types areas and times
  - On regulatory discards as opposed to market/commercially driven discards
  - On juvenile mortality
  - On loss of opportunity due to impact of other fisheries
- Industry reporting program should be developed
- NMFS observer program should be expanded to cover
  - All sectors
  - All areas
  - All times
- Solution to problems could lie between the two extremes – NMFS/Industry
- Develop creative ways to generate funding for research and development
  - Example – CCHFA (Cape Cod Hook Fishermens Association) voluntary fuel tax
  - Scallop TAC (Total Allowable Catch) set-aside
- Current frustration has led to development of cooperative ventures – this is a positive change
- NMFS is out of touch with fishermen and community fisheries – NMFS needs to invest more resources in developing relationships
- Move away from Magnuson concept of rebuilding all stocks at one time – this is a farce

- The management system is set up for failure – not success – Management system needs complete overhaul

- Develop methods to reduce bycatch and discard of scup in squid fisheries

- Need to develop artificial baits so that hook fisheries are more size and species selective

- Hook fishing is currently dependent on cod
    - Need to identify new target species

- Identify impacts of non-fishing human impacts on stocks
    - Eg Chlorine + sewerage on Boston harbor flounder fishery

- Develop methods to reduce impact on habitat
    - Fishermen should take initiative
    - Assess benefits of closed areas and MPA's (Marine Protected Areas)

Bycatch discard issues

- Reduce discard of scup in squid fisheries

- Develop methods to separate cod from non-cod

- Develop methods to separate dogfish from non-dogfish

- Develop sex selective gears for dogfish

- Reduce bycatch and discard of skate (3 species are potentially overfished)
    - As a bycatch from other fisheries
    - Develop species selective gears within mixed skate populations

- Discard of yellowtail flounder should be reduced in both square and diamond mesh fisheries
    - Due to large biomass – large catches of undersized fish

- Reduce regulatory discard of fluke in monkfish fisheries

- Decrease juvenile fish mortality in hook fisheries

- Reduce discard of dogfish in
    - Hook fisheries
    - Trawl fisheries
    - Gillnet fisheries

Issue Prioritization Exercise

Reduce discard of scup in squid fisheries	*******
Develop methods to separate cod from non-cod	*****
Discard of yellowtail flounder should be reduced (square + diamond mesh)	***
Reduce discard of dogfish in hook trawl and gillnet fisheries	***
Develop methods to separate dogfish from non-dogfish	**
Develop sex selective gears for dogfish	*

Note: **Participants were asked to prioritize the list of bycatch and discard issues by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.**

What works

- Hook fishing – bait size affects selectivity
- Mesh size increases
- Raised footrope trawl – whiting fishery
- Hook fisheries – reducing tub No. reduces effort
- Nordmore grate
- Pingers in gillnet fisheries reduce harbor porpoise incidental take
- Low profile cod nets are size selective for cod and flatfish
- Raised footrope trawl in inshore squid fishery
- Closed areas
- Buy-back schemes – reduce effort
- Large twine tops in scallop fisheries
- Composite mesh codends
- Sweepless raised footrope trawl – whiting fishery – also reduces habitat impact
- Change in attitudes – now have a cooperative research environment
- Permitting process is getting better

Discussion on solutions to selected bycatch/discard issues

- **How to reduce scup discards in squid fisheries**
    - Need to assess survivability of scup – if scup is robust – discarding may not be big problem
    - Assess utility of
        - Raised footrope trawl
        - Contrast window in extension to encourage differential escapement
        - "Lovgren" window and variants
        - Separator trawls
        - Fish eyes as escapement devices similar to red snapper fisheries in Gulf of Mexico
    - Need better data on distributions of both species including detail on mixing
    - Fish weir fishery is good because all bycatch can be released alive and in good condition

Additional issues

- Discard is forced on fishermen by regulations – if regulations were changed there would be no discards
- Assess 100% retention management strategies
- Conduct better assessments for all species managed by NEFMC
- Need better information on potential impacts of management changes
- Need to match correct fishermen to projects – not match scientists to fishermen who want to do projects

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
John Pappalardo - FV Peggy B II / CCCHFA
Lorraine Spenle - NMFS
Morgan Eldredge - CCCHFA
Steve Tucker - Mass Bays Program / Cape Cod Commission
Mike Pol - MADMF
Ron Borjeson - MCFA / FV Angenette
Luis Ribas - FV Blue Skies
Doug Fraser - Cape Cod Times

Total Attendees **12**

$100k Research Project Challenge

- Conduct mesh size selectivity comparisons
  - Assess selection factors
  - Assess economic impacts of different selection factors
  - Need work on gill nets – most selectivity work has been done on trawl gears
- Develop better handling practices to improve survivability of small-flatfish in shrimp fishery
- Reduce small hake capture by scallop drags
  - Assess and improve survivability
- NMFS as an agency should be restructured
- Find alternative bycatch reduction strategies other than closures
- Investigate effect of larger ring sizes and mesh sizes in scallop drags (large and small drags) in order to
  - Reduce discard of scallops, flounder and roundfish
- Determine size selectivity for
  - Large and small nets
  - Determine appropriate mesh sizes and configurations for individual species
- Determine economic impact that large boats fishing on Georges Bank have on small boats fishing along the coast
  - market considerations
  - Supply and demand issues
- Determine degree of habitat impact by nearshore mussel draggers
- What is the level of impact of scallop and urchin drags?
  - Do they need to be so heavy?
- Recreational fishermen can have heavy impact on local inshore stocks
  - Educate recreational fishermen to use larger hooks
  - Reduce take of small Pollock by recreational fishermen
- Develop methods to weigh scallop/urchin drags
- Identify important scallop spat areas
  - Investigate larval drift
  - Conduct DNA analyses of spat to determine its origin
- Redfish is in recovery – determine impact of use of large mesh
  - Eastport would be good place for pilot research project
- Investigate and determine degree of impact of land based pollutants on fisheries resources

- Identify ways to reduce porpoise interactions with gillnets in order to
    - Enable nearshore gillnet fishery

- Need basic biological and ecological data on sea cucumbers and their fishery
    - Need sea sampling program
    - Document landings

Bycatch and discard issues

- Reduce cod bycatch and discard in all fisheries

- Reduce redfish discard in large mesh trawls and shrimp fisheries

- Develop methods to reduce damage to lobsters by Nordmore grate

- Assess degree of bycatch and discard in herring fishery
    - What is the degree of interaction with marine mammals

- Assess gillnet mesh selectivity for mesh sizes greater than 6”

- Improve survivability of small fish in shrimp fisheries

- Reduce discard of dogfish in gillnet fisheries – temporal closures may be effective

- Investigate use of larger ring sizes to reduce discard in scallop drags

- Make lobster traps more selective **AGAINST** large lobsters

- Implement real time monitoring of discards
    - Fishermen can then avoid bycatch “hotspots”

- Assess area and time specific selectivity factors for key species

- Document degree of bycatch and discard in mussel and urchin drags
    - Document practices

- Reduce interaction between harbor porpoises and gillnet fisheries
    - Reduce large mammal bycatch
    - Is there really a problem?

- Develop a scallop drag that does not catch lobster

Issue Prioritization Exercise

Assess degree of bycatch and discard in herring fishery	****
Document degree of bycatch and discard in mussel and urchin drags	****
Assess area and time specific selectivity factors for key species	***
Implement real time monitoring of discards	***
Reduce redfish discard in large mesh trawls and shrimp fisheries	**
Assess gillnet mesh selectivity for mesh sizes greater than 6"	**
Improve survivability of small fish in shrimp fisheries	*
Investigate use of larger ring sizes to reduce discard in scallop drags	*
*Make lobster traps more selective **AGAINST** large lobsters*	*
Develop a scallop drag that does not catch lobster	*

Note: **Participants were asked to prioritize the list of bycatch and discard issues by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.**

What works

- Nordmore grate/ whiting grate
- Square mesh panel in extension of trawl gears
- Knotless square mesh codend in shrimp fishery
- Larger ring size in scallop drags
- Large mesh gillnets
- Lighter head bail in scallop drags
- Vents in lobster traps
- Controlling entrance size and shape in lobster traps
- Acoustic pingers in gillnet fisheries
- Larger hooks catch fewer small fish
    - Small hooks catch fewer large fish
- Larger mesh sizes in trawl fisheries

Discussion on solutions to selected bycatch/discard issues

- **How to reduce gear impact on habitat**
    - Current lack of information on habitat
        - Collect information on species, areas oceanography, topography

- Make gear as efficient as possible to make catch in as few tows as possible
  - This is different from improving overall fishery efficiency
- Lessen contact with bottom

- **How to reduce dogfish bycatch in gillnet fishery**
  - Describe reaction behavior of dogfish to gears by videotape analysis
  - Determine periodicity of bycatch
    - Is bycatch worse at dawn? At dusk?
    - Are other periods worse than others?
    - Can bycatch be avoided by not fishing in areas times where bycatch is worst?
  - Gather basic catch and discard data

- **How to reduce large mammal bycatch**
  - Introduce more weak links
  - Increase anchor weights
  - Investigate higher technology solutions eg pingers, acoustically reflective twine

How to develop a project

- Define the nature of the problem
  - Ask specific question – avoid broad categories
- Identify gaps in knowledge and information base
- Gather information to fill gaps
- Design a program to test the specific question
- Conduct field trials – with appropriate scientific protocols
- Identify answer to question
- Assess process
  - Did you ask the correct question?
  - Are there other questions?
  - Where did this lead you?

Additional Issues/information

- Fisheries in downeast ME are substantially different in nature to other regions due to
  - unique nature of tides and currents
  - nearshore nature of many fisheries
  - potential for land-based pollutants to impact resource

- Maine Technology Institute will help industry
    - Write proposals
    - With project development

- NMFS will help fishermen develop proposals and projects

- Fishermen raised concern about raising issues in a formal setting
    - Fear that raising issues will hurt them financially through additional restrictions

- Investigate gear impact on “habitat”

- Gear impact on habitat will become increasingly important as it will dictate ability to fish in certain areas

Issue Prioritization Exercise

Investigate gear impact on “habitat”	*****
Fishermen raised concern about raising issues in a formal setting	**

Note: See issue prioritization exercise comments above

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
Stephen Robbins - Downeast Lobsterman's Assoc.
James Nordon
Jack Schmalzer - Globe Iron Works
Weatherly Philips
James Haughtes
Bill Crowe - Fisherman's Voice
Ted Ames - FV Robin & Anne
Leroy Bridges - Downeast Lobsterman's Assoc.
Arne Porter - Ellsworth American
Steve Smith
Earl Meredith - NMFS
Robin Alden - Consultant
Bill Look - FV Marylou & FV Kendra
Rich Arnold - Thistle Marine
Bruce McInnis - FV Seawife
Dan Schick - Maine Dept. of Marine Resources
Laurie Schreiber - Bar Harbor Times

Total Attendees **21**

$100k Research Project Challenge

- Need to actively develop partnerships and cooperative programs
  - Lets get down to it – stop talking about it
  - How do fishermen really get to make it work
  - Need more guidance from NEC and NMFS
  - Must meet industry expectation – make a difference to how stocks are managed
  - Next step requires one to one relationships between fishermen and scientists

- Consolidate u/w video with bottom type
  - Fill in gaps in our knowledge
  - Make inventory of what video exists
  - Analyze video with respect to bottom type/habitat
  - Make an atlas of bottom type for Gulf of Maine

- Management need
  - Use gear /conservation engineering to manage bycatch/discard
  - How do we target certain species while leaving others alone?
  - Use conservation engineering techniques to define and manage environmental impacts

- Address non-fishing industry impacts
  - "Leave smallest footprint"

- Need to understand dynamic between recovering cod stocks and lobster populations
  - Do recovering cod stocks negatively impact lobster populations through increased predation pressure?

- Explore historical data on population size and distributions
  - Correlate with current trends

Bycatch/discard issues

- Cod discard
  - In lobster traps
  - Trawl gear
  - All gear types

- Dogfish discard in tuna bait fisheries

- Concern regarding loss of bait (herring) in lobster fishery – if bait species are not available lobster fishery is negatively impacted

- Discard of urchins in lobster trap fisheries

- Mahogany clam discard in fisheries from Ellsworth east

- Gulf of Maine cod – need to control Fishing Mortality Rate

- Gulf of Maine Haddock – need to control F.M.R. (fishing mortality rate)
- Develop methods to retain pollock but not catch cod/haddock
- Reduce skate (particularly thorny) bycatch/discard in flatfish fisheries
- Improve selectivity for monkfish in trawl and gillnet fisheries
- Improve selectivity for hake (red and white)
    - Reduce fishing mortality in groundfish fisheries
- Define selectivity parameters (L50, SR) for various mesh sizes/shapes
    - For all species
- Develop methods to select for maximum size and minimum size – groundfish fishery
- Develop methods to enhance herring catch through acoustic herding?
- Reduce redfish bycatch/discard in small mesh whiting fishery
- Address mackerel discard issues due to lack of market/quality issues
- Develop sex selective gear for dogfish fisheries
    - Select for males – release females

Issue Prioritization Exercise

Gulf of Maine cod – need to control Fishing Mortality Rate	******
Cod discard in all gear types including traps	*****
Define selectivity parameters (L50, SR) for various mesh sizes/shapes	****
Loss of bait (herring) in lobster fishery	*
Improve selectivity for monkfish in trawl and gillnet fisheries	*
Develop methods to enhance herring catch through acoustic herding?	*
Reduce redfish bycatch/discard in small mesh whiting fishery	*

Note: Participants were asked to prioritize the list of bycatch and discard issues by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

What works

- Nordmore Grate
- Escape vents in lobster traps
- Increase in mesh size
- Escape windows in extension of trawl gears
- Gillnet pingers to reduce harbor porpoise bycatch

- Weak links in fixed gear fisheries to prevent entanglements
- Raised footrope trawl
- Composite mesh codends
- Timing fisheries to avoid bycatch/discard – and/or area closures
- Fish during part of day – not at night

Discussion on solutions to selected bycatch/discard issues

- **How to retain pollock but release haddock/cod/**
    - All species (cod, haddock, Pollock) have 19" MLS therefore separation is difficult
        - Need to look at distributions of all three species both spatially and temporally
        - Identify length/girth relationships for 3 species
        - Identify potential differences in reaction behaviors
        - Explore non-trawl fisheries

Discussion regarding "Habitat Impact issues"

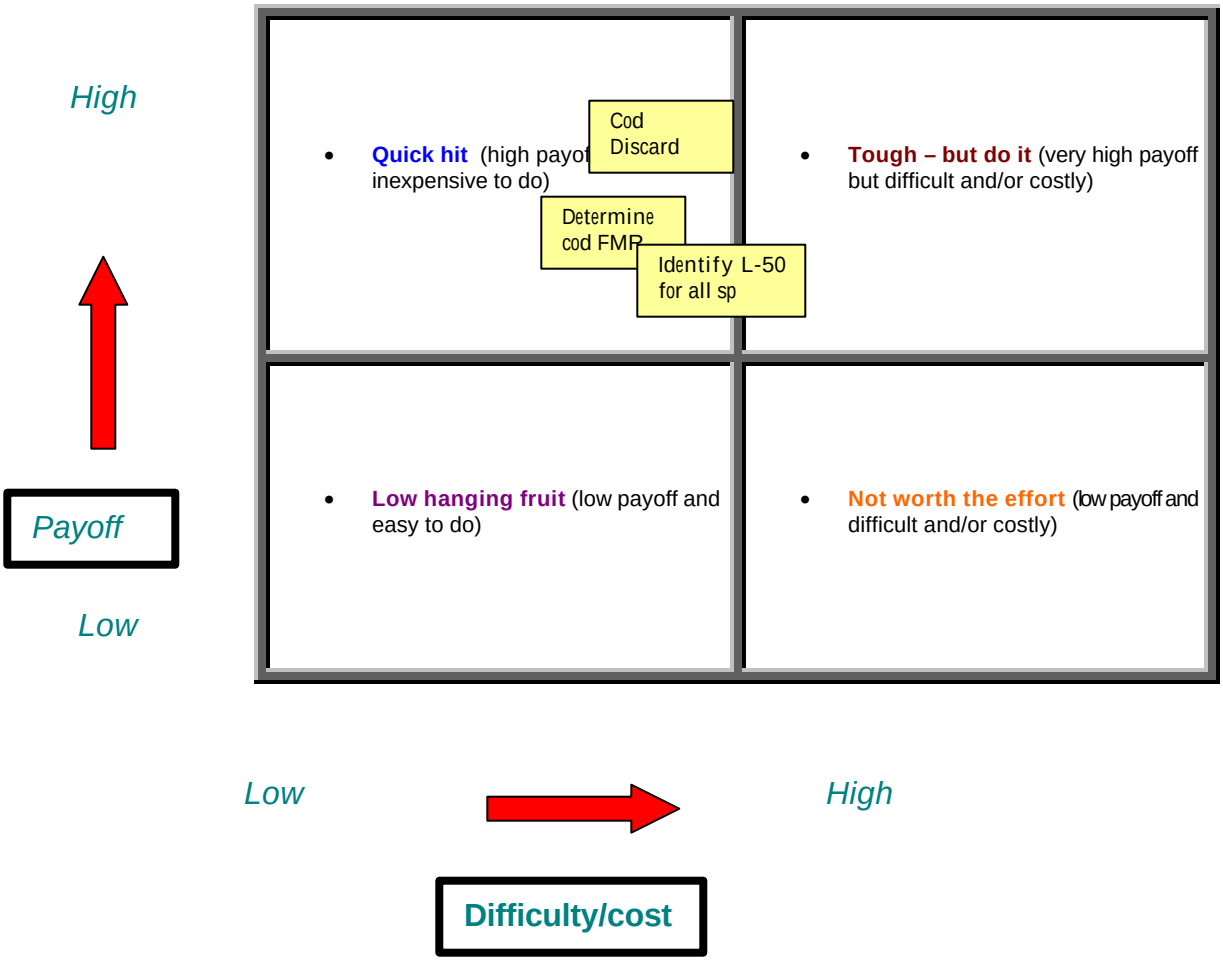
- Raised footrope trawl reduces habitat impact
- Need to develop methods to minimize impact of all gear types
- Need better information on positive and negative effects of habitat impacts
- Need better baseline data
- Need to dispel notion that all trawling is bad
    - This was felt to be particularly important in the area around Rockland
- Management system lack ability to react quickly to need for assessment of impact issues
- Consider alternative/historical fishing practices

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
Rick Albertson - MFCA / FV Tenacious
Ben Neal - Island Institute
John Williamson - Research Steering Committee
Ron Huber - Penobscot Bay Watch
Earl Meredith - NMFS
Kevin Kelly - MEDMR
Carter Newell - Great Eastern Mussel
Bob Moore

Total Attendees 12

Project Assessment Exercise



Note: The technique illustrated above (2x2 matrix analysis) was used to demonstrate how topics of particular importance can be identified from a list of potential candidates. This technique can also be used to identify projects that, although important, may be too expensive or too difficult to achieve. Participants selected three bycatch issues identified in a prior session and applied them to the 2x2 matrix above. Priorities identified by this technique reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

$100k Research Project Challenge

- Reduce bycatch of small whiting (silver hake) and redfish in shrimp trawls
- Reduce bycatch of dabs (American Plaice) from groundfish trawls
- Reduce bycatch of small monkfish from groundfish trawls
- Reduce bycatch of non-economic species from catch
- When new strategies are developed for bycatch reduction
  - Need to conduct economic impact analysis of change
  - Need to implement an experimental fishery to validate the proposed change
- Reduce dogfish bycatch
- Reduce effort on juvenile fish
- Identify mesh selectivity parameters for all species
- Improve survivability for all species
  - Assess survivability
  - Develop better hauling/handling practices
- Implement better and **MANDATORY** observer coverage
- Assess degree of non-fishing industry related impacts on nearshore stocks
  - Land based run-off
  - Effect of power plants
  - Chlorine

Issue Prioritization Exercise

Reduce bycatch of small monkfish from groundfish trawls	******
Reduce bycatch of dabs (American Plaice) from groundfish trawls	*****
Reduce bycatch of small whiting (silver hake) in shrimp trawls	***
Reduce dogfish bycatch	*
Reduce bycatch of small monkfish – all gear types	*
Improve survivability for all species	*

Note: Participants were asked to prioritize the list of issues raised in this session by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Bycatch and discard issues

- Reduce bycatch of small whiting (silver hake) in shrimp trawls
- Reduce bycatch of dabs (American Plaice) from groundfish trawls
- Reduce bycatch of small monkfish from groundfish trawls
- Reduce bycatch of non-economic species from catch
- Reduce dogfish bycatch
- Reduce bycatch of small monkfish in directed fishery
- Develop strategies to separate cod from haddock
- Reduce cod bycatch and discard
- Need better/improved stock assessments
    - Management changes could address the cod discard problem
- Re-instate the running clock
- Allow transfer of fish at sea

What works

- Nordmore grate
- Raised footrope trawl
- Adjustable sweep net
- Mesh size/shape changes
- Gillnet pingers
- Information sharing – can help avoid bycatch hotspots
- General net adjustments
    - Not everyone knows how to adjust net to fish properly
    - Better education programs would help
- Match fishing effort to stock levels

Additional issues

- Address the issue of regulatory discards
- Give fishermen more options with regard to regulations
- Individual quotas would reduce discards

- Adopt alternative management strategies
    - For example – adopt larger mesh sizes coupled with 100% retention
- Fishermen are frustrated with the management system
- Re-instate the running clock
- Allow transfer of fish at sea
- Safety is an issue
    - Discard forces longer fishing periods
    - 100% retention strategies would lead to less time at sea – would improve safety

Issue Prioritization Exercise

Address the issue of regulatory discards	******
Adopt alternative management strategies	**
Give fishermen more options with regard to regulations	*
Individual quotas would reduce discards	*

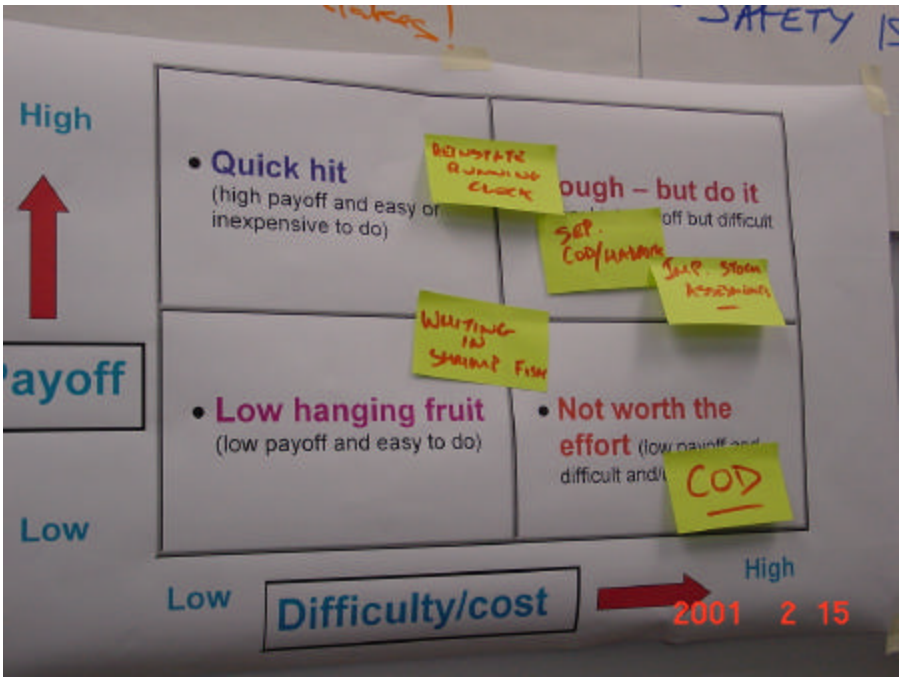
Note: Participants were asked to prioritize the list of issues raised in this session by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Additional comments received by mail-in contact sheet

- The following comments were submitted by one attendee following the meeting. The participant was not a member of the fishing industry and the comment in no way reflects the tone or content of the meeting.
    - *It's a disgrace that animal welfare issues are not discussed widely with regard to commercial fishing*
    - *"There's no good dogfish but a dead one" – comment made by attendee – is the kind of thinking that reflects the carelessness and callousness towards marine animals. Target and non-target animals suffer greatly due to inhumane fishing practices*
    - *If fishermen (women) (sic.) cannot fish humanely then our society should not allow them to fish the resource that belongs to all of us for profit. (Humanely includes reducing bycatch and discards to as low an incidence as possible).*

    Eds. Note. Name and address supplied.

Project Assessment Exercise



Note: The technique illustrated above (2x2 matrix analysis) was used to demonstrate how topics of particular importance can be identified from a list of potential candidates. This technique can also be used to identify projects that, although important, may be too expensive or too difficult to achieve. Participants selected five bycatch issues identified in a prior session and applied them to the 2x2 matrix above. Priorities identified by this technique reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
Peter Kendall - Co-op Mgr. / FV Elizabeth Ann
David Goethel - FV Ellen Diane
Jerry Monkman
Terry Farish - HMMA
Roger Wood - NH Public Radio
Suzanne Fournier
Will Wrobleski – Congressional Aid to Congressman Sununu
Mike Pol - MADMF
Wayne Driscull - FV Amanda-My
Rich Beauchesne - Portsmouth Herald
Bud Fernandes
Phil Yund - GoMA
Carl Bouchard - FV Stormy Weather
Ellis Batson - FV Northern Edge
Craig Mavrikis FV Marion-Mac
Tom Eaton - FV Princess
Andy Lang - FV Erica Nicole
Nick Anderson - NMFS
John Williamson **Total Attendees** **23**

$100k Research Project Challenge

- Address northern shrimp fishery
  - Define distributions properly
  - Develop methods to reduce catch of small shrimp (2 year Male and smaller)
  - Further develop Nordmore Grate
  - Reduce bycatch of small (6-8") flounder
  - Lose all whiting catch from shrimp fishery
  - Lose small redfish from shrimp fishery

- Multi-species fishery
  - One mesh size does not fit all
  - Obtain better mesh selection information for the multispecies complex
    - For different mesh configurations
  - Determine whether minimum landing sizes are correct
  - Do not sacrifice yield of legal sized fish

- Develop "futuristic" approaches to harvesting
  - Habitat impact

- Develop better understanding of species behavior patterns
  - Build behavioral profiles for key species
  - Investigate facilitative learning in fish? *

- Develop strategies to
  - catch haddock but **not** cod
  - catch grey sole but **not** dab

- Develop strategies to access rebuilt yellowtail in closed area II but **not** catch cod

- Can scallop gear and management practices be improved?
  - Do they need to be improved?

- Revisit Magnuson Act with respect to terms regarding bycatch/discard/EFH (Essential Fish Habitat)
  - Educate industry and public about terms

- Develop education and outreach programs – educate public about "real" issues

- Look at historical data on bycatch/discard
  - Split by category
    - Kept
    - Regulatory discard
    - Economic/market discard
    - "Political discard"

- Recognize that many problems are solved every day by industry

- Address impact issues for all gear types
  - Define +ve and –ve factors

- Build better oceanographic/fisheries databases
    - Provide hardware for industry to participate
    - Eg Fleetlink

- Institute a data Clearing House – don't talk – just do it!
    - Assess survivability of discard – for all species and gear types

- Address regulatory discarding practices
    - Investigate applicability of 100% retention strategies

- Develop real time (fleet based) data monitoring systems

- Provide fishermen with incentives to avoid bycatch and discard

Issue Prioritization Exercise

Address northern shrimp fishery	******
Multi-species fishery	***
Addresss regulatory discarding practices	***
Build better oceanographic/fisheries databases	***
Recognize that many problems are solved every day by industry	***
Develop "futuristic" approaches to harvesting + habitat impact	***
*Develop strategies to catch haddock but **not** cod * catch grey sole but **not** dab*	**
Can scallop gear and management practices be improved?	**

Note: Participants were asked to prioritize the list of issues outlined above by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Bycatch and discard issues

- Shrimp fisheries
    - Lose small flounder
    - Lose whiting
    - Lose small redfish
    - Develop grate

- Determine mesh selectivity parameters for all species and appropriate mesh configurations
    - Determine appropriate Minimum Landing Sizes

- Multi-species fisheries
    - Develop strategies to separate cod/haddock
    - Develop strategies to separate grey sole/dab

- Reduce bycatch of small monkfish in groundfish fishery

- Reduce bycatch of dogfish in groundfish fishery

- Small mesh fisheries are impacted by groundfish regulations
    - Find a way to fish for whiting/redfish without catching cod or other groundfish

- Reduce discard of grey sole less than 13”
    - Is 13” appropriate size?

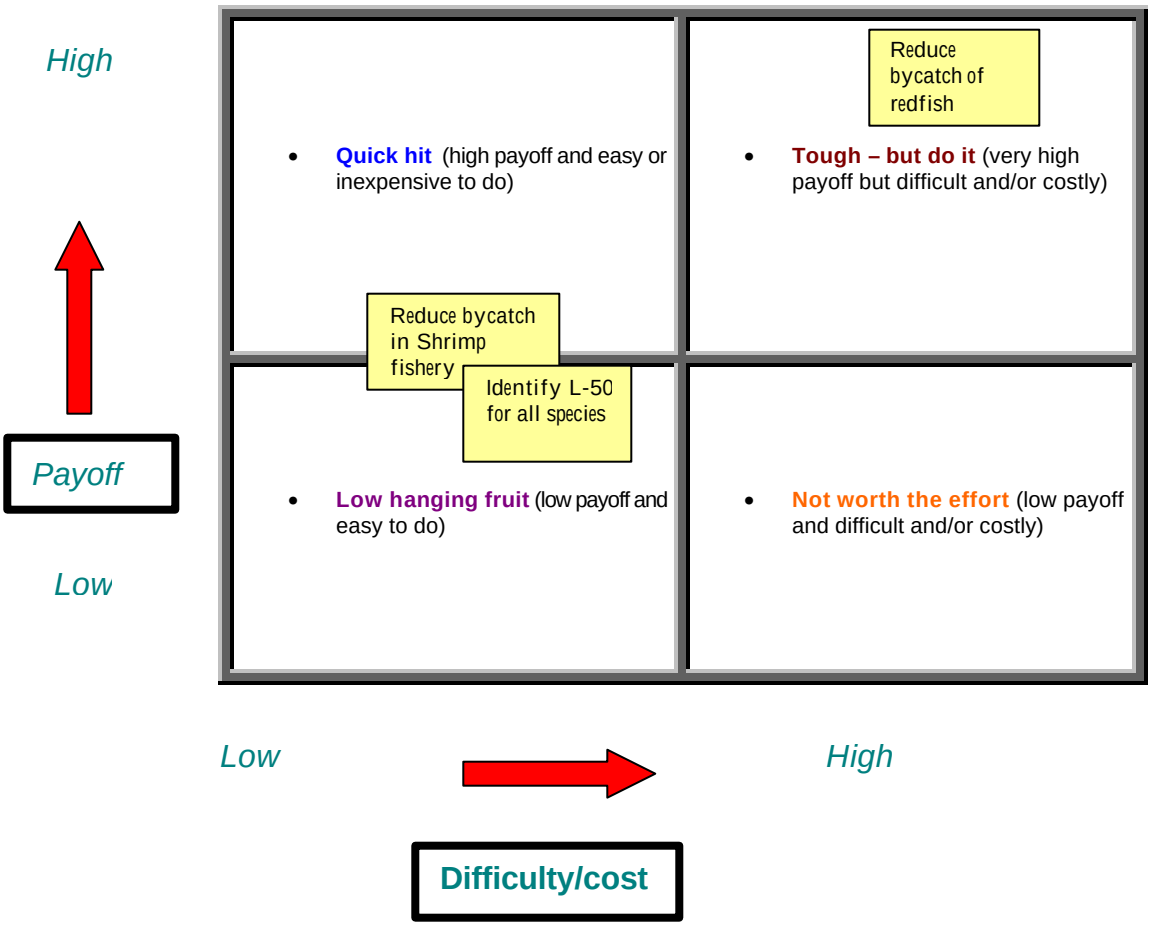
- Need for much better ecological and biological data
    - Fish distributions
    - Surveys
    - Oceanographic data
    - Behavior patterns
    - Migrations and movements
- Monitor changes in species composition due to fishing and management pressures/strategies
- Define degree of bycatch and discard in herring fishery
- Be realistic – smallmesh fisheries will always have a bycatch and discard – just need to minimize it
- Address resource allocation issues
    - Who gets what?
    - Trip limits
    - TAC’s
- Lobster fishery needs bait and supply and demand issues force re-direction of fishing effort. This has a big effect on bycatch/discard
- Determine degree of and reduce bycatch/discard of cod and other groundfish in trap fisheries
- Determine degree of and reduce bycatch/discard of urchins in trap fisheries

Issue Prioritization Exercise

Small mesh fisheries are impacted by groundfish regulations	*****
Shrimp fisheries	*****
Determine mesh selectivity parameters for all species	****
Need for much better ecological and biological data	****
Reduce bycatch of monkfish in groundfish fishery	***
Multi-species fisheries Develop strategies to separate cod/haddock	**
Develop strategies to separate grey sole/dab	*
Reduce discard of grey sole less than 13”	*
Monitor changes in species composition due to fishing + management strategies	*

Note: Participants were asked to prioritize the list of issues outlined above by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

Project Assessment Exercise



Note: **The technique illustrated above (2x2 matrix analysis) was used to demonstrate how topics of particular importance can be identified from a list of potential candidates. This technique can also be used to identify projects that, although important, may be too expensive or too difficult to achieve. Participants selected three bycatch issues identified in a prior session and applied them to the 2x2 matrix above. Priorities identified by this technique reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.**

What works

- Nordmore Grate
- "Less is more" strategy
    - stewardship principles
    - target quality product
    - target high $ species
        - example Tuna has moved from 25c - $60 lb fish
- Portland fish exchange
- Juvenile/spawning area closures
- Change in attitude of industry
    - Move away from problems
    - Use less gear
    - Shorter tows
    - Appropriate use of mesh size and shape
- Willingness in Maine to adopt measures and accept technologies voluntarily
- Re-introduce "Scottish Seineing"
- Circle hooks reduce bycatch
- Gillnet pingers

Additional comments received by mail-in contact sheet

The following comments were submitted by one attendee following the meeting.

- *Need to access rebuilt haddock stocks without impacting cod*
- *Need to access rebuilt yellowtail stock without impacting haddock/cod*

Meeting Attendees

Chris Glass - Manomet
Gregg Morris - Manomet
Yoshiki Matsushita - Manomet
Timothy Feehan - Manomet
Lucy LaCass - Manomet
Julie Herndon - NAMA
Dave Leeman - Vessel Services Portland
Kohl Kanwit - MEDMR
Matthew Cieri - MEDMR
Nick Anderson - NMFS
Maggie Raymond - AFM Groundfish Group
Anne Gamble - Manomet
Walter Gamble - Manomet
Dan Schick - MEDMR
David Gallagher
Greg Walsh - Natural New England Magazine
Don Perkins - GoMA
Bob Morill - NMFS
John Williamson - Research Steering Committee
Craig Pendelton - NAMA
Mike Pol - MDMF
Kevin Kelly - MEDMR

Total Attendees 22

$100k Research Project Challenge

- Regulatory discard of codfish is a problem
  - Stock is larger than science indicates
- Dogfish bycatch and discard is a problem
  - Discard of all sizes of dogfish particularly in gillnet fishery
  - Loss of market for dogfish
  - Should explore ways to select by sex
- Gear Impact is a big issue as is EFH (Essential Fish Habitat)
  - Industry needs to be proactive
  - Identify degree of natural disturbances and relate to scale of fishing related impacts
- Need to define EFH properly to help minimize the impact of proposed MPA's
  - Possibly protect areas **FOR** fishing
- Justify allowable use of MPA's – need to define what is allowable and what is not
- What effect does skate have on distributions of other fish – skate is a big predator of other species
- "souring the bottom" Need to understand the entire ecological process – dumping dead fish may cause big ecological impacts
- Mesh/gear selectivity
  - What mesh is the correct mesh size – for all species
  - Match mesh size to minimum landing size
  - What is correct MLS
- Height adjustment of nets to target differential distribution
- Regulatory discards (R.D.) – can system be altered to reduce R.D.'s
  - Is enforcement an issue?
  - How can enforcement be removed as a issue?
- Simplify regulations
  - Don't always keep adding to existing regulations – make the book "thinner"
  - Give regulations time to work
  - Set goals/targets/timescales
- Reduce discards of American plaice (dab)
- Reduce fixed gear encroachments onto traditional trawl bottom
  - Closed areas encourage gear conflict
- Rolling closures force increased discarding on re-opening – is there a better way of helping rebuild stocks?

- Trip limits can be beneficial
    - Small trip limits lead to wasteful discard

- Gear technology can help to reduce bycatch and discard
    - Needs improved/increased funding

- Too much fixed gear
    - Leads to wasteful discard

Bycatch/discard issues

- Bycatch and discard of Codfish is a problem
    - Because of low trip limit in groundfish fishery
    - And in small mesh fisheries

- Dogfish
    - Regulatory discards are a problem
    - Gear modifications may show promise
    - Need for sex selective gears

- Need to match mesh size with MLS in multi-species fishery for
    - American Plaice
    - Yellowtail flounder
    - Grey sole

- Skate discard is a problem
    - Skate discard likely to increase due to impending regulations

- Redfish – shrimp sized – need to reduce redfish bycatch/discard

- Whiting – shrimp sized – need to reduce bycatch/discard of small whiting

- Fluke discard needs to be reduced – TAC is too small

- Scup discard needs to be reduced
    - In small mesh squid fishery
    - Allocations issues – need to know more about stock structure – identify selective fishing practices

- Monkfish – large discard of small monkfish in groundfish fishery
    - Trip limits force discards of large monkfish too

- Lobster discard in trawl fishery – change regulation to allow catch to be landed

- Try to make nets more effective (selective) for all areas and all times

Issue Prioritization Exercise

Bycatch and discard of Codfish is a problem	******
Dogfish	****
Monkfish – large discard of small monkfish in groundfish fishery	****
Need to match mesh size with MLS in multi-species fishery for all species	**
Scup discard needs to be reduced	*
Lobster discard in trawl fishery – change regulation to allow catch to be landed	*

Note: Participants were asked to prioritize the list of bycatch and discard issues by casting votes for the most important issue. Results of this prioritization exercise (outlined in drop-put box above) reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

What works

- 12" rollers in Inshore restricted area
- Nordmore Grate
- Raised footrope trawl
- Larger mesh sizes – both square/diamond
- Days at Sea – reduction in effort
- Closed Areas
    - Scallop fishery
    - Grey sole/GB yellowtail/cod
- Change in attitudes/behavior
    - Fishermen are more open minded
    - Focus on quality not quantity
    - Higher $ from less volume
- Reduction in catching capacity – CPUE is down
- Increased funding for cooperative research – increased political awareness
- Region needs three more Arne Carrs and three more Chris Glass'

Additional Issues

- 5% bycatch rule is arbitrary – needs to be reviewed
    - Is there a better way?
    - What happens when stocks are in recovery?
- Need for a change in regulations
    - Fishermen have changed behavior

    - Fisheries have changed
    - Need real time management

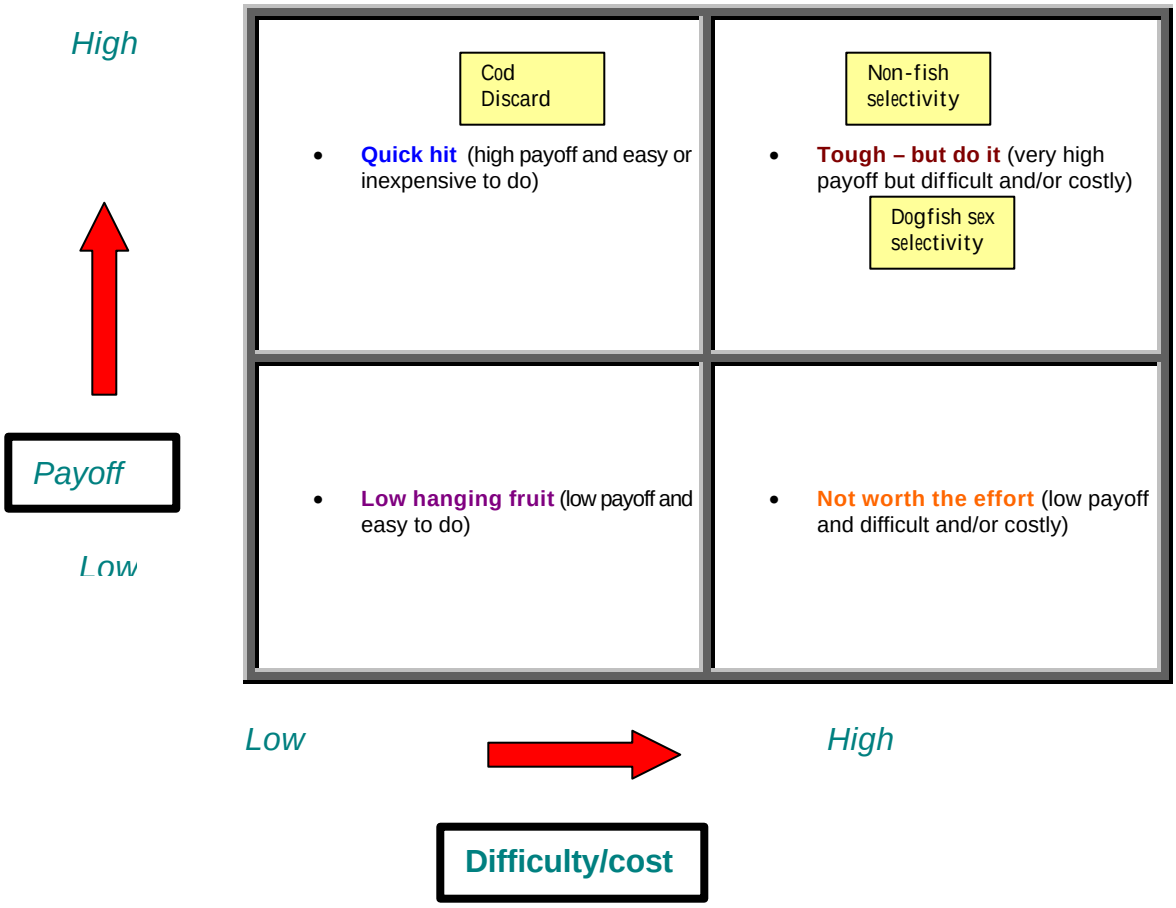
- Need to address day/trip regulations – this can be divisive or at least is perceived as unfair

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
Bob Fisher - FV Marina Rose
David Lincoln - Gloucester Fisherman's & Families Asst. Ctr.
Baldassare Noto - FV Virginia Surf
Tom Brancleone
Joe Scola - FV Dolores Louise
Bill Lee - Ocean Reporter
Costa Maletskos - Manomet
Busty Noto - FV Grace Marie
Arnold Carr - MADMF
Mike Dean - Gloucester Daily Times
Jay Lindsay - Associated Press
Louis Linguata - Gloucester Fisheries Comm.
Vito Calomo - Mass Recovery Commission
Nick Anderson - NMFS
Pat Frontierro - Mass. Fisheries Comm.
Paul Vitale - FV Angela & Rose
Dave Ellenton - World Wide Trading
Rob Contrinc - FV Gretchen Marie
Barbara Toramina - Gloucester Daily Times
Russell Sherman - FV Capt. Dutch

Total Attendees 24

Project Assessment Exercise



Note: The technique illustrated above (2x2 matrix analysis) was used to demonstrate how topics of particular importance can be identified from a list of potential candidates. This technique can also be used to identify projects that, although important, may be too expensive or too difficult to achieve. . Participants selected three bycatch issues identified in a prior session and applied them to the 2x2 matrix above. Priorities identified by this technique reflect only the views of the meeting participants (many of whom were scientists and/or fisheries managers), not industry as a whole. The results of these exercises are included for completeness but should be viewed as exercises not as recommendations.

$100k Research Project Challenge

- Develop scallop trawl net to reduce finfish (particularly summer flounder (fluke)/yellowtail) bycatch
    - Improve selectivity
- Reduce bycatch of juvenile monkfish – all gear types – up to 11" tail
- Improve performance of scallop dredges
    - Reduce bycatch/discard
- Achieve better understanding of hydraulic fishing processes (for example surf-clam fisheries) – understand impact on stocks/other fisheries.
    - Are these technologies as effective/efficient as they could be?
- Survivability of fish bycatch/discard – discard mortality needs to be assessed. Many believe most fish live
- Address utilization issues – develop markets/markets need to be developed – redevelop existing markets (supply and demand issues)
    - Low process lead to higher discards
    - Understand effects of removing fish from sea
- Safety issues?
- Low price could lead to increased discarding
- Understand non-fishing related impacts on species and habitat eg thermal discharge from power plants
- Develop gear research infrastructure – industry + technologist teaming
- Facilitate fleetwide testing – how to implement ideas.

Bycatch/discard issues

- Discard of juvenile monkfish
- Finfish discard in scallop dredges
- Selectivity of target species (scallops) in scallop dredges
- Scup discard in inshore/offshore squid fisheries
- Roundfish discard in directed flounder fishery (eg Gulf of Maine cod)
- Improve selectivity of scallop dredges for target species

    - Reduce bycatch of finfish – particularly yellowtail flounder, fluke

- Fluke discard in Conch trawl fishery
    - Assess survivability of fluke

- Need better biological catch data
    - Including better information on retained/discard ratios and split discard by category
    - Improve port sampling data

- Bycatch of juvenile cod in tub trawl fishery
    - Quantify extent
    - Identify areas/times

- Regulatory enforced discard of fluke

- Develop methods to minimize skate discard

- Survivability of discard – assess "unobserved mortality"

- Dogfish bycatch/discard
    - Develop sex selective fishing strategies

- Match mesh size with MLS – for all species

- Redirect fishing effort towards "clean" economically viable fisheries eg Neon squid

What works

- Raised footrope trawl

- Increased mesh sizes on scallop dredge twine tops

- Appropriate use of square/diamond meshes

- Increased mesh size
    - All gear types

- Increased hook size

- Change in industry attitude and behavior

Additional issues

- Permits and permitting process needs to be better
    - Environmental assessments should be conducted by NMFS
    - Needs to be more user friendly
    - Permits should be delivered in a timely manner
    - Process at the moment "hand-cuffs" science

- Re-visit Magnuson terminology with regard to bycatch, discard

- Document good fishing practices

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Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
Arnold Carr - MADMF
Mike Pol - MADMF
Seth Garfield - FV Ocean Rancher
Jodie York - SMAST
David Martins - SMAST
Joe Rogers
Sarah Babson-Pike - NMFS
Bill DuPaul - VA Institute of Marine Science
Dennis Main – NMFS

Total Attendees **13**

$100k Research Project Challenge

- Need to reassess stocks on all species of fish
  - for example cod – using nets and sonar
  - why do we rely on antiquated methods (random stratified industry independent surveys with research vessels)?
  - need to utilize all gear types in surveys

- Need to develop a fisheries **dependent** data collection system

- Phase 1
  - Develop a study fleet
    - Include training for fishermen in data collection techniques
    - Use only volunteers
    - Use all gear types
    - Use all vessel sizes
    - Build in regional diversity – appropriate methods for each area

- Phase 2
  - Use new and current technology
    - Use laptops and email to augment/facilitate data collection systems

- Phase 3
  - Implement observer program to groundtruth study fleet data

- Phase 4
  - Make database publically available through internet in a timely fashion

- Need enhanced stock assessments
  - Most problems stem from “faulty” assessments

- Enhance understanding of habitat/stock relationships
  - Provide baseline data regarding Marine Protected Areas

- Determine if there is a +ve effect of fishing on stocks

- Map the ocean floor
  - This is considered essential before we talk about Protected Areas
  - Determine appropriate-use zoning

- Develop ongoing, never-ending tagging program which should be industry based
  - Use all tag types
    - Acoustic
    - Conventional t-bar tags
    - Thermal
    - Data storage
  - For all species

- Need to understand non-industry related impacts to environment/stocks

- Simplify regulations – codify!
- Bring enforcement/managers onto same page

- Improve accessibility of information
    - Implement a data clearing house
    - Data should be handled by independent organizations or industry

Bycatch discard issues

- Gulf of Maine haddock

- Thorny skate – in grey sole/dab fisheries

- Spiny dogfish
    - Reduce discard
    - Develop sex selective gears?

- Halibut – is now part of multi-species complex

- Barndoor skate

- Horseshoe Crab

- Undersized monkfish

- Determine relationships between removal of one species on other non-fished species

- Georges Bank winter flounder

- Southern New England and Mid-Atlantic yellowtail

- Georges Bank and Gulf of Maine discard of cod in directed blackback/yellowtail fishery

- Turtle bycatch can be problem in southern part of region

- Discard of juvenile cod in hook fisheries

What works

- 12” heavy gauge monkfish mesh – gill net fisheries

- Increased mesh size – both square/diamond

- Raised footrope trawl

- Sense of stewardship – change of attitude by industry
    - For example – appropriate use of tow duration

- Area closures

- Days at Sea – effort limitation

- Escape vents
- Trap limits
- Pingers on gillnets
- Weak links on risers in trap fisheries – prevents entanglements
- Fishing for better quality product
    - Higher $ - less volume
    - Higher $ species
- Limited entry has improved stewardship

Projects which should be encouraged/developed

- Look at effect of color (contrast) of gillnet material for different species
- Develop gear to catch Northern stone Crab without bycatch (using 10"gillnet mesh)
    - Skate and monkfish could be discard problems
- Develop pot/trap fisheries for cod
- Build a behavioral profile of reactions to fishing gears - for key species
- Develop baseline data on gear/habitat impact
- Develop a gear to fish for sea ravens (underutilized species) without bycatch/discard
- Develop raised footrope technology to separate whiting from other groundfish
- Address issue of discard of large numbers of small "recovering" cod
    - There is currently a mismatch of mortality rates
- Develop new markets

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
John Nordgren - Manomet Center for Conservation Sciences
Bob Mackinnon - FV Lady Irene / SMAST
Nick Anderson - NMFS
Ed Barrett - FV Phoenix
John Haviland - FV Emily Rose
Frank Mirarchi - FV Christopher Andrew
Bob Lane - FV Isabel S
Phil Ruhle - FV Sea Breeze
Susan Playfair - Whisper

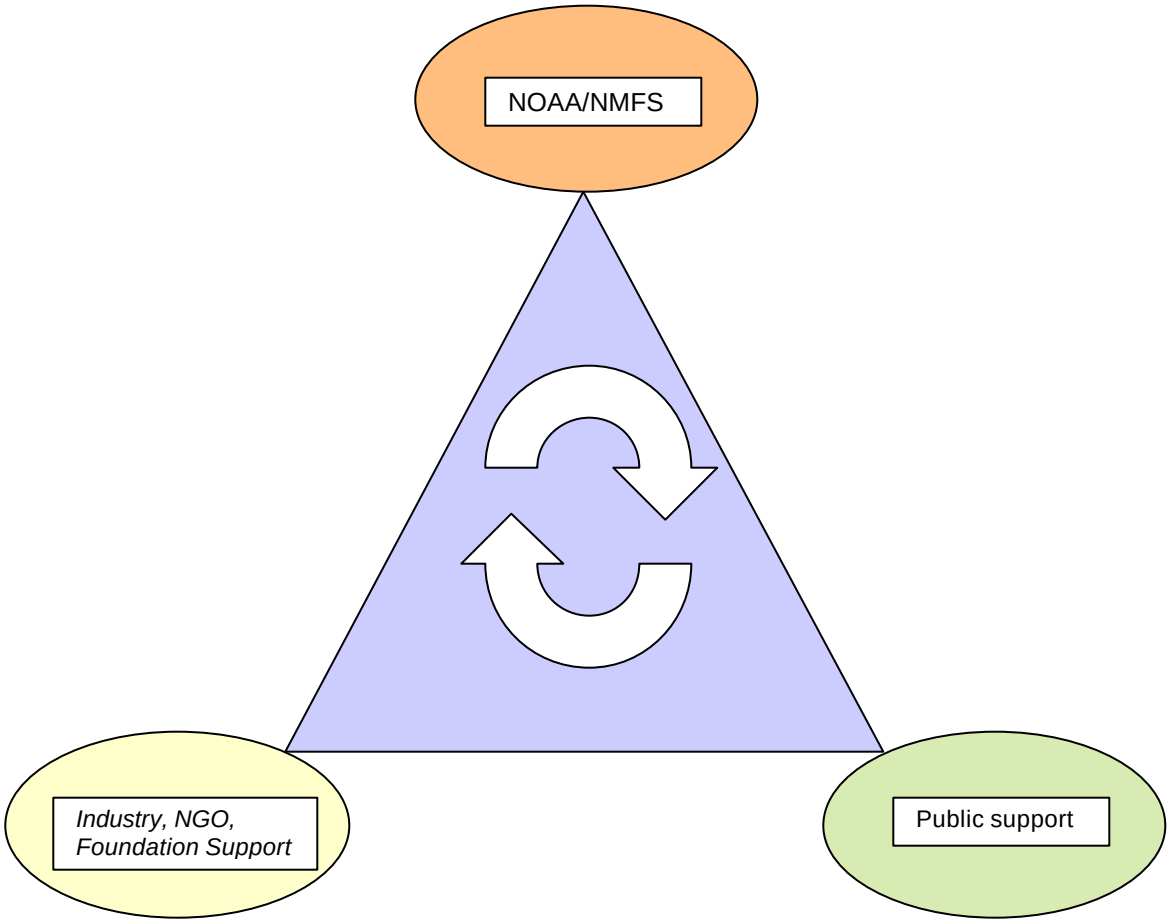
Total Attendees **14**

Future funding strategies

Note: Participants at this meeting explored funding issues and developed this conceptual model for future funding strategies.

- Need to invest in the future
  - Move away from "disaster" status
  - Funding and support should be come from all sectors – don't just rely on government hand-outs

Conceptual model may look like this



- Appropriate use of Agency fees could raise funding for key programs
  - Example Cape Cod Hook Fishermans Association fuel levy
- Regulatory discards could be used to help support research through sale
- TAC set asides

$100k Research Project Challenge

- Demonstrate that the squid fishery has no bycatch or discard
- Discard issues are driven by regulations
  - Change the regulations that force discarding
  - Discard would no longer exist if regulations were changed
- Lobby to change the SFA (Sustainable Fisheries Act)
- Develop real time management strategies
- Determine survivability
  - for all species
- Assess scup Gear Restricted Areas (GRA's)
  - Re-examine data on scup discards
  - Look at geographical distribution of discards
  - Determine which gear modifications could be used to reduce scup discard
- Assess economic impacts of management strategies
- Improve safety by reducing time spent at sea
  - Discarding practices force prolonged fishing trips
  - Potentially force fishing in poor weather conditions
- Re-visit historical discard data
  - Split by category
    - Kept
    - Regulatory discard
    - Economic discard
    - Market considerations
    - Quality considerations
- Implement expanded and improved observer programs
- Utilize days at sea and 100% retention strategies
- Determine degree of bycatch and discard of whiting in squid fisheries
  - What is the real bycatch of whiting in squid fishery?
  - Can trawl gear be modified to reduce bycatch?

Bycatch and discard issues

- Reduce whiting discard in squid fisheries
- Reduce bycatch and discard of Southern New England yellowtail

- Separate striped bass and weakfish from bluefish

- Reduce bycatch and discard of small monkfish
- Determine strategies for fishing in GRA's without catching scup

- Permitting process need to be improved and streamlined

- Reduce bycatch and discard of
    - Fluke
    - Winter flounder
    - Dogfish
    - Sea bass
    - Loligo squid

Issue of Recreational Fisheries

- Need to assess discard mortality in recreational fisheries
    - To reduce discard mortality

- Assess degree of impact of recreational fisheries
    - For all species – commercial or otherwise

Discussion on solutions to selected bycatch/discard issues

How to catch squid without catching whiting?

- Define reaction behavior of both species with underwater video techniques

- Define extent of problem by improved observer programs
    - Geographically
    - Temporally

- Collate better information from industry

- Develop programs to test new gear – and/or avoid geographical/temporal hotspots

Additional comments

- Fisheries in Long Island are very different from elsewhere
    - They have always been a mixed species fishery
    - Require different management strategies

- Discard issues are driven by regulations
    - Change the regulations that force discarding
    - Discard would no longer exist

- Lobby to change the SFA

- Develop real time management strategies

- Improve safety by reducing time spent at sea
    - Discarding practices force prolonged fishing trips
    - Potentially force fishing in poor weather conditions

- Permitting process need to be improved and streamlined

- Why does New England Council control whiting fishery when NJ, NY and RI catch 85% of it?

- There is an important issue of trust
    - Fishermen feel that NMFS and managers do not trust them to fish cleanly
    - Fishermen also feel that NMFS and fisheries managers are not completely open

Meeting Attendees

Chris Glass - Manomet Center for Conservation Sciences
Gregg Morris - Manomet Center for Conservation Sciences
Yoshiki Matsushita - Manomet Center for Conservation Sciences
Timothy Feehan - Manomet Center for Conservation Sciences
Kevin Maguire - FV Evening Prayer
Emerson Hasbrouck - Cornell Cooperative Extension
Bruce Beckwith
Richard Jones - FV Pontos
Patrick Wetzel - FV Wanderlust
Sima Frierman - Montauk Inlet Seafood Line
Dave Aripotch - FV Cory & Leah
Robert Diem - FV Ocean Spray
David McKernan - NMFS
Vincent Carillo - FV Chrissy K
Robert Harter - FV North Sea
Chris Winkler
Erik Braun - NMFS
Russell Drumm - FV East Hampton Star
Mike Fallon - FV Barbara Joan
Greg Gorniok
Tara Froehlich
Albert Leo
Christian Harter - FV North Sea

Total Attendees 23

Source information for selective gear research

Web sites

- Manomet Center for Conservation Sciences
  www.manomet.org
- Gulf of Maine Aquarium Fisheries Research Portal
  www.fishresearch.org
- Massachusetts Division of Marine Fisheries
  www.magnet.state.ma.us/dfwele/dmf/dmf_toc
- Northeast Consortium
  www.northeastconsortium.org
- NMFS Northeast Regional Office
  www.nero.nmfs.gov
- NAMA
  www.namanet.org
- Barbara Stevenson Seller Rep.
  www.bdssr.com
- Fishing New Jersey
  www.fishingnj.org
- Northeast Fisheries Science Center, Woods hole
  http://www.nefsc.nmfs.gov/nefsc/woodshole/
- Alaska Fisheries Science Center, Seattle
  http://www.afsc.noaa.gov/
- MIT Sea grant, Center for fisheries engineering research
  http://web.mit.edu/org/s/seagrant/advisory/cfer.html
- Department of Fisheries and Oceans, Canada
  http://www.ncr.dfo.ca/home-accueil_e.htm
- International Council for the Exploration of the Sea (ICES)
  http://www.ices.dk/
- Sea scallop page
  http://www.seascallop.com/
- Russian trawl design software
  http://www.koenig.su/eng/sokolov/trd.htm
- National Fisherman
  http://www.nationalfisherman.com/

Appendix 2: Meeting Attendees Contact List

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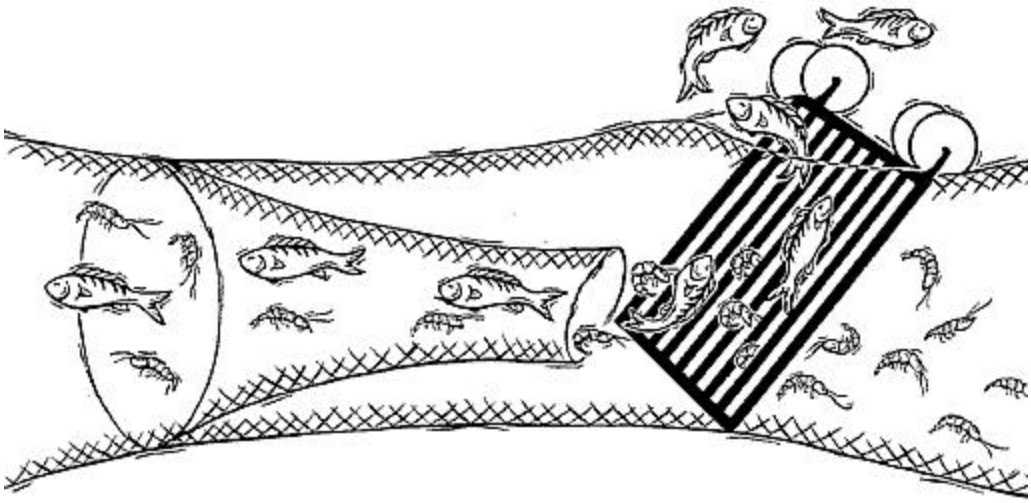
APPENDIX 3: BYCATCH/DISCARD & CONSERVATION ENGINEERING BIBLIOGRAPHY



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