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CONSIDERATION OF SOCIAL INFORMATION IN NEW ENGLAND FISHERIES MANAGEMENT: REPORT ON 2019 INTERVIEWS WITH NEW ENGLAND FISHERY MANAGEMENT COUNCIL MEMBERS

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EXECUTIVE SUMMARY

This report summarizes interviews with members of the New England Fishery Management Council (Council) completed in 2019 to gather feedback about how they use sociocultural information in decision-making and how the Council can better understand and document the potential impacts of its decisions on fishermen, fishing communities, and other affected stakeholders. The impetus for this project was two-fold. First, it serves as an update to similar work in 2012 (Feeney 2013), helping to understand the degree of progress made since then in improving the use of sociocultural information in fisheries management in New England, and begins to identify where efforts to further improve could be best directed. Second, this project aims to help address recommendations made through the 2018 Council program review (Hull et al. 2018) that the Council consider how it can better meet National Standard 8 and other federal requirements for considering social information. The goal of this report is to bring to light how Council members responded to the driving research question: *What information do you need to know about fishery participants, communities and other stakeholders that would help you make better-informed decisions as a Council member?*

Results are presented by category: 1) information and data, 2) documents, 3) staff interactions, and 4) general. Each section describes some of the positive reflections, the needs and challenges, and lastly some recommendations made by Council members. Overall, Council members were highly positive about staff efforts but expressed frustration with the data and information available to them to consider. Several Council members either explicitly or implicitly noted that the social sciences are the areas where they have the least technical expertise and comfort. This challenge, in concert with the challenges noted around the volume of information and the timing of when that information is provided, cause frustration among Council members and stakeholders. The results of this new study indicate progress has been made since 2012, but that challenges still exist.

Due to the broad nature of some of the issues raised by Council members, there is likely value in having the results of this study shared and reviewed by Council, GARFO, and NEFSC staff to evaluate where information already exists that could relatively easily address the item or where future efforts could be directed. Where items here may be beyond the scope of existing resources or capabilities, the Council could consider including them as research priorities and/or sharing the needs with the academic community to explore as other research opportunities present themselves. The data and information needs noted by Council members (Table 1) would be fulfilled by range of social science disciplines and interdisciplinary approaches. The issues raised by Council members in these interviews provide a useful starting point for further consideration by the Council, as well as opportunities for agency and academic partners to consider how they can also better support the social science needs of fisheries management.

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ACKNOWLEDGEMENTS

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1. INTRODUCTION

Fisheries management is inherently about managing the human use of a renewable but exhaustible resource (Fulton and Adelman 2003; Anderson 2004; Hall-Arber et al. 2009; Tietenberg and Lewis 2018). As such, understanding the human dimensions of the system are essential to management decisions (Clay and Goodwin 1995). To further advance the use of social science in fisheries management, this report presents findings from interviews with members of the New England Fishery Management Council (Council) conducted in 2019. The purpose of the interviews was to gather feedback about how they use sociocultural information in decision-making and how the Council can better understand and document the potential impacts of its decisions on fishermen, fishing communities, and other affected stakeholders.

The term "sociocultural" is used here to indicate the aspects of human dimensions of fisheries that relate to the "who" of fishing – demographics, fishery dependence, safety, stakeholder involvement, equity, cultural values, and the well-being of persons, families, and fishing communities – the considerations that typically are included in a social impact assessment. These factors are inextricably linked with revenue and costs – the economics of fishing – but can be more challenging to characterize and represent. Beyond an "it's the law" argument for why the Council needs to consider the sociocultural aspects of fisheries in decision-making, marine ecosystems include the people and communities who study, manage, and use marine resources. As Fulton and Adelman (2003) point out, "fisheries management is 10% biological resource management, and 90% people management." Managers are continually thinking deeply about who will be impacted by their decisions and how, but reliance on perception and intuition alone, rather than in concert with systematically collected social science data, can be problematic and can lead to regulations with unintended consequences.

The impetus for this project was two-fold. First, it serves as an update to similar work in 2012 (Feeney 2013), helping to understand the degree of progress made since then in improving the use of sociocultural information in fisheries management in New England, and begins to identify where efforts to further improve could be best directed. Second, this project aims to help address recommendations made through the 2018 Council program review (Hull et al. 2018) that the Council should consider how it can better meet National Standard 8 and other federal requirements for considering social information. The goal of this report is to bring to light how Council members responded to the driving research question: *What information do you need to know about fishery participants, communities and other stakeholders that would help you make better-informed decisions as a Council member?* This project focused on understanding perspectives around sociocultural (i.e. non-economic) issues and information and their connection to social impact assessments because there is usually less data and documentation in this area.

The 2012 project involved qualitative analysis of semi-structured interviews of 45 people, a mix of Council members, staff, and social scientists who were working to support fisheries management (e.g., Plan Development Team members). Four overarching issues were examined in the 2012 project: use of sociocultural expertise, collection and analysis of data, incorporation of data and analysis in fisheries management (in both deliberations and documents), and communication strategies for increased utility of sociocultural data. Most informants were from the Northeast U.S., but context was provided by interviewees from each U.S. Fishery Council

region. It was concluded at the time that sociocultural factors of fisheries were considered important, and the collection and use of related data have improved over time, though continued progress was still necessary to ensure that managers have the information necessary to understand how fishermen and fishing communities might be impacted by management decisions. This current project report provides context for progress updates on several of the earlier conclusions.

In addition, the 2018 Council program review panel noted as a high priority that: "the Council [should] increase its ability to meet National Standard 8, on the participation of fishery-dependent communities and minimization of economic impacts of its measures, and the requirements of Executive Orders that pertain to minority, low-income, and Native American populations" (Hull et al. 2018, p8). This current project aims to help address this recommendation by identifying what information Council members feel they need to know to be better informed about the fisheries, fishermen, communities and other stakeholders as well as to seek their ideas for areas of improvement. This current project aims to identify specific and actionable potential improvements to social impact assessments to improve their utility in decision-making based on Council feedback. The methods, results, and discussion are presented below as a tool to assist the Council in its deliberations and future planning around these topics.

2. METHODS

Data for this project was collected through semi-structured interviews (Seidman 2013) based on a six-question interview guide developed by the research team based on the guide used in the 2012 study (Appendix A). The questions were designed to elicit responses from Council members about their perspectives on information needs, use of documents, interactions with staff, and any general feedback. Council members were asked to reflect broadly on their views of social science information needs which often included economic information needs as well. Through the semi-structured interview approach, Council members were asked to elaborate on non-economic aspects given the additional challenges around sociocultural data and information. It can be difficult to disentangle the issues in some cases and therefore many responses included discussion of both sociocultural and economic topics.

One of the main focus areas of the interviews was on soliciting input on what types of information Council members felt like they needed in order to make management decisions and secondly, what information they felt might be lacking in quality or quantity. In soliciting ideas for improvement, Council members were not asked to constrain their responses based on their understanding of currently available resources.

All Council members (18 voting and two non-voting Council seats were invited to participate along with their designees where appropriate). Participation in the interviews was voluntary and participants could decline to answer any question. Responses were collected with the assurance of confidentiality – no names or individually identifying information is included in the report. In total, we interviewed 23 people in 19 interviews representing 17 voting Council seats and one non-voting Council seat. Interviews ranged from one to three participants each, but the majority were with just one person (14 interviews). Interviews were conducted by the lead researcher (LCW) between July 23 and October 16, 2019. Interviews ranged from 14-43 minutes each

resulting in a total of 8 hours and 33 minutes of audio and 125 pages of transcripts. Responses were analyzed by seat, so those seats with more than one interview participant (i.e. a designee or staff member) were not weighted more than those without. All responses (17 voting and 1 non-voting) are presented together in the results.

During interviews, handwritten notes were taken along with an audio recording which was later transcribed and checked to ensure the transcript matched the recording. Handwritten notes where summarized into a framework for cross-group analysis and interpretation (Gale et al. 2013) and transcripts were further analyzed using *NVivo 12*, a qualitative data analysis software.

Transcript data was qualitatively coded using *a priori* codes looking at needs and recommendations, negatives or challenges, and positive statements (Bazeley and Jackson 2013; Saldana 2016). Once coded for these themes, the transcript data was further analyzed and categorized by responses related to: 1) information and data, 2) documents, 3) staff interactions, and 4) general. An iterative process of reviewing the interview notes and transcript data served to assist in moving from the unstructured flow of the data in the transcripts to more structured data to assist in further interpretation of the results. The selection of coding process and themes was based on the goals of this study, the results of the 2012 study (Feeney 2013), evaluation related coding (Saldana 2016) and consideration of emergent themes (Strauss and Corbin 1998). The interview notes and transcripts were analyzed in their totality by the lead researcher (LCW) with portions further reviewed by other members of the project team to ensure consistency in interpretation of responses. Subsets of the transcript data were also further analyzed for in depth interpretation of the results.

While there are limitations to the selected method of data collection and analysis, they are appropriate for the identified project needs and the goals of this report. While self-reported data carries the risk of biases and subjectivity, the semi-structured interview approach allows the interviewer to revisit concepts and ensure that they are capturing the correct interpretation of a response and fully exploring the subjectivity inherent in the responses that are focused on individual views. These methods of data collection and analysis enable project personnel to meet the goal of gaining an understanding of perspectives and impressions of decision-makers. This approach also lends itself to projects where organizations seek to reflect on and learn from their own collective perspectives. In addition, this type of confidential interview and summary by a neutral entity helps to identify shared interests and divergent thinking, and the resulting summaries can help a group think collectively about whether there is a shared path ahead on the issue at hand (Susskind and Field 1996; Karl et al. 2007; Rumore et al. 2016; Matsuura and Schenk 2017).

The project was conducted with the approval of the MIT Committee on the Use of Humans as Experimental Subjects (COUHES) as an exempted project (#E-1424). See Appendix B for documentation.

3. RESULTS

Results of the analysis are presented by category: 1) information and data, 2) documents, 3) staff interactions, and 4) general. Each section describes some of the positive reflections raised by Council members, an exploration of the needs and challenges raised in the interviews, and lastly some recommendations put forth by the Council members.

3.a. Information and Data

Council members provided a wide range of feedback related to sociocultural information.

> "everybody's getting a little bit better about talking about the numbers, you know, the values and what it means to something other than fishing vessels."

Information and Data – Positives:

Council members noted a general perception that good information was being made available, but they recognized that more was possible and needed. Council members described several aspects of social science information and data in a positive light in some cases indicating specific progress in recent years. When information was available, many noted it as thorough and well targeted to the needs. Others noted that given the limitations on available data, the information provided was "not bad." Several Council members felt like they had seen improvements in data and information, specifically noting improvements at the NOAA NMFS Northeast Fisheries Science Center (NEFSC) around information on community dependence, economic impacts, and the groundfish performance reports. In addition, one Council member noted a perceived improvement in the ability of the Council to discuss the information provided, noting for example in the context of impacts on shoreside businesses and communities "everybody's getting a little bit better about talking about the numbers, the values and what it means to something other than fishing vessels." One Council member cited the leasing data been provided for a recent scallop action as particularly helpful. In addition, one Council member noted the value of the state based briefings in helping participants understand and interpret the information.

Information and Data – Needs and Challenges

> "All socio-economic data is limited. That's my perspective anyway. So any new information is helpful. … [What's there] can be maybe described a little bit better, but they're not that bad now, it's just there is a data limitation in the system."

Council members noted many different types of data and information they felt was important to their decision processes, highlighted several existing areas that they felt needed improvement, and described potential new types of information that they felt was needed. Table 1 summarizes the responses categorized into several themes, the most prevalent being: demographics, economics / financial, and data quality / scientific rigor. Since this was an open-ended collection of perspectives (not a survey) and is binned based on researcher expertise, significant weight should not be placed on counts rather they should be interpreted as a way to view relative prevalence. Many of the topic areas that were stated most regularly were as to be expected: demographics, economic and social dependence, financial aspects, etc. Patterns also began to emerge reflecting the evolution of fisheries management in New England. For example, information on leases and detail about the expanded economic and social role of recreational fisheries were also raised as needs.

Table 1. Information noted as needed and as lacking by Council members for federal fisheries management decision making.

Theme	Needed for Decisions – Details	Lacking - Details	Prevalence	Example Quote
Demographics	general, # of individuals/ participants (also at community level), age, community demographics (general and primary target species), comparison across communities, crew info (inc. earnings), demographics of impacted, gear type demographics, distribution of jobs, distribution of landings, ownership demographics (individuals, corporations, etc.), fishery participation, permit structure, recreational and commercial make-up, usage patterns / participation, vessel classes.	Lacking: distribution: # permits landing % fish, fishing activity locations, length of operation of businesses, role/position in industry, *Many items noted as needed for decisions were also noted as areas for improvement.	13 seats	"There are times with some actions that I feel I don't have a real grasp of the actual dollar numbers and how dependent people are on specific resources. Particularly when you get into small communities that have small boats that may participate in multiple fisheries. Sometimes, it does vary, and I can't give you examples now, but some documents I get a real good feel for it and others it seems like it's, they have to use, instead of quantitative information, qualitative information."
Economics/ financial	Differential financial impact of regulations, distribution of profit, distribution of revenue, distributional aspects, economics at fleet level not community, ex-vessel value, financial impact to vessel owners, general, geographic distribution of impacts, impact on businesses, input prices, overhead costs, return to owner.	Lacking: jobs linked indirectly to vessels, lost markets, percent income from fishing, percent income from leasing, see fishery economics from industry perspective, info on ability to access capital (new vs established operations), economic analysis doesn't take enough into consideration (initial permit, boat cost / payments) / solvent number is too low, incomplete economic info (i.e. health insurance costs missing, financial info missing), more needed. *Most items noted as needed for decisions were also noted as areas for improvement.	12 seats	"I understand the need for the broader analysis and I think for the most part, those are helpful and informative. But as the decision maker, it's really the economic impact. The impact to the businesses, the communities that really I think are the driving, that should be one of the driving forces." "I'm not really sure what how they come up with the numbers. They can never explain well, how they come up with those numbers. There's some kind of formula or mathematical thing that they use and maybe it's outdated?"
Quality / scientific rigor	Accuracy and reliability key	Economic numbers/info isn't right, need more up to date info, need improved quality of economic impact analysis, info doesn't seem accurate (communities, average income, etc.), MRIP data concerns, slight negative / slight positive is hard to interpret,	7 seats	"Often we look at the fishery dependent communities, but that information never seems to be that strong to me, so we tend to rely more on our personal experience and knowledge." "We're getting things on average. And so sometimes the summing up and the scale at

Theme	Needed for Decisions – Details	Lacking - Details	Prevalence	Example Quote
		concern with stretching/ extrapolations, use of assumptions in economic models impacts confidence, use of averages challenge, scale of the analysis.		which the analysis is conducted, the community level that it is conducted, it can kind of limit the reality and the complexity of the fishery that's captured. I know there's often confidentiality constraints there."
Dependence / Reliance	Community revenue from fishing, economic dependency, economic impact of fishing on community, social dependence, social reliance, general.	Most items noted as needed for decisions were also noted as areas for improvement.	6 seats	"I've been pleased to see some of the work that's come out of the social science branch in terms of the community dependence. But I don't really ever see that so explicit in the council analyses. Having that kind of work highlighted and brought forward explicitly to the council, I think would be of great benefit. "
Shoreside	General, infrastructure access, financial impact to shoreside businesses	Information on supply chain, shoreside economics, shoreside impacts, lack of hard numbers, *Items noted as needed for decisions were also noted as areas for improvement.	6 seats	"We concentrate a lot on the fleet. But we don't really pay much attention to the shoreside operations unless it becomes a contested issue. And I think that will really help us understand the distribution of the revenues and the value of these fisheries throughout the region."
Community (general)	General, context, community structure, fishery performance by community, etc.	Community health impacts / psychology, impact of catch shares on lives/families, etc.	5 seats	"if we're talking, really talking about a comprehensive social impact analysis, it should be looking at more than just the economic impact that should be looking at community health impacts, as well. Particularly [where] fishing is a significant component … of what supports that community."
Diversification	Ability to switch fisheries, diversification opportunities, impact buffering or mitigation potential, permit movement ability, where likely to move effort	Most items noted as needed for decisions were also noted as areas for improvement.	5 seats	"I would love to see some greater assessment of the diversification opportunities available in different communities. Whether that's by permits held of home ported vessels there. I guess that would be sort of a proxy that immediately comes to mind but, that really can impact how we view the impact of an action."
Recreational	General	Recognize diversity of recreational industry, recreational coverage, recreational: standardized info to compare, timing impacts (particularly on rec), understanding of recreational fishing behavior.	5 seats	"more work to understand what drives the full recreational community. It's not one broad brush of a type of person going out for an experience. There're other components to it. And that's a missing part of helping me [with] decisions, particularly with groundfish."

Theme	Needed for Decisions – Details	Lacking - Details	Prevalence	Example Quote
Confidential Data	N/A	Lack of access to data, confidentiality limitations on analysis, etc.	3 seats	"that's my biggest problem with social sciences and social information. Much of it is unavailable to fisheries managers. And we manage by guesswork with fingers crossed hoping that it all works out."
Data from industry	N/A	Socio-econ data shared from industry	3 seats	"a lot of fishermen ... don't like to participate in [social science research or council processes] so it's pretty difficult to get the right information."
Leases	Lease information	# of lease only permit holders, $ spent to lease, accessibility of leased fish, impact on individuals, lease market interaction, lease prices, leases: use of allocations, possession limit link to lease prices, profit (from leases)	3 seats	"In the last couple of years, and it'll become even more important, it's just the lease markets. And understanding those and then understanding how proposed management changes could affect the lease market."
Scenarios	Predictive analysis (for alternatives)	Scenarios of possible behavior responses/outcomes, understanding how fishermen might react to proposed regulations	3 seats	"[You could] describe a number of different scenarios and then the managers can use some of their own judgment and experience with the fishery to say, 'you know, I really think the fishermen are probably going to react [how] scenario two describes.'… So that there's not just this one assumed path and reaction by fishermen, maybe a number of different scenarios."
Consolidation	N/A	consolidation impacts on communities, consolidation risks / thresholds	2 seats	"I don't think we fully understand, if we increase possession limit, what will that do to consolidation or to the leasing market? … I don't fully understand how all those things are going to interact with each other."
General	Catch broken down by fleet, differential impacts, previous biological/social context re: past actions, previous council thinking, social impact assessments /social information generally, socio-econ impacts: individual up to port, trends over time, who/ how impacted.	Info on ability to attract new entrants / affordability of entry, differential impacts / complexity, discards, excessive shares update, historic context, network of influence, centralized data source, getting what need but would like more, general limitations.	One seat each	"It's hard to compile all that information. You know, even if you do, even if you get everybody [in] the survey you're going to have different reactions for different regulations from … different people in the same harbor. So, how do you compile all that to come up with one strong opinion on the regulation or on an impact survey?"

In addition to the information and data needs in Table 1, several Council members also discussed specific challenges related to the voluntary nature of much of the needed social science data and information. Council members felt that the social science data and public input was drawing on the same set of people all the time and not getting at the true complexity of the region. An associated challenge was described by one member as follows: "[i]t's a delicate balance. I think there's people out there that you couldn't ask enough questions. And they would love to give you all the information that they possibly can. And there's other people out there where they're two question Charlies and they're done." Another noted their perception that much of the sociocultural information seemed to come from public comments and therefore they felt that the Council may be limited in who they hear from based on social dynamics and hierarchies within the industry: "We don't really have a mechanism by which people can honestly and truly and anonymously - other than writing written comments during scoping period. We don't have a means to solicit that input unless we asked them to put their name on it. And then it winds up in published correspondence." One member noted that distrust of NEFSC among industry members may impact survey and interview response rates and therefore the quality of the data upon which decisions are being made. Another Council member noted the challenge of industry not able to "envision themselves in the analyses," therefore negatively impacting perceptions of the data and analysis by both members of industry and some Council members.

Information and Data – Recommendations from Council members

Council members made several recommendations for improvement and possible areas for further study related to information and data needs:

> "[B]ecause of [confidentiality provisions], we can't really get down to the level of analyses that we really need and more importantly, we can't crowdsource a lot of these problems. … I think we're missing out on seeing things, a lot of analytical power ..."

- Include and consider socio-economic information earlier and more iteratively throughout the deliberative process
- Consider the interaction of biological and social uncertainty
- Include dedicated social impact presentations as part of deliberative process
- Have a centralized data source that all can draw from
- Revisit confidentiality / rule of three requirements and implications
    - One Council member noted a concern about missed opportunities due to confidentiality provisions, pointing out that in another region, data was voluntarily submitted to a third party and anonymized for increased accessibility by scientists and managers: "We're missing out on that power, that ability of third parties, industry associations, NGOs, academics, we're missing out on the insights they could be giving us … I think we're missing out on seeing things, a lot of analytical power, because we've got these data confidentiality things."
    - "Are those data confidentiality protections A) effective and B) really doing their job in our or are they holding us back from tapping into the lot of people who really want to help get this right."
- Revisit the definition of active groundfish permit (one pound landed is not realistic)

- Possible areas for future study (see Appendix B for details):[1]
    - Assumptions about behavior change
    - Capacity study / impacts of access control
    - Consolidation trade offs
    - Impact of distribution of Rafael permits/allocations
    - Organization of shoreside industries and economies
    - Recreational studies
    - Retrospective on response to management changes

3.b. Documents

When asked to reflect on their use of Council documents to consider social information, members noted positives, but also described challenges and recommendations for the future.

Documents – Positives

Several areas of recent improvement were noted along with description of several Council related materials that members found useful (see Table 2). Several Council members also noted that they felt the materials were professionally presented, high quality for the short timeframes, helpful and clear, and that they liked the current format.

> Council documents are "amazing pieces of work usually produced on a crazy, really tight deadline"

Table 2. Council positive descriptions of documents.

Useful Items	**Noted Improvements**
Groundfish performance report	Conscious effort to improve
Charts/graphs	See improvements over time
Social section of EIS	Improvements in timeliness of docs
Summary documents	Structure of documents (standardization)
Correspondence summaries	Improvements to info on shoreside
Public hearing summaries	

Documents – Challenges

Most comments around challenges in using documents centered on the volume of information received and in the amount of time it takes to thoroughly review and prepare for meetings. Many Council members had general perspectives on the documents that while relevant to the social information, also apply to the documents on a whole. Additional detail and example quotes are available in Appendix D.

Volume of information concerns included (9 seats):

- feeling that it is impossible to read all the documents,
- views that the documents were "burdensome" and hard to digest,

[1] While many of the items noted in concept in Table 1 and the recommendations listed could generate a slew of potential research projects, several Council members shared observations that were characterized more specifically as future study/research recommendations (not a question that was specifically asked). This listing summarizes those items as an augmentation to the rest of the recommendations, not as anything with higher weight.

- a general sense of being overwhelmed with the amount of information provided while still wanting more information to help make decisions.
- a perception that information was buried in dense paragraphs and couldn't be quickly found in discussions, and
- challenges using qualitative data in Council deliberations and debates.

Timing of documents concerns covered two major themes (5 seats):

- the time it takes to review all the materials, and
- the timeliness of getting the needed materials in advance of meetings (full Council and Committee meetings were noted).

Several members described an improvement in getting the materials in advance, but noted it was still a lot of information to digest in short time.

Other concerns expressed about documents included (one each):

- Link between the lack of shared objectives and criteria around the social aspects of the fisheries and the challenge of how to format the documents and present the information in a way that facilitates decision making (i.e. if there were shared social objectives by the Council, the documents could be organized around these themes),
- Documents and presentations tend to use insider language and therefore are challenging for stakeholders and the public to interpret,
- Challenges around reconciling the analysis in the documents versus the public comment statements and personal experience,
- Legal requirements for documents are to facilitate public involvement, but document length and structure deters involvement, and
- Documents are repetitive in part due to legal requirements, but that this causes challenges in reviewing and digesting the documents.

Documents – Recommendations from Council members
When discussing their use of Council documents in the context of social information, members' recommendations for improvements include:

- streamlining where possible (5 seats),
- use of visualized data (5 seats),
- viewing the industry and public as the target audience for documents (4 seats),
- desire for digitized interactive documents and/or open source data (1 seat), and
- presenting social information as formally as possible (1 seat).

> "[Think] about how to best communicate another type of science that is the least familiar to all the members … there is a whole other vocabulary involved" [in social science].

3.c. Staff Interactions
The most positive feedback in the interviews pertained to interactions with staff, though challenges and recommendations for improvement were noted as well.

Staff Interactions – Positives

> "I don't know how they'd do a better job. I truly don't. They do a pretty darn good job laying information out there, just they're using really bad information to derive an answer."

Council members were quite effusive in their comments about staff in general and at times noted specific staff at the Council, NEFSC and the Greater Atlantic Regional Fisheries Office (GARFO) that they had particularly positive interactions with. Council members described staff as professionals, smart, hardworking, and competent people. Council members also noted that staff do a good job with the information that they do have, while acknowledging that these human dimensions factors and potential changes can be hard to forecast. Council members also felt that the staff they interact with are open to adding information when it's provided, they are responsive, and that they listen to input from Council members.

There was wide agreement that it is always possible to access someone to help with a question, but several noted that they felt they had far more interaction with Council and GARFO staff than with NEFSC. It was also noted that efforts to increase staff capacity around social science aspects was appreciated and that the general efforts around advancing use of social science information was a positive development. Several members shared a perception that NEFSC was reaching out more and becoming more accessible than in the past. A feeling that collaborative efforts were improving was also stated, but that there continued to be room for improvement.

Council members felt that overall they had productive and positive interactions with staff. Several members noted that they really valued the opportunity for informal interactions with staff and other experts to help them better understand the issues and expertise available around human dimensions topics. Several specific staff were described as excellent communicators of complex issues and as especially accessible and willing to help (details on specific staff is not provided here for confidentiality reasons).

Staff Interactions – Challenges

> "I haven't pursued … social science information because it's just not there in the amount and at the quality that I would want. So it's just too frustrating to try to get something they cannot provide."

While significant positive feedback was noted, Council members also shared several challenges. Several noted a lack of familiarity with staff beyond the Council staff. One used "generalists" to describe their view of Council staff, noting less familiarity with their individual areas of expertise. Another noted a perceived lack of social science trained staff in the past that may still have an impact on current operations and processes. Some Council members noted limited interaction with NEFSC staff and a wish for more interaction with the social science experts earlier in the process. Several Council members noted the differential access to expertise based on the organizational affiliation of the member (i.e., a state or federal agency member may have access to their own staff who also have relationships with other staff and therefore differential access to expertise to interpret documents and analyses). One Council member also summed up their interactions as positive but limited because of their perception that the data that they need just isn't even there: "I haven't pursued with anyone, council staff, Northeast Fisheries Science Center, or GARFO, haven't pursued aggressively [a] demand for, request for, begging for social science information because it's just not there in the amount and at the quality that I would want.

So it's just too frustrating to try to get something they cannot provide." While acknowledged as very rare, two Council members noted a feeling that staff perspectives at times impacted responsiveness to certain questions. A concern was expressed by one Council member that the processes and interactions are not set up for feedback on the social science analyses, noting that while they felt staff worked hard, there was not an opportunity for dialog about the social science related analyses before decisions had to be made. While describing one on one interactions with staff as positive, one member noted a challenge that the public and other Council members did not get to benefit from the understanding and nuance in those discussions. Another Council member noted that while they felt there was a strong breadth of social science skillsets present across the three organizations (Council, GARFO, and NEFSC), staff skills were not necessarily being put to their best use to advance social science analyses.

Staff Interactions – Recommendations from Council members

Council members shared several recommendations for future improvements about staff interactions across the Council, GARFO, and the Science Center.

> "take what the scientists say and provide a picture to the fishermen that they can relate to, from their personal experiences, or to be able to describe why, what they're seeing may not be, and understanding may not be, what is coming out of the social science work that they're doing."

- All parties (Council members, staff) should recognize the importance of relationships and make an effort to reach out with questions or just to familiarize themselves.
- Continue opportunities for small group and informal interactions with Council, GARFO, and NEFSC staff and Council members
- Explore building in more time and opportunities for idea exchange and collaboration
- Staff to staff interaction might be helpful so they can learn from each other more (across PDTs, organizations, etc.)
- Have social science technical experts available at the beginning of the process, not just to run analyses at the end.
- Staff should be diligent in ensuring that the presentation of data and results are as objective and unbiased by personal opinions of the researcher and should acknowledge the disciplinary perspective they bring.
- Staff should continue to focus on and build capacity to clearly communicate the issues and information.

3.d. General/Other

In addition to the discussion of data and information, documents, and staff interactions, Council members reflected on a number of items that were more general in nature. These included a number of challenges relevant to the use of social science information in fisheries management, as well as more general reflections. Several recommendations were also raised.

General/Other – Challenges:

Council members described several challenges related to the use of social science information in decision making. The most prevalent items raised were around the topics of:

- Interconnectedness and complexity of issues (7 seats)

- Perceived legal constraints (5 seats), and
- Different levels of involvement by various Council members, industry members, and others (4 seats).

Other challenges ranged from the differences across states in the region to the lack of shared socio-economic objectives to the relative limited familiarity of Council members with social science disciplines and methods, among others. Appendix E further describes the challenges as perceived by Council members along with example quotes.

General/Other – Recommendations from Council members
In addition to the topic specific recommendations described earlier, several general recommendations and ideas emerged on a wide range of topics. These recommendations included (See Appendix F for example quotes):

- Consider how the Council process around human dimensions impacts buy-in.
- Increase the Council's general social science awareness to help know what questions to ask.
- Increase interagency coordination on socio-econ impacts (especially re: offshore wind activities).
- Provide more opportunities for interaction.
- Explore a role for CCC or NRCC to assist with shared social science challenges across Councils.
- Have more socio-economic discussion (based on data) at the table.

> "working to improve [the social science] I think is going to benefit the council members like me and making their decision but it's also I hope will build buy in from the communities that are suspect of everything we do right now. Building that trust, I think ends up with better decisions."

4. DISCUSSION

Throughout the interviews, Council members raised a range of perspectives on data and information, documents, staff interactions, and several general areas. Overall, Council members were highly positive about the staff involved, but expressed frustration and challenges with the data and information available to them to consider the human dimensions.

Several Council members either explicitly or implicitly noted that the social sciences are the areas where they have the least technical expertise and comfort. This challenge taken in concert with the challenges noted around the volume of information and the timing of when that information is provided come together to create a feeling of frustration among Council members and stakeholders.

The data and information needs noted by Council members (Table 1) come from a range of social science disciplines and interdisciplinary approaches. This is a common challenge in resource management settings and has resulted in the development of social science training modules (NOAA 2019) and other educational tools (NOAA 2018). Another challenge with applied settings like fisheries management is that the theoretical and field advancing research in academia is at times not salient to the immediate management questions at hand (Cash et al. 2003). This leads to a challenge of having staff and advisors who need to be able to draw from that theoretical thinking to interpret results and provide advice, when encouraging academic

researchers (in addition to agency staff) to work on these applied topics that are directly relevant to the management questions of the Council might be more beneficial.

For the New England region, several areas of progress can be noted between the 2012 and current report, but many areas still remain a challenge. For example, in the 2012 study it appeared that few Council members read the social impact analysis and fewer read the whole EA/EIS, largely feeling overwhelmed by the volume of information. While not explicitly asked in this study, it does appear that Council members are using more of the social information sections of the documents, but that they still have the same concerns about length, etc. The 2012 study also indicated that that Council members seemed to learn of social impacts more through stakeholder input and dialogue than through documents. While Council members certainly commented on the value of discussions and public input, comments noting the challenge of reconciling the documents with public comments indicate use of the information provided in the Council documents. This presents an opportunity for further discussion among Council members and staff about the mix of systematically collected social science data considered in concert with public comments, written correspondence, and other conversations. The timing of the availability of social impact analysis continues to be a challenge. While not explicitly raised by many Council members in the 2019 interviews, the 2012 project identified several activities that were underway at the time that have since been completed. For example, Council website improvements, the availability of the Northeast Ocean Data Portal (Northeast Regional Ocean Council 2019), social indicators projects (Colburn et al. 2016), and others are now available. The fact that they were not explicitly mentioned in the 2019 interviews could indicate lack of familiarity with these resources.

Several similar efforts to analyze the use of social science in fisheries management have been conducted in the Pacific (Pacific Fishery Management Council 2005), the Atlantic States Commission (ASMFC Committee for Economics and Social Science 2013), and the Great Lakes (Heck et al. 2015) along with several workshops specifically held to advance these efforts (Seagraves and Collins 2012; Hawkins et al. 2015). These studies and workshops noted reached similar conclusions to this study. In addition, Council member desires for more interaction, collaboration, and more iterative approaches are also consistent with the literature and practice related to co-production of knowledge, consensus building, and other related approaches (Ehrmann and Stinson 1999; Karl et al. 2007; National Research Council 2008; Cvitanovic et al. 2015; Matsuura and Schenk 2017; van Kerkhoff and Pilbeam 2017). These approaches have the potential to increase participation in research and public engagement efforts, build buy-in, and increase responsiveness.

Due to the broad nature of some of the issues raised by Council members, there is likely value in having the results of this study shared and reviewed by Council, GARFO, and NEFSC staff to evaluate where information already exists that could relatively easily address the item or where future efforts could be directed. An item listed as lacking may exist, it could be that the person commenting was not aware of it. It is important to understand what issues are perceived as missing or lacking however, as the lack of knowledge about existing data products among Council members may contribute to the insufficient consideration of social science information. The areas noted as lacking, but where resources are known to exist by staff present an opportunity for increased outreach about the availability of related information resources. Where

items here may be beyond the scope of existing resources or capabilities, the Council could consider including them as research priorities and/or sharing needs with the academic community to explore as other research opportunities present themselves. There is also likely benefit from sharing this report with the SSC as well as with other social scientists from a broad range of disciplines and methodological backgrounds to seek additional input on what non-fisheries related expertise, data, and tools might be available to assist the Council, but also what other types of considerations might benefit the Council decision processes.

5. CONCLUSION

The results of this new study indicate progress has been made since the 2012 study (Feeney 2013), but that challenges still exist. The issues raised by Council members in these interviews provide a useful starting point for further consideration by the Council, as well as opportunities for agency and academic partners to consider how they can also better support the social science needs of fisheries management in New England.

The use of science to inform decision-making is a hallmark of natural resource management but while important progress has been made on the incorporation of the biological science into decision making, the use of social science information has continued to lag as noted in this report and other studies. Incorporation of the social sciences into decision making has an added challenge that it tends to be an area of less familiarity to natural resource decision makers. In addition, some of the methods and characteristics of social science data collection parallel the tools and methods often used for public participation in decision processes (i.e. surveys, focus groups, interviews, etc.), presenting an opportunity to think more deeply about the nexus between systematically collected social science information and public engagement.

In addition, when considering the use of social science information in natural resource decision-making, the challenge of theoretical differences in different social science disciplines is also present (i.e. a market economist is going to bring different data/analysis/theory than a behavioral economist, than an anthropologist, than a psychologist, etc.). All of these (and other) disciplines have implications for how we think about fisheries management, community impacts, and behavior in response to regulation. As such, interdisciplinary connections continue to be key to the development of management relevant information.

Taken together, the feedback from the Council members on their perspectives about the data and information needs along with areas for consideration in the future provides context for the Council to revisit these issues on a regular basis. At the end of the day, resource management decisions are ultimately policy decisions that while based in social and natural science information, cannot be decided solely on technical information. The Council then must continue to wrestle with these challenges as it seeks a path ahead to make difficult decisions for the benefit of the resources and the people who depend on them.

"In science, when human behavior enters the equation, things go nonlinear.
That's why Physics is easy and Sociology is hard."
– Astrophysicist Neil deGrasse Tyson

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APPENDICES

A. Interview Guide
B. MIT Human Subjects Review Documentation
C. Council Member Quotes Regarding Ideas for Future Studies
D. General themes and topics raised by Council members as possible recommendations to consider regarding Council documents.
E. General challenges raised by Council members in the context of use of social information in fisheries management.
F. General recommendations raised by Council members

Appendix A. Semi Structured Interview Guide

1. What information do you feel you need to know about fishery participants, communities and other stakeholders that would help you make better-informed decisions as a Council member?

2. What information about the human dimensions of commercial and recreational fishing (e.g., social, economic, cultural aspects) do you think is missing from Council documents or lacking in quality and/or quantity?

3. How do you use Council documents to consider the human dimensions of fishing in the management process (e.g., the social impact analysis)? How do you think that compares to your perceptions of how Council members generally use the documents?

4. How do you think information can be organized and presented in a more useful manner?

5. Are you aware of, and have you had contact with, those who are involved in supporting the Council actions regarding human community/social impacts? What have those interactions been like? If you haven't interacted or don't know who they are, what ways would be useful to help you become familiar with those individuals and their areas of expertise?

6. Any final thoughts or ideas that have come up while we have been talking?

Appendix B. MIT Human Subjects Review Documentation

Lindsey Williams

From: [redacted]
Sent: Wednesday, June 5, 2019 4:41 PM
To: Lindsey Williams; mt
Subject: Exempt Evaluation: Determination: E-1424, Williams

The proposed research activities outlined in Exempt ID: E-1424: Consideration of Social Information by New England Fishery Management Council members **have been determined to be exempt**.
No further actions in COUHES Connect are required.

As the Principal Investigator or Faculty Sponsor, you must adhere to the policies within the Investigator Responsibilities for Exempt Research and ensure that all members of the research team comply with these policies.

Your study may proceed as long as all research procedures correspond with responses within the Exempt Evaluation. If the scope or procedures of the research undergo significant alterations, you must submit a new Exempt Evaluation.

Any deviation or violation of the Investigator Responsibilities for Exempt Research or alterations from the study as described in the Exempt Evaluation must be reported to the COUHES office for further review.

E-1424, Consideration of Social Information by New England Fishery Management Council members.

Principal Investigator: Williams, Lindsey C
Faculty Sponsor: Triantafyllou, Michael S
Start Date: JUL-01-2019
End Date: JUN-30-2021

Determination(s): Exempt

Exempt Category 2 - Educational Testing, Surveys, Interviews or Observation

Research involving surveys, interviews, educational tests or observation of public behavior with adults or children and disclosure of the subjects' responses outside the research could not reasonably place the subjects at risk for criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation. Research activities with children must be limited to educational tests or observation of public behavior and cannot include direct intervention by the investigator. 45 CFR 46.104(d)(2)

If you have questions, please contact COUHES directly:

email: couhes@mit.edu | phone: 617-253-6787 | website: couhes.mit.edu | online: COUHES Connect

This is an automated notification. Please do not reply directly to this email.

Appendix C. Council Member Quotes Regarding Ideas for Future Studies

While many of the items noted in concept in Table 1 and the recommendations listed earlier in this report could generate a slew of potential research projects, several Council members shared observations that were characterized more specifically as future study/research recommendations (not a question that was specifically asked). This listing summarizes those items as an augmentation to the rest of the recommendations, not as anything with higher weight.

Possible areas for future study:

- Assumptions about behavior change
    - "something we talked about a lot is that we're making assumptions about what will happen under new proposed regulatory scenarios, we're assuming that, you know, fishermen's behavior will stay constant, that sort of the level of effort they put in and the way they fish and how motivated they are to fish and all those things will sort of be the same as it was in the past. So that a measure of past performance can be used to assume how new regulations … will perform and that we constantly find when we change regulations that, at least on the recreational side, quite often, it doesn't come out anywhere near where we thought it would. And some of that is probably due to people changing their behavior. So from the human dimensions piece, having some kind of information about how anglers might change their behavior, how their motivations might change."
- Capacity study / impacts of access control
    - "Not to get so buried in individual management plans, but take a look at what's happened to capacity in the most quantitative, scientifically based way we can. And explain if there are the sort of perceived large reductions, why we haven't got the response in terms of fishing mortality for example, or overfishing, or if in fact, there isn't the perceived reduction in capacity, just based on how many fewer boats there are. Explain why. I think this is a very major contextual lack of information that means a lot in terms of evaluating where, particularly the New England Council is and how well it's doing and what it might need to do differently. Or maybe nothing at all if it turns out that … the answer could show something that I haven't even described. … It's a disconnect. It's contextual for basically all of the major fisheries in New England."
    - "And a lot of the movements towards you know access control, ITQs, and various other versions of ITQs that have about 50 different names. But at least in New England it hasn't, it hasn't changed the perspective of this is a place we've been overfishing. Why? What didn't happen that was supposed to be based on the concepts that evolved 15, 20 years ago. Is New England different in that regard than the other places? I think that's really a big picture overriding issue, I'd really love to see some people study it."
- Consolidation trade offs
    - "is there a benefit sometimes to having less participants who are doing better than a lot of participants who were sort of just scratching by, as far as impact on the whole the whole community, whether it's you know, the shipyard builders and stuff?"

    - "What would be [the] impacts on the communities be of consolidation in the fisheries, … at what point does addressing [the] over capitalized fleet, how that should that enter into our thinking sometimes? Is consolidation always going to be a bad thing? Or is it beneficial in some instances?"
- Impact of distribution of Rafael permits/allocations
    - "Who's going to own those permits? Will the allocations be used? Will they be leased out? What price?"
- Organization of shoreside industries and economies
    - "there's only what a handful, less than a handful of places that can handle commercial volumes of fish coming ashore. What happens to those, how are those places organized? … Having a breakdown in terms of what the auction houses are paying the fishermen versus what they're charging the wholesalers and retailers, again, in an aggregate form, would be really helpful. And understanding the structure of the shoreside operations, how many jobs are tied up with one vessel bringing fish ashore, you've got processors, you've got distributors, you've got packagers."
- Recreational studies:
    - Standardized information for recreational fisheries: "I think it would be helpful … to have a set of standard information that you can get for the recreational fishery. And then always use that as a standard. … sometimes you get some information up to a certain point and then it stops. Meaning 'this many trips equates to this many dollars', but how you get to that this many dollars that this many trips equates to can have a lot of different contributing factors to it. And I think it would be good to have a solid … set of information. So would it be like gas, bait, tackle, whatever it is, and I'm not sure what would be the right values, but that you would only get that information. Sometimes it's hard to compare what the economic value is on a recreational fishery … because of the lack of information in one side versus another type of species."
    - Diversity of operations "But I definitely think that there needs to be more work to understand what drives the full recreational community. It's not one broad brush of a type of person going out for an experience. There's other components to it. And that's a missing part of helping me do decisions, particularly with groundfish."
- Retrospective on response to management changes
    - "I think the only thing that you can do maybe is to do a retrospective analysis. So here's what we thought was going to happen. And here's what really happened that sort of help show how human behavior and what was theorized may not always line up."

Appendix D. General themes and topics raised by Council members as possible recommendations to consider regarding Council documents.

General Themes	Details	Prevalence	Example Quotes
Streamlining	Less text increases readability / make documents as succinct as possible / Expand use of summaries / Increase efficiency /streamline info / Split out summaries for discussion vs required EIS info but don't lose supporting info / Make it compelling/ interesting	5 seats	"anything that anything that can increase efficiency would be appreciated." "summarize or keep that information up front versus all the other information that they're still required to do, but maybe in appendices or in the latter half of section" "there are certain graphs that are very easy to understand, you don't need any specific fisheries training. And I think those are probably more valuable to the council as a whole and allow the individuals that have the background and want to, you know, sort of jump in deeper into some of the more scientific documents, that opportunity will always be there." "presenting information kind of in a logical, thoughtful, summary way, so that I can see the data, understand the differences among the issues. And, and then, you know, draw the conclusions that that I think are supportable based on the data. " Video clips / documentaries are "a compelling way to put information in front of folks and help, them deliver a message and help them understand it maybe in a better manner than a traditional report or document again filled with facts and figures."
Visualized information	Figures, tables, graphs, visualized info	5 seats	"sometimes folks just don't take the written data very seriously. They like tables, they like charts, they like visualized information. And I think using those to present sociological and social scientific information might help people mobilize that information more readily in our discussions." "Sometimes you could have two or three pages of text summarized in one graph. I'm probably a more visual learner so I think those are helpful. And also likely those graphs or charts are going to be up on somebody's PowerPoint, … the full text is never going to be up on a PowerPoint. So if people are familiar with the graph, maybe it's somebody's PowerPoint, you're in the position to understand it better."
Target public audience	Getting info out to community / Target audience for documents should be industry and public	4 seats	"I am more concerned about the council documents being put together in a way that's understandable, can be understood by the public, particularly the fishing industry, the affected stakeholders."

Interactive documents / open source data	Open source data in standardized form / Data available in standardized format / Digitized document to build queries	1 seat	"so that our analysts at the Council are pulling from the same data sets that I could pull from. Or a university scientist, or anybody, anybody in the public."
Formal presentation	Presentation of social information in formal manner	1 seat	"If you were to expand the social analyses, presenting it as formally as a piece of social science work as possible … I think people will take it more seriously because it looks a lot like the economic analyses and the biological analyses." "So just thinking about how to best communicate another type of science that is the least familiar to all the members and that it is different than the biological sciences and so there is a whole other vocabulary involved, and a little bit more hand holding, I think that way would be really helpful."

Appendix E. General challenges raised by Council members in the context of use of social information in fisheries management.

Theme / Topic	Detail	Prevalence	Example Quote
Interconnected nature / complexity of issues / differences	Fishing is interconnected across multiple industries and communities, complexity of impacts and effects / mitigating factors, variability in types of fisheries and FMPs / Different council member backgrounds impacts interpretation, different reactions by different industry participants, differential impacts, different economic circumstances for different size operations / Different Industries, reporting requirements, expectations / Differential info/analysis available across FMPs	7 seats	"And I think the Council staff does do an excellent job in identifying that, but how possible, I guess my question would be, is it even possible to be able to identify, you know, all those impacts on such a small scale at times." "we all have different perspectives of what the problems are. But if we had the answer on how to fix things we would have done already." "different states have different reporting requirements … And if you don't have that information, obviously, it makes it more difficult and I think about" "I feel like some FMPs have more robust understanding. But some of them just kind of do qualitative analysis and say this is as good as it can get or they say we're going to get a quantitative analysis but it comes so late in the game that it's really not informative in the decision making."
Perceived legal constraints	National Standards generally, NS 1 vs 8, MSA and guideline constraints	5 seats	"Right now, national standard one takes priority. Probably there's some good reason behind it, but I do wish we could have more opportunities to adjust our measures to take into consideration the interactions of the uncertainty in the biological science that drive some of the measures and the uncertainty in the social side. But right now, resource and biological science takes priority."
Differential involvement of Council members / stakeholders	Limited involvement by some members, lack of early communication of concerns impacts development, always same participants in process, lack of new membership in Council and committees	4 Seats	"It's hard to hear from the same people all the time, so you get the same views of who the participants are and what's important who. "it's a frustrating and confusing process, we can't get many new members to apply."
Differential pace of change	Economy changes faster than data can keep up, behavior constantly adapting	2 seats	"the pace of crafting an amendment is multiple years. Things, things that were emerging three years, four years ago may have taken a 90 degree turn or you know, but it's in the document."
Lack of shared objectives / criteria	Lack of clear goals and objectives written by members, no shared set of	2 seats	"the investment level and social impact assessment has traditionally been so much lower than the biological impact

for socio-econ aspects	objectives re: social, lack of criteria for socio-econ		assessment or stock assessment because there are clear cut criteria and achieving more information and more precise information directly fits into the decision making framework. This social information probably does and probably should influence people in some way. It influences me because I generally am interested or want to avoid any disparate impact, particularly on disadvantaged communities, but there is no formal process that says if I don't have that information. I can't make a decision or if I have more precise information my decision will be sharper."
Limited comfort with and knowledge of social science	Lack of familiarity w/ different social science disciplines and methods, not knowing what's possible, not knowing what questions to ask,	2 seats	"I would say [for] a vast majority of council members, this is probably the arena where we have the least level of technical comfort. You know, everybody has been schooled or is at least very familiar and has had a lot of practice through the biological assessments and there's a kind of language that's understood there. Whereas I think there's the biggest gap of communication and it's tough to actually set the questions as a manager. … [F]raming the question and tasking the PDT is a huge beginning point of this and leads the outcome of what the data will be."
Discomfort w/ qualitative assessments		1 seat	"they're often graphically represented, you can cite them chapter and verse and they're the numbers. People are more comfortable arguing numbers than more qualitative assessments. " "And since they're all expressed when it comes to the council in an impact assessment in sort of imprecise qualitative terms, you don't you don't really get a flavor for how much of this is really a hard science versus somebody's judgment. Which can also be very scientific, but you don't know that. You're more or less having to judge the people rather than the data."
General / Other	Data validation / triangulation limits, known costs versus projected benefits, revenue is a crude measure of value, perception of micromanaging industry / Theory vs reality and the complexity of human behavior / role of SSC /	One seat each	"we're always dealing with a known cost versus a projected hypothetical potential benefit to accrue at some point in the future." "behavior is hard to predict. We're kind of a wacky bunch." "Social scientists in the past, have not had much of an impact, I've expressed that

	Difference in agency vs industry interpretation		concern. I believe they have a bit more of an impact in terms of vocalizing their perspectives and trying to get traction. But frankly, I'm unaware of any real progress regarding their recommendations and what they think needs to be provided to help them as SSC members deal with the social science aspect of the fisheries' management." "It's not intentionally misleading, but it is unintentionally misleading to folks that are trying to figure out how management decisions are going to impact them."

Appendix F. General recommendations raised by Council members

Topic	Example Quote / Description
How the Council process impacts buy-in	"working to improve that [social science] process I think is going to benefit the council members like me and making their decision but it's also I hope will build buy in from the communities that are suspect of everything we do right now. Building that trust, I think ends up with better decisions."
Increase Council's general social science awareness	"how can we better educate the council so that they're thinking appropriately about social impacts and understand the framework of social impacts and when they really matter. So, kind of creating a baseline of understanding, so that they know what questions to ask right? That's, that's often the harder thing than to understand the information presented, but to know the right questions to ask."
Increase interagency coordination on socio-econ impacts	"[T]here's this difficulty in interagency communication about the social impacts of things that have really not a lot to do with fishing itself but impact the fisheries. We need to start thinking quickly and broadly about how, what NOAA, and GARFO the regional office, and the Science Center and the Councils collect for social and economic information about communities and fisheries, so on. How that gets stuck into other agencies that are proposing different things in the same place. I think it would be great if you could come up with a system like that because the stakeholders, especially the fishing community, they seem overwhelmed by meetings upon meetings and there's enough of them for fisheries alone. But then you add wind farm meetings in there, and then maybe some Coast Guard regulations are changing and, and they need to be part of that as well. If there was a way to have a collective giant pile of information, socio and economic information for the fisheries, that other agencies could, would use, that would probably save some work on the fishermen's end. … But I think the community itself can benefit from a collective pile of this information. I don't know if that exists, doesn't seem like it. Seems like you have to go through comment periods for every action that happens across a broad variety of agencies. Some of that information might be able to cobble together one singular place."
More opportunities for interaction	Learn new perspectives from more interactions; Re: interactions w/o Roberts Rules - "where you can kind of work out all the complicated details and get everything sorted out on the table a little bit easier than in a structured meeting."; Re: committee meetings - "I think when you get a bunch of people in a room and you start talking about things, you get better ideas, better results in a more thought out, a more thought out idea."
Role for CCC or NRCC to assist across Councils	"talk about what lessons learned and how best to do that as well as … how can we best support our individual council members? Is that some better education? Is that having the technical stuff more available at formal meetings, instead of just individual reaching out to have some dialogue, answer questions?"
More socio-economic discussion at the table	"not so much in the documents but in the discussion that we have around the table sometimes and we don't talk about that stuff as much. So I don't feel like even if the information is there, we're not utilizing it or emphasizing it as much as I would like sometimes."
Other	Consensus building opportunities/training, survey/interview compensation for industry ("I would be nice if they were compensated for a survey, at least maybe then they would know that their thoughts are going to be used."), more journal publications from science center staff, draw from a broader range of information sources, regular step back/review of these issues, meeting cancelation policy re: lack of documents