



New England Fishery Management Council

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MEETING SUMMARY – DRAFT

Research Steering Committee

Hilton Garden Inn, Boston, MA

March 23, 2017

The Research Steering Committee (RSC) met on March 23, 2017 in Boston, MA to: 1) discuss the purpose of the RSC; 2) conduct a management review of several recently-completed research projects; 3) develop input on Council research priorities; and 4) conduct other business.

MEETING ATTENDANCE: Mark Alexander (Chairman), Vincent Balzano (Vice Chair), Bill DuPaul, Bill Gerencer, Jake Kritzer, Richard McBride, Chris McGuire, Matt McKenzie, Mike Pol, Ryan Silva, and Graham Sherwood. The RSC was supported by NEFMC staff: Rachel Feeney (RSC Coordinator), Chris Kellogg, and Jamie Cournane (Groundfish Plan Coordinator). About 11 members of the public attended, including participants of the research projects discussed.

SUPPORTING DOCUMENTATION: Discussions were aided by the following documents:

1. Meeting cover memo
2. Meeting agenda
3. RSC-related excerpts of the Council's *Operations Handbook*
4. Final report: *Small mesh fishery bycatch reduction in the southern New England/mid-Atlantic windowpane stock area* (Hasbrouck)
 - a. Presentation slides
 - b. NEC technical evaluation #2
5. Final report: *Determining the post-release mortality rate and best capture and handling methods for haddock discarded in Gulf of Maine recreational fisheries* (Mandelman)
 - a. Final report addendum
 - b. Presentation slides
 - c. NEC technical evaluation #2
6. Final report: *Assessing recreational haddock discard mortality on Jeffrey's Ledge through an industry-led collaborative mark-recapture tagging program* (Bradt)
 - a. NEC technical evaluation #1
 - b. Presentation slides
7. Final report: *Mapping the distribution of Atlantic cod spawning on Georges Bank using fishermen's ecological knowledge and scientific data* (DeCelles/Cadriu)
 - a. NEC technical evaluation #1
 - b. NEC technical evaluation #2
 - c. Presentation slides
8. Final report: *Northeast multispecies fishery flatfish bycatch and market analysis* (Cadriu)
 - a. Presentation slides

- b. NEC technical evaluation #2
- 9. Final report: *Identifying offshore spawning grounds of Gulf of Maine winter flounder* (Fairchild)
 - a. NEC technical evaluation #1
 - b. Presentation slides
- 10. Final report: *Synoptic acoustic and trawl survey of winter-spawning cod in Ipswich Bay, western Gulf of Maine* (Sherwood)
 - a. Presentation slides
- 11. Northeast Consortium's final technical evaluation criteria
- 12. Council's *Research Priorities and Data Needs for 2017-2021*, draft as of February 2, 2017

KEY OUTCOMES

- The RSC discussed seven research projects and made recommendations on the use of project outcomes in management.
- Regarding the Council's draft list of research priorities and data needs for 2017-21, the RSC recommended that the word "priorities" be struck from the title and that a smaller list of priorities be developed by the RSC, a subset of the larger list.

INTRODUCTIONS AND AGENDA REVIEW

The meeting began at 9:30 a.m. Chairman Mark Alexander welcomed all to the newly reconstituted RSC. There were no agenda changes (though later in the meeting, the discussion of one project got postponed to a subsequent meeting).

REVIEW RSC-RELATED SECTIONS OF THE COUNCIL'S OPERATIONS HANDBOOK AND DISCUSS PURPOSE OF THE RESEARCH STEERING COMMITTEE

The Chairman gave an overview of the history of the RSC and its charge as outlined in the Council's *Operations Handbook*. He reviewed several tasks, as outlined, including helping identify research needs, review completed projects, improve collaborations between fishermen and scientists, and to serve on proposal evaluation teams (contact Ryan Silva if interested).

Dr. Kritzer commented that the Scientific and Statistical Committee (SSC) often grapples with immediate information needs, so his interest in switching to serving on the RSC is, in part, to help shape longer term research needs. A stronger relationship between the SSC and RSC would be beneficial, because the SSC's long-term recommendations are often overlooked.

Mr. McGuire commented that fostering collaborative research is very important. Administration of collaborative research is changing in the region, with the Northeast Fisheries Science Center (NEFSC) involving more industry in surveys and with the recent programmatic review. The Council and RSC could be involved in shaping the changes in a positive way. Chairman Alexander indicated that discussing the programmatic review could be a future agenda topic, once the review and NEFSC response is made public, but at least an update will be provided at the April Council meeting from the NEFSC.

Dr. McKenzie agreed with both comments; perhaps the RSC could have a role in communicating findings of the trawl Advisory Panel and help shape future trawl survey projects.

Mr. Balzano commented that the Council always has data gaps, and research tends to be reactionary rather than proactive. He wasn't sure how to get to a proactive approach though. Mr. Pol noted that our current approach to identifying Council priorities results in an overabundance

ideas, which are not priorities. Vague priorities are not helpful for the research community. The projects being discussed today stemmed from very specific priorities, which the RSC helped set, which is a great approach. The RSC should build off that model of developing more precise priorities. Chairman Alexander noted the current draft priorities are too long.

Mr. Gerencer agreed with the first two comments; he would like the RSC to focus on management needs rather than reviewing. Asking RSC members to write written comments in advance of a review is helpful to make the discussion more efficient. There are pressing needs for data and assessments to reduce uncertainty.

Dr. DuPaul commented that the research priorities coming out of a PDT can be fairly specific, but through the Council process, can get more abstract. It would help if the funding sources be more specific and narrow in their Request for Proposals (RFPs). Then it's up to the researchers to respond. Chairman Alexander noted the role of the RSC to weigh in on RFPs. Mr. Sylva indicated that the RFPs are program-specific. RSA priorities are set through the Council process, but programs like the national Bycatch Reduction Engineering Program (BREP) tend to be general. There's been some discussion about better integrating regional priorities in BREP though. Chairman Alexander wondered if the RSC could time a meeting to give input on RFP priorities. Mr. Silva indicated that BREP, RSAs, and the Saltonstall-Kennedy (S-K) program are issuing RFPs consistently. BREP and S-K have competitions in the fall, so perhaps the RSC could be involved. There's periodically a national competition for cooperative research, and there's awareness of Council priorities.

Mr. Sylva commented that there is a void in understanding where a project goes after it has been discussed by the RSC and asked if the RSC could help determine the impacts collaborative research has had in assessments or management. Chairman Alexander is unaware if there has been a retrospective look at how the RSC recommendations have been acted upon, but agreed that it would be worthwhile.

Mr. McGuire commented that the RSC could meet with more frequency, seeing how the agenda had to get pared down, and there's a lot of interest in a deliberative process to develop priorities. He'd like to broaden meeting opportunities for the RSC. Mr. Pol indicated that RSC ideally provides "value added" management review, but sometimes gets weighed down in doing technical peer reviews when that hasn't been completed.

MANAGEMENT REVIEW OF FINAL RESEARCH REPORTS

Chairman Alexander outlined the management review process in the *Operations Handbook* and asked Dr. Chris Glass to explain the technical review used to evaluate the projects being discussed today of those funded in 2014/2015 through a Council contract with the Northeast Consortium (NEC). Dr. Glass explained how he organized a proposal review committee and followed through on an ongoing basis. The NEC strives to have each final report technically reviewed by two or three experts who do not have a conflict of interest with the project, and ideally familiar with the Northeast region (small universe of people). To date, the NEC has not received all the technical reviews yet, but will continue to submit them to the Council as they come in. Additionally, any RSC comments on the projects will be noted in the NEC's final report to the Council.

Chairman Alexander asked the RSC to consider the sufficiency of the technical review and how that bears on the RSC's consensus recommendations to the Council. The written comments submitted by RSC members will be part of the review. He referred to the policy in the *Operation's Handbook* regarding the criteria for using alternative gears in B Days-at-Sea

program and the steps of the process. Mr. Sylva noted that the requirements drive a lot of gear research, though perhaps there could be an evaluation of this standard. Perhaps the RSC could have a role in evaluating this standard.

Chairman Alexander introduced the subsequent management review discussion by recalling that in 2013, Executive Director Tom Nies identified some extra funds, and the Executive Committee decided to use it fund groundfish research. In 2014, the RSC develop specific research topics (e.g., closed area access, increase haddock catch without impacting other groundfish), and the Northeast Consortium was contracted to administer the research funding. A supplemental RFP in 2015 was focused on groundfish spawning research.

Project: "Small mesh fishery bycatch reduction in the southern New England/mid-Atlantic windowpane stock area"

Dr. Emerson Hasbrouck presented a summary of the project, with collaborator Dr. Patrick Sullivan in support. This project evaluated a large mesh belly panel for bycatch reduction in small mesh fisheries in Southern New England. The panel reduced windowpane flounder bycatch (numbers and weight). There was also a reduction in target catch (scup), but most of reduction was of sub-legal sized fish. This gear innovation has a dual purpose: it could be adopted by industry to avoid exceeding bycatch limits, or could potentially be approved as a gear usable in the Southern Windowpane Flounder Accountability Measure (AM) Areas.

Dr. Kritzer asked if there has been an estimate of the impact of adopting this gear fishery-wide: if the small reduction in legal scup could be offset by allowing the industry to avoid triggering the AM. Dr. Hasbrouck noted that the scup reduction was really more the sub-legal catch. Dr. Kritzer also asked why the panel had greater reductions of sub-legal rather than the larger scup. Dr. Hasbrouck was initially surprised at this result as well, but our industry partners indicate that scup stratifies by size within a school. The higher the net will open, the larger the scup they will catch. Dr. Kritzer asked for the rationale for using a diamond-shaped mesh, if having a horizontally elongated mesh would better release flounders and retain scup. Dr. Hasbrouck indicated that the mesh shape has been tested over several projects with industry and that's easy and cost-effective to insert a large mesh belly panel into a net. An earlier project sponsored by the Commercial Fisheries Research Foundation provided vouchers to get a free drop chain and/or large mesh panel.

Dr. Cournane reminded the RSC of a January 2017 Council motion to ask the Greater Atlantic Regional Office (GARFO) to consider any and all remediation measures for a one-year exemption to the pending Southern Windowpane Flounder AM. The Groundfish PDT is working on an economic analysis of what the most recent estimate revenue for specific fisheries that will be impacted. For scup, it's a \$600,000 impact.

Dr. DuPaul noted that, using this panel, there might need to be more effort (longer tows) to offset the loss of legal scup. Dr. Hasbrouck noted that he could better highlight the results for legal scup.

Dr. McBride asked if having the control mesh panel temporarily sewn onto the experimental net to serve as a control net impacted the performance of the control net (smaller effective mesh openings). Dr. Hasbrouck noted that the large mesh panel is 32ö mesh, so would probably have little impact on the 5ö mesh, but that wasn't specifically tested. Dr. McBride asked if there was sufficient testing by water depth or bottom type. Dr. Hasbrouck indicated that depth and habitat were not variables to be analyzed experimentally; rather the study was designed to randomize those factors. The goal was to co-locate flounder and scup. Dr. Sullivan noted the limited number

of tows may hinder looking at depth and habitat for this project, but perhaps there could be a meta-analysis.

Mr. McGuire noted that the brass ring of gear research is to reduce bycatch while retaining target catch. This project was a big success in that regard, yet the report undersells it. Lead with the (minor) change in kept catch. He also asked how popular the CFRF voucher program was and if fishermen today want to adopt this gear. Dr. Hasbrouck agreed and said that many fishermen took advantage of the voucher program for the sweep and panel.

Mr. Pol asked if the gears already approved for the AM could be adopted by industry. Dr. Hasbrouck indicated that many fishermen don't have the gear (e.g., Rhule trawl), and installing a large mesh panel is a simple solution.

Mr. Balzano agreed that the results for marketable catch should be highlighted. On the net design, the connection between the sweep and foot rope is tight (maximum bottom contact). The results may be further improved if there is a raised drop chain or adding discs in the sweep. Scup swim higher in the water column and flounders are on bottom, so finding ways to raise the gear may help. He also noted that sub-legal release is common with bigger mesh.

Dr. Cournane asked for information about other groundfish of concern (e.g., yellowtail flounder and winter flounder), which wasn't detailed in the report. Dr. Hasbrouck indicated that he would need to look at the data.

Dr. Sherwood was interested in the behavior patterns of different sized scup, wondering if video or acoustics would be helpful. Dr. Hasbrouck indicated that they tried video in prior study, but had limited results, because of the sediment cloud.

Chairman Alexander noted that written RSC comments have generally reflected the discussion, that it was a good project that reduced bycatch substantially. Mr. Sylva noted that in the past, the RSC has made recommendations to the Council about gear approval, but not sure how the bycatch reduction standard would be applied if the primary bycatch is not a species of concern.

The RSC developed the following consensus statement:

Consensus Statement #1: The RSC recommends that the Council ask NMFS to consider approving the large mesh belly panel for use in the Southern Windowpane Flounder Accountability Measure Areas (as a reactive AM). During the approval process, the RSC recommends additional consideration of the impacts on other groundfish species and scup kept catch. This gear could also be considered for a proactive AM to avoid triggering the AM.

Project: "Determining the post-release mortality rate and best capture and handling methods for haddock discarded in Gulf of Maine recreational fisheries"

Dr. John Mandelman presented a summary of the project. Funds from the Council/Northeast Consortium and the S-K program were used to partner scientists and recreational fishermen to estimate the discard mortality (DM) rate of Gulf of Maine haddock caught on rod-and-reel groundfish fishery. Biological, environmental, and technical data pertaining to the recreational fishery were collected. A subset of haddock was tagged with acoustic transmitters and released into a passive array. By evaluating vertical and horizontal movement patterns, mortality was determined. The project identified capture-related variables most influential on mortality (temperature, fish length) and a set of best practice guidelines was generated. The project determined a preliminary discard mortality rate of about 56%, though analyses continue.

Dr. Kritzer thought this work was excellent, but asked if additional work is needed to validate the models. Dr. Mandelman clarified that a tagging project can be ongoing to wait for tags, so a line has to be drawn to analyze the data. The study identified best practices broadly (e.g., hook better than jig), but additional work would be needed on the details (e.g., hook type). Outreach also needs to continue, following through on grant commitments.

Dr. DuPaul was surprised by the conclusion that physical condition is not a predictor of mortality, rather season and size. Does physical injury predict time to depth or survival rate? Dr. Mandelman was also surprised. For injury, jig created more injury than hook. Reducing injury is a goal, because that has impacts that aren't accounted for.

Mr. Balzano asked how the fish that aren't returned are treated. Dr. Mandelman said that the t-bar tags were secondary for the project, so not imperative to the function of the study.

Mr. McGuire asked about the spacing of the receivers, if the spacing could be larger and capture the same amount of movement, and also why tag returns were so successful. Dr. Mandelman said that the spacing could probably increase, but there's a trade-off, and they wanted to be consistent with prior studies. With respect to tagging, Nate Ribblett was a vital partner due to his fishing and knowledge and networking in the region. He was key to the project's success. Also, tags need to be released early in the fishing season to allow for recaptures.

Dr. Kritzer urges researchers to pay attention to management process and timelines, and it seems like this is being considered here, but having more detail in the report would be helpful. Changing a DM rate is one of the acceptable changes for an assessment update. Knowing that you are aware of that would be helpful. Dr. Mandelman agreed and said that he talked to recipients of the data in management before the study began to ensure that the results could be applicable.

Dr. Sherwood noted that this project and the Brandt project (low tag returns) worked with the same industry partners, so maybe there was another difference. Dr. Mandelman said that the acoustic tags had a \$50 reward and passes to the New England Aquarium. The t-bar tags had Dunkin Donuts gift cards and passes to the aquarium. He noted that the specific captain was key (Nate was very proactive), and was puzzled by the difference in return rates.

Dr. Cournane noted that the earliest assessment updates will likely be in July. Prior to that, there's an assessment oversight panel meeting, where the project could be discussed. Dr. Mandelman said that the project could be concluded in time. There will also be a submission to a peer-reviewed journal, with a review process that may influence the analysis. Dr. Kritzer noted that for the purpose of applying science in management, publication is about perception, and processes like this are more important.

Chairman Alexander thought this work reinforces the current assumed DM and identifies best practices for the fishery.

The RSC developed the following consensus statement:

Consensus Statement #2: The RSC recommends that the results of this project be considered in determining the recreational discard mortality rate during the upcoming GOM haddock stock assessment. The RSC also recommends that the SSC review this work if there is time to consider it prior to the assessment process. Several aspects of this project (e.g., recreational seasons, gear) may help inform the setting of recreational measures and should be considered by the Groundfish PDT.

Project: “Assessing recreational haddock discard mortality on Jeffrey’s Ledge through an industry-led collaborative mark-recapture tagging program”

Dr. Gabriela Bradt intended to present a summary of the project (via conference call). However, Chairman Alexander postponed discussion of this project to a subsequent meeting, because the RSC was getting behind on its agenda. He noted that the lack of tag recaptures hindered use of the data for calculating a discard mortality rate, but that in their written comments, RSC members indicated other potential uses for the project information. Chairman Alexander apologized for the inconvenience, took comments, and asked staff to forward the RSC comments to Dr. Bradt for consideration.

Dr. DuPaul asked if the project results could be framed within the context of the prior project. Dr. Mandelman said that there may be some possibility, but it will be difficult with inconsistent methods.

Dr. Cournane said that information on the recreational cod and haddock fishery is limited (e.g., where fish were caught, fish size). It would be helpful to know about the composition of catches.

Dr. Glass noted that a major difference in methods. They both used Eastman’s boats, but Bradt’s project trained crew members to do the tagging, and he wasn’t sure if Dr. Bradt went back to do quality control after the training. Double tagging fish could also help, as it’s common for t-bar tags to fall out.

Project: “Mapping the distribution of Atlantic cod spawning on Georges Bank using fishermen’s ecological knowledge and scientific data”

Dr. Greg DeCelles presented a summary of the project, with collaborators Dr. Steve Cadrin (via conference call) and Dr. David Martins in support. Fishermen’s Ecological Knowledge (FEK) and traditional scientific data were used to develop a more holistic understanding of cod spawning on Georges Bank (GB). Data from historical reports, trawl surveys, fisheries observers, and ichthyoplankton surveys were used to describe the spatial and temporal distribution of cod spawning activity. Semi-structured industry interviews gleaned fine-scale spatial and temporal knowledge of cod spawning, and identified 210 spawning grounds on Georges Bank and Nantucket Shoals. The spawning seasons and locations identified by fishermen generally agreed with information from traditional scientific data, but it was evident that seasonal scientific surveys lack the spatial and temporal resolution needed to fully characterize the distribution of cod spawning activity. Results may help future research and management measures intended to promote stock rebuilding.

Dr. McKenzie felt that the work was magnificent, particularly the interview methods. He asked if the identified spawning grounds be weighed by effort. There were fewer areas identified offshore, but was that proportional to the amount of effort offshore. Dr. DeCelles noted that having spawning locations identified on Nantucket Shoals wasn’t surprising, as that area was critical to New Bedford fishermen in 70s and 80s and a lot of the fishermen interviewed were from there. They tried to spread the interviews out, but there was better coverage closer to New Bedford. Fishermen active today are avoiding cod, so there’s less ecological knowledge now. He would like to use this technique for different questions.

Dr. Kritzer asked about what management actions may emerge from the project. Dr. DeCelles wasn’t sure where management should take the results. The project identified a rich mosaic of historic spawning grounds, but it was hard to identify which grounds are still active. This project may help develop a more fine-scale approach to protecting spawning grounds. A number of the sites are closed to fishing now. He’s not sure that time-area closures are effective, and there would need to be more work (dedicated survey) to identify current spawning grounds.

Mr. Pol asked about the results for Eastern Georges Bank. Dr. DeCelles shared his opinion that cod on eastern GB should be managed as a discrete stock (western GB cod should be part of the GOM stock). A few of the U.S. fishermen fished east of the Hague Line early in their careers. He hoped that interviewing the Canadians would help fill in some gaps, but they are using haddock separator trawls and also avoiding cod at all costs. Also, the Canadian fishery is closed during spawning season. Getting Canadian data was difficult.

Dr. Sherwood felt that this project would be very important for understanding GS spawning, similar to how the Ames paper was informative. He asked for elaboration on the color and shape differences between fish on eastern and western GB. Dr. DeCelles noted that fishermen can tell where the fish came from, perhaps due to their diet (herring offshore, sand lance inshore) (fishermen have told him that for winter flounder too). Eastern GB are lighter, and have a better, flakier fillet quality.

Dr. DuPaul is a fan of using FEK, though the methods need to be really well thought out, and this was great work.

Mr. McGuire asked if the MADMF trawl survey would be informative. Dr. DeCelles said that the survey isn't well-timed with spawning. Nantucket Shoals is not well sampled by the NMFS survey, and it's too far offshore for the MADMF survey. It's a very difficult area to fish, with strong current and dangerous narrow channels between shoals. Mr. McGuire said that perhaps it's a good place for a longline survey.

Chairman Alexander suggested many uses for the data, such as posting on the Northeast Data Portal [subsequent to the meeting, the RSC agreed that this may be appropriate once the data are translated into spawning cod EFH]. It was pointed out that because of confidentiality concerns, the depiction any FEK-derived spawning areas would be limited to those areas that were identified by three or more fishermen.

Dr. Kritzer noted that the Sherwood project identified spawning on a very discrete site, whereas this was a more broad characterization. He wondered if Sherwood's approach could help groundtruth the sites identified. Dr. Sherwood noted that his project sites (and several other projects) were also informed by FEK.

Mr. Gerencer supports avoiding fishing on spawning fish, but felt that some of the spawning protections are not focused on that, rather ensuring that the pain is equally distributed across the industry.

The RSC developed the following consensus statement:

Consensus Statement #3: The RSC recommends that this project be considered in the upcoming cod stock structure workshop. It may also be helpful in the ongoing clam habitat framework (e.g., for citing access areas for the clam fishery). This project is a shining example of using Fishermen's Ecological Knowledge. The data could help inform revisions to EFH for Georges Bank cod. Additional research would be needed to determine if spawning closures need to be reconfigured to match current spawning locations.

Project: "Northeast multispecies fishery flatfish bycatch and market analysis"

Dr. Steve Cadrin presented a summary of the project, with Dr. Cate O'Keefe, and Cassie Canastra in support (all via conference call). Recent groundfish landings from Georges Bank

have been far below catch allocations, because the fishing industry was not able to efficiently target and catch healthy stocks. The team met with groundfish industry members to consider possible approaches for designing a bycatch avoidance program for flatfish and other species. However, the industry indicated that such a program is not practical under the current status of the fishery. With industry input, and approval from the funding organization, the project objectives were revised to focus on understanding the market constraints for yellowtail flounder, and to identify possible mechanisms to rebuild the market and increase economic viability for the groundfish fleet. Market analysis indicated that the yellowtail flounder market has collapsed because of the limited supply, fluctuations in landings and leasing prices, as well as public opinion. Market demand for yellowtail flounder is not expected until the species is consistently landed; it cannot currently compete with Pacific substitutes.

Dr. Kritzer felt the team was remarkably adaptive when it was clear that the original objectives may not be met. He noted a potential contradiction. The project focuses on yellowtail, because it is a "choke stock" – a poorly defined term, but to Kritzer, it means a stock that is actively avoided, because reaching its quota would trigger constraints on more abundant stocks. However, it seemed like the project was investigating the potential for yellowtail to be a target species with a market to be developed. The SSC has recommended that optimum yield for a choke stock should be as low as possible, such that bycatch avoidance strategies should be probed more deeply. The report didn't detail why a bycatch avoidance program wouldn't be helpful. Dr. Cadrin agreed that there is a contradiction and noted the ambiguity of terms. Choke stocks are typically fully harvested, yet the yellowtail utilization was much lower than normal, likely due to market factors. He noted that yellowtail used to be one of the principal groundfish stocks, and that rebuilding a fishery and its market go hand in hand. Dr. O'Keefe noted that a flatfish bycatch avoidance program isn't feasible, because most fishermen are already avoiding it. One goal was to see if the assessment projections are too high or if there are market forces driving down landings.

Dr. DuPaul reflected on the collapse of the yellowtail market in the '90s when Closed Area 2 was open. At that time, there was talk of scallop vessels targeting yellowtail; he asked how far back the study went. Dr. Cadrin noted that the data they used went back to the year 2000.

Mr. Gerencer indicated that yellowtail flounder is absolutely a choke stock. Processing the entire ACL would take one processor just three days, so lack of market is understandable. As of last week, the industry has caught just 21mt of the 247mt allocation, so we have already figured out how to avoid yellowtail. He noted that landings might go up at the end of the year, if someone leases in the remaining quota and fishes it. However, he felt that the project demonstrates that fishery-dependent data as a stock assessment tool is borderline useless if fishermen are getting this good at avoiding it. He felt that fishing behavior has so drastically changed over the last 30 years.

Dr. McKenzie asked how these results mesh with fishery-independent data. Dr. Cadrin said that the project focused on understanding markets, but when there is such little catch, the assessments are almost entirely dependent on fishery-independent data, which are noisy. When there is scientific equivocation, market dynamics could be informative. Dr. McKenzie noted that after the decline of the haddock fishery in the 1940s-60s, there was a market analysis prompted by the belief that foreign imports were making a market glut. Lynch and Dreheim (1961) found both market and biological reasons for the decline. Dr. McKenzie noted that low landings do not mean scarcity unless tested with other information. Dr. O'Keefe said that no one is likely disputing the biomass decline here, but the project focus was on understanding markets.

Mr. Sylva said that the most interesting part of the project was the decision to move on from a bycatch avoidance program; this is an opportunity to identify whether a network would be effective. Lessons learned are not included in the report. Dr. Cadrin indicated that participation, buy-in, and sense of urgency are key. For the scallop program, that's waned. Dr. O'Keefe noted the recommendation to develop guidance, and that they weren't aware that there are just two vessels targeting yellowtail. Also, if a fleet is also avoiding a stock to the best of their ability, adding an additional layer isn't needed. Mr. Gerencer is a fan of bycatch avoidance, but perhaps the fishermen should be asked directly what they are doing to avoid yellowtail. The voluntary scallop bycatch avoidance program was developed by fishermen and SMAST and had a big improvement in bycatch reduction.

Mr. Pol noted that for the RedNet project, what builds a market is consistent supply ó which can be driven by Council decision. Mr. Alexander agreed that there are unintended consequences of management. Dr. McBride recommend more rigor in the discussion about the ability to substitute flatfish, noting disparities in west coast flatfish in terms of meat quality. Are all flatfish the same? More could be explored here. Dr. Cadrin said that the consumer is less picky on flatfish, with the exception of grey sole.

Dr. Cournane noted a question for the SSC sub-group for yellowtail flounder. The SSC wondered if price data could inform catch advice. Dr. Cadrin said that price could be looked at and praised the Mid-Atlantic approach of having advisory panels give regular, annual input on market dynamics. She noted that the TRAC meets in July on yellowtail, which kicks off the management process.

The RSC developed the following consensus statement:

Consensus Statement #4: The RSC recommends that it would be useful to forward this project to the PDT and SSC for consideration of the economic and market responses and consequences that result from management actions, especially those that affect a steady supply of product. This project suggests that bycatch avoidance networks are not necessarily effective for all fisheries.

Project: "Identifying offshore spawning grounds of Gulf of Maine winter flounder"

Dr. Elizabeth Fairchild presented a summary of this project to determine where and when winter flounder in the GOM are spawning offshore by studying winter flounder populations during the spawning season at three offshore sites identified by industry: southern Jeffreys Ledge, Bigear, and the southwest corner of Stellwagen Bank. A total of 1,384 winter flounder were caught by trawl, measured, sexed, and assessed for reproductive stage. This is the first study to document that non-Georges Bank winter flounder spawn offshore.

Dr. McBride asked about the impact of postponing dredge projects due to winter flounder spawning. Dr. Fairchild was unsure, but every project must work around the closure. Dr. Kritzer noted that, during his service on the Boston Conservation Commission, dredge projects weren't substantially impacted. However, Dr. Fairchild has been asked to lobby against closures (though she has remained neutral on the issue). Mr. Pol said that the closures are a concern for small towns which share a dredge. Dr. Kritzer noted that the prevailing wisdom is that winter flounder spawn in estuaries, but have they ever? Dr. Fairchild noted that UNH and Normandeau Assoc. regularly sample New Hampshire estuaries, but have never caught a pre-spawning winter flounder, though estuaries are important nursery grounds ó though it may have been important historically. Dr. Kritzer said that it's an important question about if a spawning component ever existed in estuaries and if they could return. Dr. McKenzie noted that Bigelow and Schroeder noted estuarine spawning. Dr. McBride noted evidence of estuarine spawning in areas to the

south (Long Island Sound). Mr. Gerencer said that fishermen say that inshore spawning stopped with chlorine influx from sewage treatment plants.

Dr. DuPaul asked if this offshore spawning is an annual event. Dr. Fairchild said that the fishermen said that where we'd find fish, and the team has captured pre-spawning winter flounder offshore from these sites for other projects. Very seldom did they catch running ripe fish. Tagging work suggests site fidelity.

Mr. McGuire asked about why fish needed to be sacrificed, and if a portable ultrasound would be helpful to assess spawning condition. Dr. Fairchild said that ultrasound may be helpful, but not necessary as there are external characteristics of spawning stage. Just 0.03% of the fish were sacrificed in this project to validate methods of assessing spawning condition.

Dr. DeCelles felt that this study could be very informative for the assessment to help interpret the results of surveys.

The RSC developed the following consensus statement:

Consensus Statement #5: This study contributes to the scientific evidence that Gulf of Maine winter flounder spawn offshore. RSC recommends that this project may be useful for refining EFH for winter flounder and may be useful as background for the next assessment. Future work would be helpful on spawning site fidelity and the contributions and trends of the inshore vs. offshore spawning component to the total stock.

Project: "Synoptic acoustic and trawl survey of winter-spawning cod in Ipswich Bay, western Gulf of Maine"

Dr. Graham Sherwood presented a summary of this project which conducted an acoustic and trawl survey of The Cove which lies to the east of Ipswich Bay, a location which holds spawning cod in the late fall and early winter. The results showed a peak in trawl-caught biomass in mid-December. This was accompanied by peaks in the proportion of cod in spawning condition (ripe and ripe/running) and gonadal somatic index values in early December. All spawning indicators decreased to unequivocally low values by early February. Acoustic results show cod using a broader range of depths than indicated by the trawl survey, but both surveys showed cod aggregating near the southern half of the survey area. The existence of cod stacks (putative spawning aggregations) and spawning condition cod caught in trawls over primarily shallow habitat (< 60m) suggests that spawning takes place in shoal water. The high-end estimate of biomass (249 mt over entire survey area) represents 11% of assessed biomass for the entire Gulf of Maine stock (2,225 mt in 2014) and suggests that The Cove is an important contributor to overall stock performance.

Mr. Pol asked about mesh size and if having smaller mesh would help inform the acoustic data. Dr. Sherwood said that standard trawl gear was used (may need to correct the report). The focus was on mature cod, so standard gear was appropriate, and that they can acoustically remove small fish post-processing.

Dr. McBride wondered if spawning started in October. Dr. Sherwood said that the acoustics showed high numbers of fish earlier. Maybe there were maturing fish staging in the area, so the question is how big of a buffer is needed to protect the staging event? Dr. McBride suspected that prespawning behavior started in October. He asked if the larger older fish were spawning longer than the younger fish. Dr. Sherwood noted a wider range in spawning age in the spring.

Chairman Alexander wondered if fishing could disrupt the stacking behavior. Dr. Sherwood indicated that stacks are a behavior that is associated with spawning, but that there is a need to be cautious with interpretations. Mr. Gerencer asked about the number of size of stacks. Dr. Sherwood said that they saw dozens of stacks. Mr. Gerencer said that there's a lot of good research that could spin off from this, such as validating the stack size. Closed areas need to follow actual spawning, and this may be a way to verify what's actually there. Dr. Sherwood said that cod have site fidelity and abundance estimates could be made elsewhere too. When cod aggregate, they are easier to count.

Mr. McGuire said that his recent work with MADMF and SMAST (winter spawning just west of Stellwagen) had similar results in terms of timing and the cod industry-based survey may have useful data. Dr. Sherwood said that there are likely similarities and that current genetic work may help.

Dr. Kritzer asked for a recommendation on balancing trawl vs. acoustic survey methods. Dr. Sherwood said that it's not trivial to coordinate two vessels, and it may not be practical or efficient. It may be worthwhile to have a targeted survey with trawl and acoustics (species verification is essential), though analyzing acoustic data is time consuming. Dr. Kritzer wondered if at new sites, trawls could verify species.

Mr. Sylva asked if acoustics and trawl could be done with the same vessel. Dr. Sherwood said yes, but here, the fishing vessel wasn't optimized for acoustics, and that it would be interesting to add acoustics to the Mass Bay study. The NEFSC collects acoustic data, but it hasn't been analyzed.

The RSC developed the following consensus statement:

Consensus Statement #6: The RSC recommends that this project be used in identifying/improving/refining the timing of spawning closures within Area 132. This method may be useful to identify other spawning areas (e.g., those mapped as historical spawning sites on the basis of Fishermen's Ecological Knowledge in the project by DeCelles et al.).

REVIEW DRAFT 2017-2021 COUNCIL RESEARCH PRIORITIES AND DATA NEEDS AND DEVELOP INPUT

Chairman Alexander asked the RSC for any input on the Council's draft research priorities. Mr. McGuire felt that this is a really important question that deserves more time than the group has late in the day. He asked about potentially delaying this item to a future RSC meeting. Staff informed the RSC of the Council's timeline to approve research priorities in April, and that the list has been developed over the last year. Dr. Kritzer felt that the scope for changing the priorities is likely limited at this point. Dr. McKenzie lamented that research priorities are usually considered in a rushed fashion at the end of meeting days; while he worries about substantial changes, though Committees haven't put a lot of effort in. Mr. McGuire felt that this discussion could get postponed until June, and that the RSC could meet for a fuller discussion.

Mr. Pol asked about the point of developing priorities. Staff clarified that it's primarily a communication tool, and that the Executive Committee may have to approve a delay in approval. Mr. Sylva noted that the MSA requires setting 5-year research priorities; they are informative, but for specific competitions, RFPs get more specific.

Mr. Gerencer said that he is on the RSC for one reason, that to find a better way to assess fish stocks is our way out of many problems. He has a vision of how to get there, and that the RSC

should be focused on steering research, with less focus on review completed work. Something really important should not be at the end of an agenda. This list is a wish list, not priorities. Stock assessment and the awareness of spawning activity should be top priorities to him. Dr. Kritzer appreciated the comment. He felt that the list is probably fine, but agreed that it is much too long. He suggested that there be dedicated RSC meeting time to prioritize this list. Dr. McBride proposed that "priorities" be struck from the title. Mr. Sylva noted the push-pull between whether the RSC or species committees should lead priority setting, but the process could benefit from a targeted list. Dr. McKenzie noted that species committees respond to the crises du jour, but that the RSC could take a longer, bigger perspective.

Consensus Statement #7: The RSC recommends that "priorities" be struck from the title of the document: "2017-2021 Council Research Priorities and Data Needs," as this document is a catalogue of broader research needs rather than a targeted and ranked list of true research priorities. The Council and research community could benefit from a more targeted list. The RSC would like to devote time at its next meeting developing a targeted list, and recommends an annual review of the targeted list.

Mr. Sylva suggested that the RSC discuss what can be done to address those needs (e.g., trawl advisory panel). Mr. McGuire noted lessons learned today on research methods, and that the RSC could help improve use of research dollars.

OTHER BUSINESS – PLANNING FUTURE MEETINGS

Chairman Alexander asked staff to review the list of ideas for future meeting agendas, including the ideas that RSC members provided today. In no particular order, ideas include:

- Identify the topmost research priorities from the Council's master list.
- Develop input on research priorities for specific, future RFPs (e.g., S-K, BREP).
- Identify best practices for research methods from completed projects.
- Identify how projects reviewed by the RSC have been acted upon to better evaluate the applicability of research results and effectiveness of communication channels.
- Evaluate the standards for approving gear that reduces bycatch.
- Discuss the program review of the NEFSC Northeast Cooperative Research Partners Program and develop recommendations for improving collaborative research.
- Conduct management reviews of completed projects:
 - MADMF EFP on reducing groundfish bycatch in small mesh fisheries (may help develop 2018 specifications).
 - Completed RSA projects
 - Coonamesset Farm project on "extended link" (may be useful in 2017 for the Council priority to revisit flatfish AMs and protect small scallops)
- RedNet and GearNet

The RSC would like to meet more frequently than in recent years, and would like to meet between the April and June 2017 Council meeting to carry today's momentum forward.

ADJOURN

The meeting adjourned at 6:15 p.m.