

**THE COLLECTION AND USE OF SOCIOCULTURAL INFORMATION
IN
NEW ENGLAND FISHERY MANAGEMENT COUNCIL PROCESSES**



**New England
Fishery Management Council**

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“New England has always been constrained by its myths ... I’m hoping that the social scientists will help us to bring reality into what’s possible and what can be done...”

- NEFMC member

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ABSTRACT

In order to improve the collection and use of sociocultural information in fisheries management decision-making, the New England Fishery Management Council (NEFMC) staff has conducted the review reported here. This assessment focused on four overarching topic areas: utilization of sociocultural expertise, collection and analysis of data, incorporation of data and analysis in fisheries management, and communication strategies for increased utility of sociocultural data. Semi-structured interviews with 45 primary informants were conducted from March to July, 2012, simultaneously with transcribing, sorting, and synthesizing data in an iterative process. Most informants were from the Northeast US, but context was provided by informants from each US Fishery Council region. Informants expounded on the current state of how sociocultural information is collected and considered in decision-making by the NEFMC and offered many ideas for ways that processes or products could improve. Reports, minutes, meeting notes, and secondary informants were used to augment interview data.

A common thread shared by informants was that the consideration of sociocultural impacts in fisheries management is highly important, but over the years, it has received relatively little attention, at least in a formal sense. There has been a lack of systematic data collection and analysis. Sociocultural experts could be more regularly engaged in the management process and articulate impacts to fishermen and communities more effectively. Managers have struggled with weighing the potential sociocultural impacts against the biological impacts in decision-making. At NEFMC meetings, there is much discussion of how measures might impact communities. Managers primarily use perception and public comment, rather than data that have been formally collected, to determine who will be impacted by their decisions and how. Reliance on this intuitive approach can be problematic though; the lack of systematic data presentation and analysis can lead to regulations with unintended consequences.

A number of steps have been taken to improve the situation, but additional measures could promote greater use of sociocultural analysis in decision-making. Federal social scientists have refocused efforts to conduct systematic data collection and provide more effective tools for the public to access and understand data. Sociocultural experts should be utilized for each fishery action and engaged early in fishery plan development and review. Regional and national dialogue among providers of social impact assessments is elevating the quality and consistency of products. Increased public discourse about the role of social science in fisheries management could help councils define how to more effectively consider the implications of their decisions for fishermen and their communities.

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INTRODUCTION

For fishery managers, understanding the likely impacts of their decisions on fishermen and fishing communities can be a daunting task. Federal mandates require the consideration of sociocultural information in fishery plan development processes, but in many cases plan documentation lacks sufficient data and analysis for social impact assessment. Thus, managers must rely on their own background knowledge and dialogue with stakeholders. In order to improve the situation, the New England Fishery Management Council (NEFMC) hired its first social impact analyst in March 2012. As a first assignment, the analyst was tasked with conducting the review reported here, an assessment of the current state of how sociocultural information is collected and used in decision-making by the NEFMC.

Essential to this review was the invaluable input received from over 45 individuals from the Northeast and beyond who have direct experience with collecting, analyzing, and using fisheries sociocultural data. All offered ways that processes or products could improve. This report documents the input of these fisheries managers, support staff, and social scientists, but it should neither be considered a decision document of the NEFMC or the National Marine Fisheries Service (NMFS) nor a consensus statement of the informants. Many of their ideas for improvement are highlighted and could be used as a spring-board to define challenges and further conversations about how to best manage the fishery resources of New England and the nation.

OVERARCHING QUESTIONS

This review of how sociocultural information has been collected and used by the New England Fishery Management Council, both through social impact assessments and in other ways, was driven by the following overarching questions:

1. PARTICIPATION.

Who has been involved with collecting, analyzing and using sociocultural information in fisheries management?

2. CONTENT.

What data are used in the consideration of sociocultural impacts, and how are the data analyzed?

3. PROCESS.

How has fisheries sociocultural information been incorporated into various stages of fisheries management?

4. COMMUNICATION.

How can information about sociocultural impacts be better organized and communicated for increased utility?

WHAT IS A SOCIOCULTURAL IMPACT?

Economic and sociocultural impacts are related, but it is often erroneously assumed that they are synonymous. “Social science” is an umbrella term that includes the fields of anthropology, demography, economics, geography, law, political science, psychology and sociology. Economic impacts relate to the return of benefits to society for the investment of capital and labor (e.g. supply and demand, costs, prices, jobs), and are typically quantified monetarily. ***Sociocultural impacts relate to demographics, fishery dependence, safety, constituent involvement, equity, cultural values and the well-being of persons, families, and fishing communities.*** The simpler term “social” is often used to mean “sociocultural,” but in this report, the latter term is used to more sharply draw the distinction with economics. Although economic and sociocultural impacts are interconnected, and sometimes described as the “human dimensions” of fishing, their analyses may differ considerably in focus and method (NMFS 2007).

WHY CONSIDER SOCIOCULTURAL IMPACTS?

The federal government has, to varying degrees, taken into account the significance of commercial and recreational fishing to society for more than 200 years through treaties and legislation (Buck 1995). Mandates with the most direct impact on fisheries management today, requiring federal agencies to consider the impacts of federal actions on the human environment, include: the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act, and Executive Orders 12866 on benefit/cost analyses and 12898 on environmental justice (Appendix 2).

The importance of accounting for the impact of federal actions on society goes beyond the “it’s the law” argument. The people and communities who study, manage, and use marine resources are integral, dynamic, and complex components of marine ecosystems. There must be a scientifically sound understanding of the sociocultural (and economic) aspects of fisheries management, in addition to the biological and ecological aspects.

WHAT IS A SOCIAL IMPACT ASSESSMENT?

In order to meet NEPA and MSA requirements, fishery management plans (FMPs) must include in the environmental assessment (EA) or environmental impact statement (EIS), a full range of impact assessments – biologic, ecologic, economic, and sociocultural. The latter component is given a variety of names, but is typically called the “social impact assessment” (SIA), though its sub-components can be spread throughout an FMP document rather than packaged together. Thus, the formal means of considering sociocultural impacts is through the SIA, but fishery managers also utilize public comments and their own knowledge and experience with fisheries in decision-making.

A social impact assessment is similar to other impact assessments, in that it outlines the areas or populations (e.g. fishing communities, fishermen, fleets using particular gears or targeting particular species) potentially affected by a federal action, and projects future impacts (here, sociocultural) under the status quo and alternative measures being considered. The current NMFS guidance, published in 2007, outlines a three-step process to writing SIAs used in fishery management plans:

1. Create regional and fishing community profiles, which should be updated every three to five years.
2. Conduct a social factor analysis of the status quo (no-action) and management alternatives, based on the profiles and including the following sociocultural variables:
 - a. The “size and demographic characteristics of the fishery-related work force residing in the area; these determine demographic, income, and employment effects in relation to the work force as a whole, by community and region.”
 - b. The “attitudes, beliefs and values of fishermen, fishery-related workers, other stakeholders and their communities; these are central to understanding behavior of fishermen on the fishing grounds and in their communities.”
 - c. The “effects of proposed actions on social structure and organization; that is, changes in the fishery’s ability to provide necessary social support and services to families and communities.”
 - d. The “non-economic social aspects of the proposed action or policy; these include life-style issues, health and safety issues, and the non-consumptive and recreational uses of living marine resources and their habitats.”
 - e. The “historical dependence on and participation in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights.”
3. Create a social impact assessment that compares the anticipated sociocultural changes between the status quo case and each management alternative. Ideally, the analysis should forecast possible changes throughout the timeframe of the action, and in the case of fisheries under rebuilding timeframes, to three years after the rebuilding deadline (NMFS 2007).

“...fisheries management is 10% biological resource management and 90% people management...”

-Fulton and Adleman (2003)

METHODS

This project employed grounded theory case study methods, systematic but flexible approaches to collecting and analyzing qualitative data about a specific case, in order to construct broader conclusions (Charmaz 2006). The four overarching topic areas (participation, content, process, and communication) provided a starting point for specific yet open-ended questions. Semi-structured interviews with primary informants were conducted simultaneously with transcribing, sorting, and synthesizing data in an iterative process. Method details and a list of the most frequently asked questions are provided in Appendices III and IV, respectively.

The primary informants (n=45) were diverse stakeholders involved in either the creation or use of fisheries social information. Of these, 76% (n=34) live or work in New England. They include NEFMC members and staff, staff of the NMFS Northeast Fisheries Science Center Social Sciences Branch (NEFSC SSB) and Northeast Regional Office (NERO), and academic or independent social scientists. Of these, five informants are current or former members of the NEFMC Science and Statistical Committee (SSC). To contextualize the New England case, one or two people were interviewed (n=11) from each of the other US Fishery Council regions. Most of the informants were selected purposively, but some were selected through a “snowball” approach, at the recommendation of initial contacts (Bernard 2011).

Other data sources include: secondary informants (n=10) for individual questions; notes from conference calls and a Fisheries Leadership and Sustainability Forum (FLSF 2012); minutes of the NEFMC (2007-2012) and the Northeast Regional Coordinating Council (2012); and NOAA policy and fishery plan documents (1985-present).

QSR NVivo 9 software (Bazeley 2007) was used to sort and synthesize data (Hutchison et al. 2010). Concepts were identified through coding, or attaching meaning labels to data and memo writing. Codes were both descriptive (e.g. Herring Amendment 5) and thematic (e.g. data gaps), and were reviewed and refined to accurately characterize the data.

Data analysis followed standard qualitative practices. Chains of evidence were built where several informants with different roles emphasized an issue, logical relationships could be plotted, and claims could be verified and refined. Feedback from informants was used to confirm the validity of results as they emerged throughout analysis.

Northeast Primary Informants (n=34)

- 9 NEFMC members, from all five states and state, industry, and non-profit arenas.
- 9 NEFMC staff, including all PDT chairs.
- 8 SSB staff, 6 sociocultural and 2 economic.
- 3 NERO staff, 2 fishery policy analysts and 1 specialist in NEPA implementation.
- 5 academic/independent social scientists.

RESULTS

Results are presented thematically, with qualitative descriptions of informant input. The bulk of each subsection contains the input generated by informants from New England. By way of comparison, informant input received from other US regions is included toward the end of subsections and identified as such. All informants provided ideas for improvement, and this is collated at the end of each subsection. Informant quotations are cited only by stakeholder type to ensure confidentiality. *These results are a collation of informant input and should neither be considered a consensus nor an official statement of their employers or of the NEFMC.*

Common to the Northeast informants was the view that sociocultural impacts in fisheries management are important, but have received relatively little attention, at least in a formal sense. Managers have struggled with how to weigh the potential sociocultural impacts against the biological impacts of decisions, stemming from National Standard 8 requirements that the consideration of “the importance of fishery resources to fishing communities...not compromise the achievement of conservation requirements (MSFCMA 2007).” Because most New England fisheries are under stock rebuilding programs, managers are usually forced to focus on the biological and ecological implications of their decisions, sometimes to the exclusion of human dimensions. The management paradigm has not fostered systematic sociocultural data collection and analysis.

Even so, fisheries management is primarily about regulating human interaction with the marine environment: who can fish for what, how much, where and when. Very little of the formal social impact assessment work done to date has been used in decision-making processes by the NEFMC. Yet, with so many opportunities for public comment throughout the development of actions, the consideration of sociocultural issues is ubiquitous and infused throughout the process.

Council members use their own background knowledge, and cogitate on various forms of sociocultural input. At council meetings, there is much discussion of how measures might impact communities, but it is more based on perception and public comment than on data that have been scientifically collected. Managers are continually thinking about who will be impacted by their decisions and how. Relying on an intuitive approach can be problematic for the council. The lack of systematic data presentation and analysis can lead to regulations with unintended consequences.

*"All of our economy, all of our wealth is based upon protecting our natural resources, and that's a well-spring that people tend to get away from."
- NEFMC member*

RECENT HISTORY OF SOCIOCULTURAL ANALYSIS

Since passage of the National Environmental Policy Act in 1970, understanding has progressively increased about the need to consider the sociocultural consequences of policies and programs. Although some sociocultural information on US fisheries had been collected at the federal level at least as far back as the 1880s (Goode and Collins 1887), it was not until the mid-1970s that NMFS hired its first anthropologist. Abbott-Jamieson and Clay (2010) provide a thorough review of the origins and development of the capacity of NMFS to provide sociocultural analysis for fishery management plans. Essentially, NMFS had just one sociocultural scientist on staff at Headquarters over the next two decades, though several people filled the position at different times. These individuals consistently stressed the need for data on the importance of fishing to communities and for gathering industry perspectives on management. They made policy recommendations on the implementation of the Fishery Conservation and Management Act (FCMA), passed in 1976 (eventually renamed to its current title of Magnuson-Stevens FCMA). They reviewed all FMPs developed by the councils, including the affected human environment and SIA sections of environmental impact statements.

The first SIA. Finalized in August 1985 by the NEFMC, the original multispecies (groundfish) FMP was perhaps the first fishery plan document in the country to contain a social impact assessment. The sociocultural scientist at NMFS urged the National Sea Grant Office to allow one of their anthropologists based in the Northeast to work on it. The SIA was quite limited in

"I'm almost embarrassed to say it now, ... but I wrote probably the first SIA... It was pretty pathetic. I had no guidance, except to be told ... not to do any primary research but just to rely on whatever existed out there in publications."

- non-governmental social scientist

scope, given that NMFS had directed the researcher to not collect new data, but use what existed in published works. The only systematic descriptions of fishing communities in New England had been published in 1980-1 (Acheson et al. 1980; Poggie and Pollnac 1981). However, the researcher did have some field experience with groundfish boats based in Provincetown, Massachusetts.

Guidance. The first NMFS guidance for writing FMP SIAs was developed in 1985 as well. Formalized in 1989, it was based on the principles and recommendations forwarded by the International Association for Impact Assessments, founded in 1981 (IAIA 2012) and advice from US academic fisheries social scientists. The NMFS guidance was updated in 1995, 1997, 1999, 2001, and the latest iteration in 2007 stands today.

The Interorganizational Committee on Guidelines and Principles for Social Impact Assessment was formed in 1992. Comprised of 12 public and academic sector social scientists, the

Committee outlined guidelines and principles to assist agencies and organizations in fulfilling NEPA obligations (IOCGP 1994), and then provided an update in 2003 (IOCGP 2003).

Acknowledging the virtual nonexistence of sociocultural data required to conduct necessary analyses, staff pushed NMFS in 1993 to produce an official memo from AA Rolland Schmitt that stated that NMFS would no longer accept that having no data would fulfill the National Standard 2 requirement to use the “best available data” (Abbott-Jamieson and Clay 2010).

Capacity. The 1996 passage of the Sustainable Fisheries Act (SFA) provided several new mandates that elevated the importance of defining fishing communities and identifying potential impacts on fishery participants. National Standard 8 (NS8) states that measures shall “provide for the sustained participation” of fishing communities and “minimize adverse impacts” (Appendix 2). The SFA helped propel the growth of social sciences within NMFS, and by the end of the 1990s, had gained enough significance that a sociocultural program (as distinct from the economics program) was formed at NMFS Headquarters. Although the first non-economic social scientist was hired by the Northeast Fisheries Science Center in 1992 within the Economics Investigation Division, and a distinct Social Sciences Branch was established in 1994, the capacity for sociocultural analysis at the NEFSC did not expand until 1999, when the second sociocultural analyst was brought on. With FY2001 funding to support NS8 activities, the NMFS Regional Science Centers were able to increase their sociocultural staff capacity (Abbott-Jamieson and Clay 2010).

Community profiling. Within New England, the experience of writing the first SIAs for FMPs elevated the need for more background information about fishing communities. Missing were data on community dependence on a fishery and change over time. Thus, the author of two groundfish SIAs (original FMP and Amendment 5) was inspired to collaborate with the Massachusetts Fishermen’s Partnership and other partners to construct profiles of New England fishing communities. With a grant from NMFS Marine Fisheries Initiative, field research in 39 communities began in 1998. The profiles were finalized in 2001, just before the 2000 US Census figures became available (Hall-Arber et al. 2001). Having used the 1990 Census, the profiles were outdated almost as soon as they were produced. However, having profiles was a significant step forward.

Several informants recalled that those New England profiles served as a basis for how to conduct profiling nationally. At the time, NMFS was planning efforts to develop indicators and methods for identifying fishing communities and began a concerted national program to obtain comparable data cross-regionally. Within the Northeast, the NEFSC SSB led a project to create profiles for 177 communities from Maine to North Carolina that was completed in 2005 (Colburn et al. 2010) and later posted to the SSB website (NEFSC 2012). They were based on the 2000 US Census, NMFS fishery data, and published data; reviewed by a member of each community, and groundtruthed by SSB staff. The SSB had planned to update the profiles every

3-5 years, but the necessary funding and staff resources have not been available. However, there are current efforts to create a streamlined on-line database of descriptive information that will be more efficient to maintain and update.

Over the years since SIAs were first written for NEFMC-managed fisheries, the participation of sociocultural scientists in fishery plan development and the use of sociocultural information have gradually increased. The following subsections outline more specifically the input from informants on the sociocultural data available, FMP development, NEFMC decision-making processes, and NMFS review of plans. Several current initiatives to improve data collection and analysis and communication are highlighted.

CONDUCTING SOCIAL IMPACT ASSESSMENTS

When constructing social impact assessments or faced with management decisions today, most informants from the Northeast (74%) spoke of there still being very little sociocultural data. No one said that there is a sufficient amount of data, but some said that the fisheries vary in the level of data available, and that there could be more effective use of the data that are currently available. A few informants (12%) felt unsure about the sufficiency of data available, either because they were not familiar with what data exist or they did not know what a sufficient amount of data would look like.

GUIDANCE

Several informants who have written SIAs mentioned the NMFS-produced guidance (NMFS 2007) in their interviews, but most indicated that they have not been able to follow the guidance fully, given the time and resources that would be required to update fishery profiles regularly, conduct social factor analyses and impact assessments that compare forecasted sociocultural changes between the status quo case and management alternatives. This would be a huge undertaking given all the other aspects of FMP analyses (e.g. biological, protected resources) that need to be written in short timeframes. NMFS has not had the resources to conduct community profiles regularly, and informants felt that five years would be much too long for updates regardless, given how quickly fishery changes can occur.

"I do think that social impact assessments are still an art form rather than something that you can follow along a model, feed in certain data, and spit out whatever you need to know."

- academic social scientist

The NMFS guidance has not been well-distributed among those who have been assigned to write SIAs or coordinate FMPs. When asked about the guidance, eight of 17 (47%) such informants had not heard of the document. Some informants observed that the NMFS effort involved in producing SIA guidance has not matched efforts to train those who write SIAs.

Informants who write SIAs spoke of doing their best within time and data constraints. Those familiar with the guidance spoke of it as a good goal that fosters improvement. This current review has been unable to produce an example where the SIA guidance was followed exactly in methodological practice.

Realizing the need for a more practical guide, a NMFS team of staff from the NEFSC SSB, Southeast Regional Office (SERO), and the NEPA office at NMFS Headquarters has been collaborating for the past few years to create a best practices manual that would serve as a “cookbook,” complementing the higher-level NMFS SIA guidance document. Informants identified several aspects of the SIA guidance that such a manual might help clarify (see p. 16). For simplicity, it was suggested that NMFS maintain just one “go to” reference for SIA practitioners, rather than create a manual in addition to the guidance.

DATA COLLECTION

What data have been used? When asked about the data sources used to gather information about sociocultural impacts, 20 informants gave 57 open-ended responses. In addition to the data collected by NMFS through fishery reporting, writing SIAs has involved original data collection (e.g. talking directly with stakeholders, field visits, listening to public comment). The US Census, the content of economic analyses, literature review, and stakeholder websites have also been used.

Sources of sociocultural data informants have used to create SIAs

(Informants = 20)

29%	NMFS data (e.g. observer/dealer reports)
27%	Stakeholder interviews (e.g. fishermen, processors)
17%	US Census
15%	Public comment (e.g. scoping, hearings, council meetings)
6%	Content of economic analyses
4%	Literature review
2%	Stakeholder websites

What are the data gaps? Much effort has been spent creating place-based community profiles, but the process is not at the stage where they are easily updated and provide full pictures of communities. Several informants (n=10) noted how quickly out of date port profiles and other baseline data become; nine indicated that five-year updates to baseline data are not frequent enough, because changes in fisheries can occur rapidly. Having fishery-based profiles would help managers identify potential impacts within specific fisheries.

"I never wrote an SIA that I really liked, because there just wasn't the social information that ought to have been there."

- NEFSC staff

"Data gaps? Everything. You've read the community profiles. Everybody that I know has a love/hate relationship with them. People are very grateful to have them, but they are extremely limited in terms of content."

- NEFSC staff

Background information should be updated if, after dialogue with key informants in a fishery, it is determined that there might be major impacts from a proposed action. Conducting oral histories is an important component to help determine community change over time and to see the interconnectedness of fisheries (Colburn and Clay 2011). Despite the time and resource constraints involved, NEFMC staff and others who have written SIAs said that it is fairly straightforward today to obtain a limited subset of fishery demographics (e.g. number of permit holders, where they live and where they land, age of captains) and a sense of the historical dependence of communities on a fishery. It is much more time and resource intensive to obtain representative data on variables such as number, age and residency of crew; attitudes; health; safety; and fishery organization. Estimating employment in particular fisheries has been difficult. In terms of decision-making, council members generally use their own personal knowledge or public comment to learn of sociocultural impacts more than what has been written in plan documents. A key reason is that they have not always trusted the information in the plan documents, because at times, ports have been missing or numbers have been out of date or compiled in a way that does not reflect categories that managers use.

"What data would you like to have that is not available today?"

Most frequent responses:

- Employment, particularly crew (n=8)
- Level of dependence on a particular fishery (n=8)
- Consistent baseline information to measure temporal change (n=6)
- Projections of future impacts of the management alternatives (n=5)
- Impacts on families, including divorces (n=4)
- Cumulative effects over time (n=4)

Have there been roadblocks to data collection? Several challenges with data collection were expressed. Although many of the informants who have been involved with writing SIAs spoke of the importance of collecting primary data, the SSB in particular has had very little funding available for travel. Council staff has wished to do more data collection, but has at times been uncertain about what constraints exist or the clearances required. There had been some frustration that data in the NERO “Data Management Information System,” first developed to facilitate monitoring of groundfish sector catches in season, differed from the NEFSC database. Care is necessary when using interview and public comment data to ensure the spectrum of viewpoints is represented and informants are honest. Informants said that having sociocultural information is necessary to have a realistic knowledge of the fisheries, but sometimes fishermen have not wanted to provide data. However, they might be more willing to do so if the data had more of an impact than at present.

Are there emerging data sources? Recognizing the need for better sociocultural data, NMFS has been developing several tools to increase the data available, the combination of which will give a better sense of the state of communities and potential impacts. Information about all of these efforts may be found on the SSB website (NEFSC 2012).

Social indicators project. The SSB has been collaborating with the Southeast Regional Office to create one of the first NMFS sociocultural databases, of indicators for fishing communities in the eastern US (Jepson and Colburn in prep.). Secondary data for 2,900 coastal communities from Maine to Texas, of which a subset is fishing communities, are being compiled to determine social vulnerability, fishing engagement and reliance. They are being vetted by researchers who are going into a select number of communities (chosen via statistical sampling methods) to capture real time data and compare them with the secondary data. The aim is to make the database available on-line by the fall of 2012. The public will be able to download, map, and cluster sociocultural data for their own analyses.

Fishery performance indicators. Nationally, NMFS is working to develop a suite of biologic, economic, and sociocultural performance indicators to guide standardized data collection. The sociocultural indicators include:

- 1.) Financial viability of the fisheries;
- 2.) Distributional outcomes;
- 3.) Well-being;
- 4.) Stewardship of marine resources; and
- 5.) Fisheries governance.

NMFS is focusing on gathering these data for catch share fisheries as a start, but eventually will expand to all federal fisheries. NMFS staff from all regions and headquarters is drafting a national report that will summarize indicators for all catch share programs. This will allow performance tracking over time for each catch share program and across programs.

Surveys. To obtain currently unavailable indicator data for the Northeast, the SSB has implemented several surveys. The “Annual Cost Survey” is being administered to 1,600 commercial fishing vessel owners on a systematic basis. It is a reinvention of a cost survey in 2006, 2007, and 2008 that suffered from low response rates. The “Socioeconomic Survey of Crew and Owners” is randomly sampling 1,000 owners and 1,500 crew members across all Northeast fisheries and is focused on data related to the fishery performance indicators. The survey of “Social Capital and Attitudes toward Management in the New England Groundfish Fishery” was conducted in spring of 2010 (Holland et al. 2010), and there are plans for a follow up survey to measure change relative to the groundfish sector management program.

DATA ANALYSIS

A common theme expressed by informants was that the approaches to sociocultural data analysis for fishery actions have been as diverse as the professionals conducting them. People have utilized the variables, analytical tools, and writing techniques that have been accessible and familiar. Researchers have not used a particular recipe, but have focused on different aspects, depending on their particular strengths. There are fundamental data necessary for SIAs, but how individuals execute the work has been up to their own discretion. When time constraints have limited data collection, the most common approach has been to take the economic analyses and state that a projected change in fishery revenue would be proportional and causal of sociocultural change, which is not necessarily the case.

What challenges exist with data analysis? Informants pointed to a number of concerns with how sociocultural data are treated in documentation.

Projections. Economists generally feel more comfortable making forecasts than anthropologists or sociologists. Even with the best sociocultural data, predictions will always have a degree of guesswork. People are not robotic, so projected impacts are not necessarily going to be realized. It is difficult to know what choices fishermen will make in the midst of future realities, switching target fisheries or changing their business plan. For FMP alternatives that have been optional if implemented, predicting how many fishermen would opt in has been very difficult. It is easier to predict impacts when fisheries are smaller or have simpler management programs. Deep familiarity with the fishing communities and the individuals involved in a fishery can help. The case study literature can reveal results of similar actions in other

"At the beginning of Amendment 16, I don't think anybody thought that sectors would be adopted as widely as they were. ... It's kind of an impossible task to determine what the social and economic impacts are going to be if you have something that's a voluntary program and you can just guess how many people are going to say, "Yes I want to do this" ... So, it becomes an infinite analysis."

- NEFMC member

fisheries, which illumine the issues at hand.

Objectivity. Council staff informants expressed that plan documents must be written objectively. Sometimes interview data have been analyzed out of context. For example, there may be several reasons for a change in fishing behavior, but if a fisherman tells an interviewee just one, then that may only be what gets reported. Statements by stakeholders can be included in FMP documents, as long as there is sufficient context provided and the statements reflect the range of views on a particular issue.

The “rule of three.” Confidentiality requirements restrict reporting publically certain information on ports or fisheries with three or fewer vessels or dealers, but this hampers adequate description of what is happening in smaller harbors.

“If I can see my community in whatever qualitative analysis there is, and if they’ve represented my community correctly, then I’ll tend to believe that the analysis is reasonable.”

- NEFMC member

Data averaging. For larger harbors, averaging data does not allow examination of the extremes. Impacts are unique to each fisherman. Some people could be doing very well and others could be going out of business. Both ends of the spectrum are missed.

Sectors as “persons.” Because groundfish sector reports are submitted to NMFS by an individual (i.e. sector manager), each sector is considered a “person” for purposes of data confidentiality requirements. Although this policy has been supported among sectors, an informant felt that it is an “irresponsible position of the Service,” because it is “denying everyone access” to information needed for analysis of sector performance.

Making data compelling. Informants cited the need to create relevant metrics and ways to convey sociocultural data that are interesting to policy makers. Visual representations of data (e.g. maps) may be more effective than pages of text, but are rarely used.

NATIONAL PERSPECTIVES

Informants from other US regions broadly indicated (91%) similar concerns with the paucity of sociocultural data and analysis in FMP documents. Staff writing SIAs have not known about the NMFS SIA guidance, which outlines an unattainable ideal. To conduct an SIA as envisioned would require far more staff resources and data than are typically available. These informants stated that they too have never been able to complete an SIA comparable to the guidance, but are striving to make SIAs better over time. They do not have the time or funding to undertake large-scale studies, and rely heavily on existing sources and public comment during scoping. They have observed that council members tend to rely on public testimony and personal knowledge rather than the content of FMP documents.

Informant Recommendations: Conducting Sociocultural Assessments

Guidance

- Maintain just one reference for SIA practitioners, rather than create a manual in addition to the NMFS guidance.
- Clarify:
 - The threshold for determining when an SIA is necessary.
 - The data that should be reported quantitatively versus qualitatively.
 - The frequency with which affected environment sections should be updated.
 - The most essential elements (e.g. 10 to 12 sociocultural variables) that should be included in an analysis, given inevitable time and resource constraints.
 - Document formats that are most effective.
 - Examples of ideal SIAs that could be modeled, if they exist.
- Provide training opportunities (e.g. webinars) for SIA practitioners.

Data Collection

- Base port profiles on variables that are important for FMP analyses.
- Create profiles that are fishery-based (e.g. the herring or groundfish communities) in addition to port-based.
- Use NEFMC Advisory Panels more for data groundtruthing.
- Consider council endorsement of requirements to submit sociocultural and economic data in return for the use of public fishery resources.
- Note missing data within FMP documents so that managers can take that into account.
- Allocate travel funds for field work to gain the true picture of the industry. Fishermen are less inclined to attend and open up at meetings where their comments enter the public record.

Data Analysis²

- Go further than simply stating that more/less revenue will yield good/bad sociocultural impacts.
- Look at cumulative impacts of measures to a fishing community from a sociocultural standpoint based on not just the FMP in question, but on the changes in other FMPs that have occurred in the past.
- Analyze at a scale finer than the permit category, so that variations due to vessel size or gear type are not missed.

² These ideas have been implemented in some cases, but could be done more consistently.

SOCIOCULTURAL EXPERTISE

Support was expressed for sociocultural scientists contributing their expertise as early as possible in management processes. The SSB provides socioeconomic analyses for the NEFMC and the Mid-Atlantic Fishery Management Council (MAFMC), and there has not always been enough staff to cover all the required analyses. Thus, the NEFMC has contracted out this work, or gone without this expertise on the Plan Development Teams (PDTs). Within the SSB, staff has been organized in “stovepipes” to do SIA work, each assigned to a single species, rather than working across fisheries. Collaboration within the SSB on SIAs was rare, though that is changing significantly now. Staff organization issues have also hindered production of SIAs by the NEFMC. The newer staff has been assigned this work, but individual eventually work on just one or two FMPs as they gain more experience. The recent hiring of a full-time social impact analyst to work across FMPs is an effort to improve consistency.

COORDINATION

Ultimately, the decision of who works on an SIA is a negotiation between the leadership of the NEFMC SSB, NEFMC, and NEMFC, and it has varied by action and FMP. Generally, the SSB has been available to support the major actions of FMPs. They do not provide as much support for smaller actions such as specification packages or frameworks. When SSB staff was not available, contracting has been encouraged. Sometimes, the timing is so close between the development of alternatives and final NEMFC decisions that it has been simpler for the NEFMC staff to write the SIA. In a few cases, NEMFC or NEFMC staff without sociocultural expertise has been tasked with SIA work.

Several informants expressed that coordination is improved when the PDT chair (i.e. the lead NEFMC fishery analyst) takes an active role in guiding the sociocultural data analysis and writing. Some PDT chairs have left decisions about the sociocultural aspects solely to the SIA writer, especially when he/she is an expert in the field. The resulting product can be an excellent sociocultural analysis, but it did not fully meet the needs of the management action. Several informants were encouraged that having a social impact analyst at the NEFMC will help with the future coordination of SIA efforts. The dialogue surrounding formulation of a best practices manual is promoting better coordination.

"We have to be careful in our documents. We have to present things objectively. Analysis has to be objective, even social impact analysis. It's totally fine to say something that people aren't going to like to hear, but you have to put it into context."

- NEFMC staff

PLAN DEVELOPMENT TEAMS

Informants expressed that it is in the design of the alternatives and regulations where one can effect meaningful change, and that is where social science has been underrepresented. The consideration of sociocultural impacts by fishery plan development teams depends on whether or not there are social scientists participating and what kind of input they are providing. The PDT chair can help facilitate input from social scientists about what issues the PDT should be thinking about or concerns that might be raised in the future. Sometimes questions have arisen on the PDT that the social scientist has been able to help with, like gathering the opinions or concerns of a specific stakeholder group.

Origin of the PDT. The first fishery management plans were produced by the NEFMC in 1982 and 1985, for scallops and groundfish respectively. These plans were coordinated by NEFMC staff. After about 1985, “Technical Monitoring Groups” (TMGs) of five to seven state and federal agents were used to ensure that FMPs were meeting their objectives. The “Plan Development Team” approach, comprised of a larger group of federal, state, and academic experts, emerged in 1992 and was applied to all subsequent management actions.




Inclusion of sociocultural experts. Although sociocultural analyses have been required since the passage of NEPA in 1970, and social scientists have been involved in FMP work to varying degrees since the mid-1980s, sociocultural analysts did not sit on TMGs or PDTs until after 2000, except when the Multispecies Amendment 5 was created. Instead, they were usually called to write an SIA after the alternatives were determined and asked to produce the SIA within a narrow timeframe. Sociocultural analysts kept encouraging their inclusion earlier in FMP processes to help shape alternatives. An informant recalled being asked to produce an SIA within two weeks, and although she began writing SIAs in 1994, was not included on a PDT until 2006.

Today, of the nine PDTs, three do not have a sociocultural analyst assigned. When a sociocultural analyst is unavailable, NEFMC staff informants spoke of making do as best they could, by borrowing analyses from other documents or conducting their own. There was about a five-year period (2006-2010) in which the Multispecies PDT went without a sociocultural analyst, and all of the SIA work (e.g. for Amendment 16) had to be juggled by NEFMC staff.

"In the PDT meetings, it's never about the social sciences. It's always about the biology, and it's not a very good place to have an open discussion, because the room is full of lawyers, and they're waiting for someone to say something that they can make a law suit out of... It's hard to know where you would insert yourself, without causing more problems."

- NEFSC SSB staff

Participation of Social Scientists on NEFMC Plan Development Teams.																							
FMP	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EBFM																						PDT	
																						SSB	
																						Acad.	
Habitat																		PDT '99 ->					
																		SSB	SSB	SSB	SSB		
Herring																		PDT '97 -> FMP '99 ->					
																		Academic ('97-'01), SSB ('97-'09) ^a					
														SSB		Academic							
Monk-fish							PDT '96 -> FMP '98 ->																
												SSB			SSB		SSB	SSB	SSB				
														SSB				SSB					
Multi-species	<- FMP '85, TMG '88-'91, PDT '92 -> ^b																						
				SSB				Academic											SSB				
						Academic												SSB		SSB			
Red Crab									PDT '99 ->				FMP '02 ->										
													SSB										
Scallops	<- FMP '82, TMG '86-'91, PDT '92->																						
						NEFMC staff																	
												Academic ('-03), SSB ('00-'11) ^c										SSB	
Skates											PDT '00 -> FMP '02 ->												
													SSB										
Whiting									PDT '98 -> FMP '00 ->														
														SSB			SSB		SSB				

 Year PDT formed and original FMP finalized.
 Economist participation on PDT.
 Sociocultural analyst participation on PDT.

^a Academic & SSB overlap '97-'01.
^b PDTs replaced Technical Monitoring Groups '92.
^c Academic & SSB economist overlap '00-'03.

NEFMC AND NMFS STAFF EFFORTS

At least five NEFMC staff members have worked on SIAs since the mid-1990s, particularly in cases where a sociocultural expert was not assigned to sit on the PDT or write the SIA. Early efforts included compiling data sets on permits, landings, and revenues (collected by NERO and NEFSC) to use as background data for FMPs. This was before the NEFSC SSB created fishing community profiles. Several of the NEFMC staff attended a workshop on writing SIAs that NMFS conducted back in the early 2000s. Staff left with a greater appreciation for the data and analyses that would improve SIAs, but ultimately, found that in their role as FMP coordinators, they did not have the time or expertise to collect sociocultural data or write the SIAs as idealized. They needed the help of social scientists.

Several informants recalled the efforts of one NEFMC staff person, who focused on SIA work between 1999 and 2002 and was responsible for all of the groundfish and whiting and some of the scallop SIAs. In preparation for Amendment 13 to Multispecies FMP, a year or so before an SSB sociocultural scientist was first assigned to the PDT, the NEFMC staff member conducted ten "social impact informational meetings" throughout the Northeast region late in 2000 in order to gather input on the sociocultural impacts of groundfish regulations since the implementation of Amendment 5 in 1994. This method was described as "somewhere between formal scoping and walking the docks." Staff then developed five sociocultural impact factors to consider relative to the management alternatives in the SIA, based on these meetings and theoretical texts (Burdge 1998):

- 1.) Demographics of the fishery workforce;
- 2.) Attitudes, beliefs, and values of fishermen, their families and communities;
- 3.) Social structure and organization;
- 4.) Lifestyle, health, and safety; and
- 5.) Historical dependence on the fishery (NEFMC 2003).

Sociocultural experts from the NEFSC had been conducting SIA work since 1992, but they did not start participating on PDTs until 2000. For groundfish, there was SSB support brought in at the end of the Amendment 13 process in 2003 through about 2006. There was a gap in SSB participation on the groundfish PDT up until 2011, when an SSB contractor was assigned to the PDT. One NEFMC analyst who wrote groundfish SIAs during 2006-2011 recalled not being aware of the NMFS SIA guidance. For the work in support of Amendment 16, the analyst followed the model that NEFMC staff created for Amendment 13, describing the alternatives in terms of potential impact to the five sociocultural factors. One informant suggested that some of the current challenges in the groundfish fishery (e.g. distributional conflicts, consolidation)

"If you go back and look at the stuff that I did in groundfish, those ... social impact informational meetings. That was the most useful exercise I've ever done."

-NEFMC staff

might have been avoided if there had been a dedicated sociocultural expert used during this period.

Today, there are just four sociocultural experts at the SSB to spread between all the PDTs and FMATs of the NEFMC and MAFMC, but the SSB strives to have someone assigned to cover all the major FMP actions. They are also focused on setting up systematic data collection systems so that future SIA work can improve. There is little room for hiring given current National Standard 8 implementation funding levels.

Of the three primary informants from NERO, two have been policy analysts assigned to conduct analyses related to sociocultural impacts in the past few years, one for Framework 1 to the Skate FMP, a Secretarial action, and the other for Amendment 17 Multispecies FMP, which the NEFMC had approved without an environmental assessment (including an SIA). In both cases, the analysts did not have specific sociocultural training and were not aware of the NMFS guidance. The SIAs for the skate action was qualitative and less than one page, borrowing text from other documents and mirroring what had been acceptable for similar actions (NEFMC 2011b). General Counsel determined that the groundfish action, regarding state-operated permit banks, could not be approved without additional review. A regulatory impact review was conducted. It was determined that the only direct impacts of the action would be to states, and because states are not classified as “small entities” for the purpose of the RFA, there would be “no economic impacts on small entities as a direct result of this action” (NEFMC 2011a). Thus, economic and sociocultural analysis of impacts to fishermen and their communities was not completed for the action. Both informants spoke of these examples as outlier cases, and would like to see impact assessment improved.

SOCIAL SCIENCES ADVISORY COMMITTEE

The Social Sciences Advisory Committee (SSAC) was formed in 1998 to “make socioeconomic analysis an integral component of council decision-making at all stages of fisheries policy development” (SSAC 1999). The aim of the SSAC was to assist the NEFMC in evaluating documents relating to plan development and annual review. It was comprised of an even split of economic and sociocultural scientists primarily from academic and other non-governmental entities.

Early on, there was some debate and tension within the SSAC about its proper role. Some members felt that the SSAC should be involved with approving analyses for FMP documents, while others were concerned that if so, the SSAC might morph into a politicized policy-making body in which the spirit of peer-review and objectivity would be compromised. At its first meeting, the SSAC was given terms of reference by the NEFMC to review the sociocultural and economic analyses for two management actions, but the SSAC hesitated, as one informant

recalled, because “they didn’t want to stop actions from going forward if they thought it [the SIA] was inadequate.” A few informants expressed that the refusal to review documents was a missed opportunity, because for the next several years, the SSAC struggled to find its purpose and gain traction.

As recalled by informants, the SSAC did make some contributions to NEFMC processes. It:

- Reviewed a few of the FMP documents, such as Amendment 1 to the Herring FMP. The SIA was determined to be insufficient, but it was the best that could be done at the time.
- Made recommendations on the content of Stock Assessment and Fishery Evaluation (SAFE) reports.
- Guided the organization of social impact meetings in advance of Amendment 13.
- Enabled public comment to include email submissions.
- Raised awareness of the importance of social science.

The SSAC was hampered for several reasons. Some informants said that funding to support meetings was only available early on. Others said that members were not reimbursed for their time or travel, and that the academics had to fit this service around full teaching schedules. This caused a high turn-over rate. A critical problem was that there was never sufficient time between FMP development and decisions to give analyses adequate review. Tensions within the SSAC hindered its utility. The SSAC was underutilized, because the NEFMC did not have a legal mandate to utilize such a committee. This was to change with the 2007 reauthorization of the Magnuson-Stevens Act.

"We [the SSAC] had determined early to never give a thumbs up or thumbs down on socio-economic components, that we were serving only in an advisory capacity. We made reference to improvements, but we weren't going to get in the middle of the politics of saying what they wanted us to say, some of the interests, i.e. some fishing organizations and some of the environmental organizations..."

- academic

SCIENCE AND STATISTICAL COMMITTEE

In 2007, the NEFMC Executive Committee recommended combining the SSAC with the Science and Statistical Committee, such that there would be at least three social scientists on the SSC. This matter was discussed at three Executive Committee meetings that year, and in January 2008, the new members of the reconstituted SSC were appointed. Previously, the SSC was primarily used for resolving scientific questions as they arose, but the 2007 reauthorization of the MSA mandated that councils use SSCs for setting fishery catch levels. Merging the SSAC with the SSC was deemed consistent with how most other councils structure their SSC and would better meet the new requirements. An informant recalled national (NMFS) agreement on this approach as well.

Thus, the primary charge of the SSC has recently been to set acceptable biological catch (ABC) levels each year, including buffers for scientific and management uncertainty. Of the four social science SSC members, three were informants for this review. They indicated that SSC meetings

"Even setting the TACs, this risk-tolerance question, and these goals and needs, these are all things that while they sound a lot like biology, they actually are social processes."

- SSC member

are dominated by biological questions, but the place where sociocultural and economic impacts comes in is in the setting of buffers between the ABC and overfishing limit (OFL). The buffer is a type of trade-off between reducing the probability of overfishing and increasing the cost to communities. This is leading the SSC into discussions of the distinction between science and policy, considering their purpose.

Several informants noted that the SSC rarely considers social science questions. One instance was a review in 2009 of the sociocultural and economic analyses relative to Amendment 15 to the Scallop FMP. The SSC considered an SSB recreational fishing economics model in September, 2012. Some NEFMC member informants (n=3) wished that the SSC would consider more sociocultural and economic issues. The SSC may be at a point now where it is established enough to do so.

It is the NEFMC Executive Committee that drives the SSC agenda, so directives need to come from that body, though SSC members can request items to be included in terms of reference. Interest was expressed in having the SSC review social and economic assessments of fisheries as they do the stock assessments. None of the informants expressed a desire to separate the social scientists from biologists, returning to a format akin to the SSAC.

"I don't think the SSC has been, I haven't seen them, I don't even know, have they been used at all for any socioeconomic questions?"

- NEFMC member

NATIONAL PERSPECTIVES

Each region of the nation is unique in terms of who is involved in collecting sociocultural data and writing SIAs. It depends on whether the expertise is located with the council or the NMFS regional office or science center, and the relationship between these entities. Some people have been assigned to conduct SIAs who have expertise in biological rather social sciences. The reverse case would surely not be acceptable: social scientists conducting stock assessments.

New England and the Mid-Atlantic are part of a single region, supported by NERO and NEFSC. As such, they are fairly similar in their use of social science expertise. Today, the South Atlantic (SAFMC) and Gulf of Mexico (GMFMC) Fishery Management Councils are the only other councils that have full-time social analysts on staff, both hired within the last two years. The SAFMC had two sociocultural scientists prior to the current analyst, but there had been a five-year gap between the last and the current one. The Pacific Fishery Management Council (PFMC) hired an anthropologist about ten years ago, but the work of this part-time analyst has shifted towards communications. With the exception of the North Pacific Fishery Management Council (NPFMC), other SSCs are rarely asked to review sociocultural or economic assessments as a matter of routine.

"It's just not the most efficient way to manage a fishery, in a constantly reactive mode. So much of the Council and staff time is spent on just keeping up with the year to year work that needs to be done, and putting out fires. There is this idea that if we can get a better grasp on what's actually going on in our fisheries, what the perspectives of stakeholders are, and really what our goals are, then we can develop a plan that helps us make sure that all of our work is moving in a particular direction."

- MAFMC staff analyst

Social Science Expertise Utilized in US Fishery Management Council Processes					
	Social Scientists		Data Collection used in SIAs	SIA Writing	Notes
	on staff	on SSC			
NEFMC	1 economic, 1 sociocultural	2 economic, 1 geography, 1 sociocultural	Council staff, NERO, NEFSC, Contractors	Council staff, NERO,* NEFSC, Contractors	NEFSC/SSB involved in several PDTs.
MAFMC	1 economic	2 economic, 2 sociocultural	Council staff, NERO, NEFSC, Contractors	Council staff, NERO, NEFSC, Contractors	NEFSC/SSB involved in several FMATs.
SAFMC	1 economic, 1 sociocultural	1 sociocultural	Council staff, SERO	Council staff, SERO	There is a new Social and Economic Panel.
CFMC	-	1 economic, 1 sociocultural	SERO, SEFSC	SERO, SEFSC, Contractors	The SSC and Advisory Panel have regular joint meetings.
GMFMC	1 economic, 1 sociocultural	8 economic, 4 sociocultural	Council staff, SERO	Council staff, SERO	The Socioeconomic SSC is one of 9 sub-SSCs.
WPFMC	-	2 economic, 2 sociocultural	PIRO	Council staff, PIRO	PIRO hired first sociocultural scientist in 2010 and has had a regional economist since the mid-2000s. Council has a Social Science Research Planning Committee.
PFMC	1 economic, 0.5 sociocultural	5 economic	NWFSC	Council staff	The SSC has not had a sociocultural scientist in over 20 years.
NPFMC	3.5 economic	1 economic, 2 sociocultural	Council staff, Contractors	Council staff, Contractors	SSC routinely reviews FMP analyses and has had sociocultural expertise since 1996.

* For Secretarial actions.

"I consider my primary job to be making sure the Council members make the most informed decision as possible, specifically how people's lives will change."

- SAFMC staff analyst

Recommendations of Informants: Sociocultural Expertise

Coordination

- Provide guidance and training to staff assigned to conduct or coordinate sociocultural analyses.
- Improve communication between NMFS and NEFMC about coordinating work to minimize duplication.

Plan Development Teams

- Assign a qualified sociocultural analyst to every PDT. For all major fisheries, the appointment should be long-term to ensure continuity.
- Engage the sociocultural analyst in PDT discussions early and consistently.
- Define roles and expectations of PDT members in the early stages of each action.

Staff Efforts

- Work with the functional strengths of staff. If someone is particularly skilled in a technique, allow them to work across fisheries with this tool.
- Oversee contractors hired to write SIAs, to ensure that the product is what is needed, it is written objectively, and that deadlines are met.
- Provide travel support to writers of SIAs to attend as many public hearings and meetings related to the FMP as possible, as well as to conduct fieldwork.
- Emphasize social science in graduate training programs.

Social Sciences Advisory Committee

- Maintain the social science presence on the SSC, rather than reconstitute the SSAC at this time.

Science and Statistical Committee

- Consider tasking the SSC with more social and economic questions.
- Use sociocultural information in setting the ABC buffers.
- Help the NEFMC address the right analytical questions in SIAs.
- Review SIAs of FMP actions and specifications.

DOCUMENTATION

In general, more sociocultural information is being included in fishery plan documents today than when social impact assessments were first conducted, because there are more data available and more efforts are directed at defining potential sociocultural impacts. A common theme expressed by informants was that the documents could still improve in terms of the quality of analyses and the accessibility of information. A number of different requirements have cropped up over the years for the writing of FMP documents, and informants wished for greater succinctness to simplify and serve the public more effectively.

SIA EXTENSIVENESS

Several informants felt that the FMP documents are getting too lengthy and cumbersome, the outcome of an increasingly complex management process. One informant described it as a problem of “law suit fear.” Documents get longer to “cover the bases.” Three informants suggested that fishery actions tend to contain too many options, with little description for how they might fit together. When an action goes to public hearing, if it is too complicated, the public cannot figure out how the options might interact. This makes contributing meaningful input difficult. The environmental assessments for small actions such as frameworks can be around 500 pages long, while amendments can be well over 1,000.

Are SIAs necessary for all actions? When an informant started writing SIAs, she was told that the SIAs for framework actions require the same level of detail as those for plan amendments. She has learned from experience that writing an SIA for every framework can be problematic. Sometimes the timing of working on frameworks and amendments for a single FMP can overlap. Because amendments generally involve large changes to a FMP, limited staff resources would be better focused on the amendments, in her view. If someone is doing all the work for frameworks, then they might not have time for the amendments. There were three informants who thought some actions require more extensive analytical work than others. If there has been a high degree of sociocultural change between the time of an amendment and the next framework, then perhaps a full SIA should be required. Another idea was to let the EA versus EIS dichotomy determine the requirements for the SIA.

"I find the documents to be a product of a process and a system that itself is cumbersome, arcane, and that when you understand the process and all of the requirements outside of NEPA that we have to adhere to, to be legal, so to speak, I guess my reaction is, that the document is what you're going to get... The way they are today, they are the fulfillment of the kind of process that we have to deal with.

- NEFMC member

FMP ORGANIZATION

Several Northeast informants noted that between fishery plans, there exist a variety of organizational approaches to writing action documents. Where the necessary components are located within a document and what the sections are called is not consistent within or between fisheries. In 16 different framework or amendment documents across eight FMPs, the environmental impact section has had a variety of titles. Most of these sections have been organized by impact type, then alternative (e.g. describing the social impact of all alternatives). Others are organized by alternative (e.g. describing all the impacts of an alternative), and some describe impacts by Valued Ecosystem Components (VECs) (Appendix 5).

Valued Ecosystem Components:

1. Target species.
2. Non-target species and other fisheries.
3. Physical environment and EFH.
4. Protected resources.
5. Fishery-related businesses and communities.

Why does this inconsistency exist? One reason informants cited was that some analysts and sociocultural scientists have worked on the same fishery for several years, while others have come and gone. Each would bring their own style or expertise and focus on different components, and there has not been a collective choice to take a consistent approach. Within NERO, when staff has been assigned FMP review tasks on a rotational basis, reviewers have had different approaches to how documents should be constructed. Document consistency has not been a review criterion. In fisheries that are simpler than others (e.g. scallops vs. groundfish and monkfish), there are fewer unknowns, and so potential impacts are easier to write about. Recently, a NEFMC staff member submitted a document organized by impact type, but was told by NEPA reviewers at NERO that the alternatives should be analyzed across the VECs. It is unclear though if the VEC approach will become standard for all FMPs.

Should there be more consistent organization to FMP documents? Applying the same approach to writing FMP documents across fisheries would help the public understand fishery actions and engage with management processes, particularly since many people are stakeholders in multiple fisheries. Staff should consider being more consistent in their approaches; this includes those who review documents. This was the sentiment expressed by 41% (n=14) of Northeast informants. Just 6% (n=2) said that each situation is unique, that formats should be adaptable to the information required, and that ideally, the council would read and digest entire documents, rather than just specific pieces. Other informants did not express a strong preference either way.

NEFMC staff informants indicated that they tend to be assigned work on just one FMP at a time and are not as familiar with how other FMP documents are prepared. In cases where one staff

person has been assigned to write all the protected resource or habitat sections of documents, there has been consistency of content across FMPs. Having a social impact analyst assisting all FMPs will help the NEFMC approach SIAs and affected human environment sections more consistently. Perhaps broader conversations should occur among the NEFMC staff and with NERO and NEFSC about whether a more uniform approach to document preparation is warranted.

Should documents be more concise? Of the Northeast informants, 24% mentioned that FMP documents are generally too long. More information could be put into appendices, or references cited to existing publications. There is much redundancy that could be removed. Given the deadline-driven nature of fisheries management, staff does not usually have the time to pare things down. However, simplicity would benefit the public.

What are the implications for social science? As noted earlier, the NERO reviewers are not necessarily versed in social science, so sometimes the critique of SIAs has been inappropriate. The required document structure has made inserting a cohesive SIA difficult. Pieces have been distributed among various sections of a document. Informants who contribute SIAs stated that the descriptive strength and sense of cumulative impacts can be lost as a result.

FISHERY PERFORMANCE REPORTING

Informants stressed that informed fisheries management requires regular, coordinated reporting on the sociocultural and economic status of the industry, much like biological stock assessments get performed on set timetables. There have been several initiatives in recent years to accomplish this:

- The Stock Assessment and Fishery Evaluation reports have filled this purpose in the past, but the required information has frequently been duplicative of what is required in FMP action documents, so some SAFE reports get merged into the EAs or EISs.
- In 2009, performance measures for catch share fisheries were determined at a national NMFS workshop, and the information will be used to create both national and regional reports.
- The NEFSC SSB proceeded with creating a FY2010 annual report for the groundfish fishery, using performance indicators that expanded upon what was approved nationally (Kitts et al. 2011).
- A FY2011 groundfish report is currently being drafted by the SSB and there are plans to create similar reports for monkfish and scallop fisheries. These reports cover both catch share and non-catch share groups within each fishery.
- NERO has begun to develop auto-generated reports, which the SSB reports will expand on.

- Early in 2012, the NEFMC approved a recommendation that fishery performance evaluations be conducted regularly and agreed to a set of standard performance measures for all FMPs.
- At its April 2012 meeting, the NRCC discussed how there are currently multiple, repetitive reports produced and agreed that NERO would lead a work group to eliminate redundancy and provide consolidated information for the public. This work group has not yet convened.

It is recommended that NMFS headquarters, NERO, NEFSC, and NEFMC (as well as MAFMC) come to agreement on a unified approach to reporting on fishery performance that results in a stand-alone, go-to reference for each fishery that is updated annually and made available to the public. They should be separate from but referenced by EAs and EISs.

NATIONAL PERSPECTIVES

Informants from around the US noted that in cases where councils have an anthropologist or someone dedicated to analyzing sociocultural impacts, there is more consistency among FMPs in how those sections get written. A MAFMC staff informant noted that consistency across the FMPs is very important for staff of this council, because the information is more accessible to the public. According to two Northeast informants (one NEFMC member and one from NERO, the MAFMC plan documents are generally simpler and more consistently written than those of the NEFMC. The NPFMC and SAFMC also package analyses in standard formats.

Document concision: An informant expressed that the staff of the MAFMC has an intentional goal to write in the simplest terms possible and in ways that are understandable to the council and the public. Recognizing that documents were getting increasingly lengthy and repetitive, the MAFMC staff formed a “Document Concision Working Group” with NERO and the NEFSC, to determine how documents could be streamlined, making them easier to understand and locate different components. When specification documents were first created at the MAFMC, they were similar in format across most FMPs, despite a lack of specific NMFS requirements. However, as time progressed and different preparers and reviewers took part in the process, these documents started to diverge from species to species, and some of them turned into very lengthy documents. The Working Group started with examining a specifications document required for the summer flounder, scup, and black sea bass fishery (MAFMC 2011). The result was a document that was at least 20% smaller than in prior years, and it is serving as the template for other MAFMC specification documents going forward.

Staff at the SAFMC also stressed the importance of concision, because no one has the time to read hundreds of pages. To focus documents, the staff informant asks the council what information it needs in order to make decisions.

Recommendations of Informants: Documentation

SIA Extensiveness

- Consider allowing a dichotomy in SIA extensiveness between frameworks and amendments or EAs and EISs, to allow staff to focus on analyzing proposed regulations likely to have the larger impacts and result in greater fishery change.

FMP Organization

- Consider whether FMP documents should be written in a more consistent manner.
- Determine whether the "Valued Ecosystem Components" approach to examining alternatives should be standard for all FMP analyses.
- Adopt document formats that resulted from the NERO-NEFSC-MAFMC Document Concision Working Group, or conduct a similar exercise for the NEFMC.
- Ensure that PDT chairs and members are aware of and use document requirements consistently.

Fishery Performance Reporting

- Conduct fishery performance evaluations, identifying the status of the industry and consequences of particular management changes.
- Produce a single report for the public per fishery per year.

"If we're going to turn things around and put emphasis on the social consequences of what we do, any description of social consequences should be brought forward in the document and not relegated to an appendix or to page 479. It needs to be up front. Attention needs to be drawn to it."

- NEFMC member

INCORPORATING SOCIOCULTURAL IMPACTS

A theme expressed broadly by informants was that the fisheries management process would be improved if more stakeholders, staff, and decision-makers were better informed about the fisheries and the implications of decisions that need to be made. The management process involves complex iterations between councils, their committees, the PDTs, and NMFS, with many opportunities for public input along the way.

Are sociocultural data considered? Northeast informants (n=34) were asked about if and when sociocultural information is considered in the management process today. Their responses could be grouped into five general bins, listed below from most to least frequent:

- (35%) Sociocultural information comes in towards the end of the process when final decisions are being made, particularly from a technical perspective. Generally, there is little sociocultural information in document drafts until all the alternatives are fleshed out and the draft EIS or EA is complete. Sometimes the PDTs use scoping comments, but it is not usually until the economic analyses are drafted that sociocultural impacts get considered.
- (26%) Sociocultural information is considered on an ad hoc basis throughout the development of an action. Public comments are “ubiquitous” and “infused” in the process. Council members cogitate on sociocultural issues implicitly, based on their background, perceptions and public comment. Discussions are often centered on how measures might impact people.
- (24%) Sociocultural impacts do not really get considered in the management process. Quite often, the quality and quantity of sociocultural data available are not very good, and the NEFMC does not know how to factor sociocultural analysis into decisions.
- (9%) Consideration of sociocultural information depends on the PDT, whether there is a sociocultural expert assigned and how actively they contribute. PDT discussions are often dominated by biological issues, but PDT chairs can help by facilitating feedback from social scientists.
- (6%) Informant was unsure, either because he/she does not closely engage with the management process or is new to the region.

"A lot of our bad decisions were made over the last number of years, because we've listened too much to the public and ignored the science. But here we are, with the pendulum swung. Congress implemented the ACLs and AMs, and we've swung too far the other way, where the industry and the community are really getting the short end of the stick."

- NEFMC member

PUBLIC COMMENT

Scoping process. A common theme among PDT chair and social science informants was that the scoping process at the beginning of an amendment is a helpful first step in gauging stakeholder views on management issues and potential impacts to investigate further throughout the development of the action. Although scoping is considered a first step in gathering information about sociocultural impacts, it was noted that scoping meetings do not always occur. The council is only required by NEPA to have a scoping period if an EIS will be prepared; meetings are not required. A few informants noted that there seems to be declining public participation in scoping meetings, which are rather formal, and that scoping comments should be used with caution, because they may not be representative of the spectrum of stakeholder views, due to low attendance or the hesitation by some to speak on the record. It was recommended that the sociocultural analyst assigned to write the SIA attend these early meetings to get a sense of the different constituents and potential data sources. Public input from scoping is better utilized by PDTs when it is analyzed thematically, preferably supplemented with interviews.

"But social impacts, you start hearing about them during the scoping process. A lot of comments that you get and input from the stakeholders during the development of the amendment, if you're paying attention, is all stuff that can lend itself to doing a good SIA."

- NEFMC staff

Council meetings. Many informants talked about the influence of public comment at NEFMC meetings. It was observed that council meetings in the 1990s were filled with fishermen, but today, just a handful of owners and paid representatives attend. A council member stated that one of the few times where public comment matters is just prior to a final vote. Another council member was glad that meetings are being broadcast over the internet to increase accessibility, and has been relieved that it has not caused a significant decline in attendance, likely because the public may only provide oral comment in person. A NEFMC committee chair said that he could accommodate more of the public who want to comment at committee meetings, but public attendance is fairly low, and he already knows the input of the "usual suspects."

"Frankly, when you're forced as a decision-maker to do something that's rather draconian, that you know will have an impact on fishing families and individuals, you might flip the switch. You go into the concept called "cognitive dissidence," where you don't want to hear the bad news, so you don't listen to it. Or when you hear it, you don't pay attention to it. It's unfortunate. Terribly."

- NEFMC member

NEFMC MEMBER DECISIONS

Individuals selected to sit on the NEFMC already have a substantial amount of knowledge and experience with Northeast fisheries, but there is still a steep learning curve that occurs in the beginning months of tenure. However, informants shared that council members and the general public could be better educated about the historical and current state of fishing communities, so that better informed decisions can be made. Given how much information council members must assimilate, simply getting them to read more material is problematic. Creative ways must be utilized to inform decision-makers. It was suggested that this education occur in small bits over time, or through website links, rather than providing lengthy reports that might not get read.

“How do NEFMC members learn of potential sociocultural impacts?”
(Informants = 27)

21%	Conversations with stakeholders informally.
21%	Stakeholder comments made at public meetings.
19%	Personal perceptions, knowledge, and experience.
10%	Reading fishery plan documents.
10%	Presentations by NEFMC staff or social scientists.
2%	Industry newspapers.
17%	They do not try to learn of potential sociocultural impacts.

Using SIAs. A majority of Northeast informants (62%), including some Council members, said that NEFMC members tend not to read SIAs. In fact, few members read entire FMP documents, because they are “too cumbersome” and “not that exciting.” People who sit on both the Atlantic States Marine Fisheries Commission (ASMFC) and NEFMC can be overwhelmed with reading material, particularly if meetings are back-to-back. With so much to read, informants said that they are “weary” by the time they get to the social impact sections. If social impact sections were included in early drafts, there is greater likelihood that council members would read them. Where sociocultural data quality has been poor, members have relied on personal

“He had all these motions. I’m sitting next to him, and I said, “We can’t do this. We have no data in front of us that supports any of this. You’re just making motions on the fly, and you don’t know what the impact is to anybody.” I said, “I’m not comfortable. I’m not doing that.””

- NEFMC member

conversations with stakeholders. Where members do focus their attention is on decision documents, so it is important to include sociocultural information in them. A council member indicated that their decisions always lean towards what would be best for the resource, because positive sociocultural outcomes result when the “intelligent” use of the resource is “maximized.”

Specific examples. Council member informants (n=9) were asked to identify specific decisions the council has made where there was a sufficient or an insufficient amount of information about the potential impacts on the fishing community. The majority (n=5) said that most of the time, it feels like there is no such information, but there tends to be better information available about the minor fisheries, such as whiting or skate. When the Small-Mesh Multispecies (i.e. whiting) FMP was created in 2000, one NEFMC member recalled that staff made a serious attempt to understand the fishery and explain it to the council, which resulted in a “good amendment” that “they haven’t had to do much with, because we actually did something that worked.”

Groundfish. Amendment 16 to the Multispecies FMP (NEFMC 2009) was particularly difficult for several NEFMC member informants (n=4). It was developed during a period when a sociocultural expert was not assigned to the PDT. The deadlines for implementing catch limits and rebuilding stocks did not allow sufficient analysis about changing the groundfish “currency” from Days-At-Sea to catch history. Projecting economic and sociocultural impacts of sectors was hindered, because it was unknown how many fishermen would opt to join a sector. The SIA, written by NEFMC staff, completed after the NEFMC voted on the draft amendment (but before public hearings).

Scallops. Informants cited the scallop fishery as easier to understand and analyze than groundfish, because the permit structure is simpler. The SIA for Amendment 15 (NEFMC 2010) to the Scallop FMP was particularly impactful, according to six informants. The action involved permit stacking and leasing. Ownership data was used, so the potential impacts to single-boat owners and larger corporations could be identified. The SIA included a summary of a large literature review, to search for evidence in other fisheries of the impacts of consolidation. The review was provided to the PDT and council members early in the processes, though some stakeholders complained that the literature was weighted towards negative impacts of consolidation. At a particular NEFMC meeting, the audience spoke of many potential impacts, and informants recalled that those particular comments swayed council members. People spoke of how the alternatives would affect them, their community, and the future of scalloping. However, one informant said that some in the industry coerced others to not come forward with their views. At the final vote, council members were fairly well versed in the SIA and the sociocultural issues at stake.

“I felt that was the best strategy [literature review]. ... These are the kinds of impacts that could happen. I felt that I had done the SIA the best I could have. So, after 12 years, at least I have one. ... That was the first time I ever heard people talk about the SIA, partly because it was a huge battle between two opposing forces in the fishery, and the SIA got used as ammo in that ... It was nice that people actually read what I had written.”

-SSB staff

NMFS REVIEW

Essential to the management process are the reviews that NERO, NEFSC, and NMFS Headquarters conduct to ensure that FMPs meet legal requirements.

Concision. There are many levels of review that occur, and NEFMC staff informants indicated that each reviewer wants to see the part they focus on as a complete component. This can lead to repetition in the document. For example, the Regulatory Flexibility Act (RFA) analysis is based on much of the same data that are contained in the economic impact analysis, but the reviewers like to see the RFA treated separately. SAFE reports contain much of the same information that is required for affected environment sections, but rather than just appending the SAFE report to a FMP document, the NEPA reviewers require that the SAFE report content be summarized in the affected environment section and also appended. Informants wondered if a more concise and efficient approach could be acceptable.

SIA feedback. Several informants who write SIAs at the NEFMC, NERO, and SSB (n=5), stated that the feedback received from NERO reviewers primarily regards the biological aspects of FMP documents. Comments on SIAs have focused on typos rather than substance. There have been some comments about additional text to add, but never questions about the validity of what was written. As submitted, SIAs have generally been considered legally sufficient by reviewers. Just one instance was recalled where a draft EA or EIS was rejected by NMFS because of an inadequate SIA.

Within NERO, there is a lack of social science expertise, and feedback might be improved if a social scientist was brought into the review team at NERO. Some reviewers have objected to inclusion of certain sociocultural analyses, and SIA writers have perceived this as due to a misunderstanding of social science. Informants from the NEFMC and SSB were unclear if NMFS uses a standard when approving SIAs. Sometimes SIA writers reach out to SSB staff informally for comments during draft phases. It can be the case that NERO has asked the SSB to review SIAs developed within the SSB. Given the overall lack of feedback, SIA writers have not been pushed to improve their product.

The comments from informants across the US about how sociocultural information gets used in the management process largely mirrored those expressed from the Northeast. Councils consider sociocultural impacts all along, but there are less structured ways for getting the information than the biological data. Scoping is an important component for later framing SIAs. Some council members read every document thoroughly, but others only cover the more controversial issues. For NEPA reviews, there is nation-wide coordination among NEPA staff in the regions for consistency in core content required in documents, but each region is different in how they work with the councils and what their specific sticking points are. However, it is unclear to SIA writers what those requirements are.

Recommendations of Informants: Incorporating Sociocultural Impacts

Public Comment

- Create a dialogue among user groups to resolve issues before formal FMP development begins, so that management change can more easily mirror what stakeholders have already agreed to.
- Focus scoping documents on the status of the fishery and the issue that the amendment will address, to help focus public comment.
- Analyze public comments received during scoping more effectively for use by PDTs while recognizing the limitations of this data source.

NEFMC Member Decisions

- Have a working knowledge of the fishery over the past half-century.
- Consider the sociocultural context as early as possible in the process.
- Present information as concisely as possible.
- Include sociocultural information in early drafts of FMP and decision documents.
- Do not proceed with Council voting until all necessary analyses are complete.

NMFS Review

- Utilize the NMFS SIA guidance or other published standard when approving FMP analyses.
- Consider adding a social scientist to the NERO review team.

INTERNET RESOURCES

Many of the Northeast informants (n=13) spoke of how the internet could be a means to better communicate sociocultural information about fishing communities, particularly through the NEFMC³ and SSB⁴ websites. Occasional reminders to NEFMC members about what is posted would be helpful, though the amount of email and report reading council service requires is already overwhelming. These websites can be a resource for improving awareness of ports and the status of fisheries, benefiting the council and the public. Reservations expressed about the internet relate to the potential for the volume of information to be overwhelming and misinformation to be posted. Industry informants said that it is the younger fishermen that tend to use the internet more. It is a last resource for the older fishermen. A key challenge with websites is in keeping them current; a website with outdated information can reflect poorly on an organization, so website maintenance plans are essential.

NEFMC WEBSITE

Informants wished that the NEFMC website would describe New England fishing communities and Council processes, e.g. the steps that an action goes through and what sort of analyses are done. Pages could give the status of resources, describe the fisheries, the gear types, the communities, number of participants, how much money is generated, etc. The council could consider building a sense of community through its website by linking to sites of stakeholder groups, although care would be needed to ensure that links represent a balance of views and that providing a link does not necessarily imply endorsement. Informants suggested that a comment form be developed for getting coast-wide feedback or to have key informants in communities (e.g. Advisory Panels) give input. Such a form would need to be carefully constructed to get meaningful feedback.

NMFS WEBSITES

Recognizing that the NEFSC Social Sciences Branch website could serve as a useful portal for the public to learn of SSB activities and products, the SSB conducted a complete overhaul of its website during the summer of 2012, temporarily removing their old website. A goal is to make the community-level data more accessible. The NMFS Social Indicators Database of 3,000+ east coast communities is expected to be on-line in the fall of 2012. The aim is for the user to be able to pull data and create maps and cluster analyses. Static fact sheets quickly get outdated, and although they have some utility, the public database will help make data available in a

³ www.nefmc.org

⁴ www.nefsc.noaa.gov/read/socialsci/index.html

timelier manner. SSB staff is working to create fishing community snapshots, three page or less visual pieces that highlight key points of the longer community profiles that were produced in 2005. The snapshots will be automatically updated by just updating the supporting database. Since several informants expressed that the SSB has been a bit of a “black box” (e.g. the community profiles were difficult to find), the website overhaul will likely improve communication and understanding considerably.

"I would like to see something [like the fishing community profiles] that's really user-friendly, that's easy to update, that anyone can check, that would be available to the public. I'd like to move away from static PDF documents."

-SSB staff

The NERO website has recently contained more landings and revenue information. A subset of the performance measures that were used in the report on the FY2010 multispecies fishery (Kitts, Bing-Sawyer, McPherson, Olson and Walden 2011) are now posted online, at mid-fishing year and year end (NERO 2012). The SSB site links to these as well. Data are available by port, state, and vessel length. Weekly landings data are available for Atlantic herring and several MAFMC-managed species.

NATIONAL PERSPECTIVES

Each fishery council has had a website for a number of years, but there is much variation in terms of the amount of sociocultural information posted and the use of social media. The CFMC uses paper for much of their communications, because that is what their stakeholder audience largely wants. On the other end of the spectrum, councils have created Facebook pages, Twitter accounts, blogs, electronic newsletters and applications for smart phones. The SAFMC informant noted that staff use Facebook to “check the pulse” of the industry. The PFMC uses both Facebook and Twitter, and has an area of their website dedicated to posting information about the human dimensions of fisheries. The MAFMC is currently redesigning their website to create a simpler and clearer structure to access information. The GMFMC has created a space for “Social Environment” information on its website. Staff has not yet had the time to populate it, but the intent is to post data and some social theory that explains how SIAs are created.

Use of Social Media by the US Fishery Councils								
	NEFMC	MAFMC	SAFMC	CFMC	GMFMC	PFMC	WPFMC	NPFMC
Facebook	No	No	Yes	No	Yes	Yes	Yes	No
Follower #			204		676	42	87	
Created			10/19/10		5/23/11	5/14/12	3/23/10	
Twitter	No	Yes	No	No	No	Yes	No	No
Follower #		125				1,396		
Blog	No	No	No	No	Yes	Yes	No	No
E-newsletter	No	No	Yes	No	Yes	Yes	No	Yes
Apps	No	No	No	No	Yes	No	No	No
Type					iPhone, Android			

Recommendations of Informants: Internet Use

NEFMC Website

- Create a page that describes NEFMC processes in general.
- Provide descriptions of fishing communities with links to the SSB website.
- Develop a public comment form.
- Post timelines of fishery actions to help the public navigate processes.
- Provide current information that describes fisheries in a more tailored way than NOAA's FishFacts.org website, including the demographics of participants, gear types, revenue generation, communities involved, etc.
- Consider the utility of social networking tools (e.g. Facebook, Twitter).

NMFS Websites

- Shorten FMP documents by using links to existing online references.
- Create an easier means for the public to track the performance of fisheries.
- Cross-reference with website of NOAA's Coastal Services Center.

The professionals involved with SIAs are reaching out to each other nationally to facilitate greater consistency and effort coordination regarding the human dimensions of fisheries.

NMFS Human Dimensions Team. The NMFS social scientists, based primarily at the science centers, have met nationally once a year or so when funding has been available. Within the last few years, the group has become more formalized, calling itself the “NMFS Human Dimensions Team.” The NEFSC SSB has much experience writing SIAs, but this is not the case with other science centers that are focused primarily on sociocultural and economic research. Only two regional offices have a sociocultural expert on staff (SERO and PIRO). The Team is beginning to discuss how NMFS social scientists can more consistently support the regional offices and councils. A subset of the Team is working on a broad sociocultural practitioners’ manual, one section of which will include a Team consensus summary of the best practices manual work being done by Northeast and Southeast sociocultural scientists and NMFS headquarters NEPA analysts.

National SSC Social Scientists. Recognizing the increased demands on science and statistical committees stemming from the 2007 revisions to the Magnuson-Stevens Act, the councils have convened annual national meetings since 2008 of SSCs to discuss solutions to meeting MSA requirements. The first three national SSC meetings were focused on biological issues related to Acceptable Biological Catch controls, but at the fourth, held in 2011, half of the meeting was dedicated to social science considerations (MAFMC 2012). The group noted the wide variation of SSC engagement with social science nationally. Their recommendations for SSCs include:

- Developing more white papers;
- Including social science in council research plans;
- Peer reviewing social science models;
- Training new council members in social science;⁵ and
- Using fishing effort data in ABC specifications.

Social Science Policy Group. Through the current review, interest was expressed by informants outside New England in fostering a network among social impact analyst staff at the US Fishery Councils and others who work directly on SIAs. As a result, a national conference call was held in July 2012 of ten council and/or NMFS staff. Called the “Social Science Policy Group,” this casual network has begun to learn lessons from each other and seek advice on particular questions or analyses that are needed in specific regions. This group will likely evolve and grow, including others from NMFS and academia who work on SIAs, but the dialogue is leading towards greater national consistency in how sociocultural data are considered in fishery management.

⁵ Social science has, for many years, been covered at new council member trainings that occur at NMFS headquarters.

CONCLUSIONS

This review revealed that sociocultural factors of fisheries are considered important, and that participation in and processes involved with collecting and incorporating sociocultural data have improved over time. Nonetheless, progress is still necessary to ensure that managers have the information necessary to understand how fishermen and fishing communities might be impacted by decisions. Inconsistent sociocultural data collection and analysis, as well as the spotty participation of sociocultural scientists in fishery plan processes over the years, has hampered formal consideration of sociocultural issues.

The fallback for managers, when faced with a paucity of social science data and analysis, is to rely on their own background knowledge and what they can learn about the human dimensions of fisheries by talking with industry or listening to public testimony. The lack of systematic and comprehensive data collection and presentation can lead to unintended consequences for fishing communities and fishermen, and create compliance problems that make regulations less effective and sow discontent.

Improvement underway. Steps are being taken to improve the situation. The NEFSC SSB has refocused efforts to conduct systematic data collection and provide more effective tools for the public to access and understand data. The presence of social scientists on the NEFMC SSC is fostering inclusion of social considerations in setting fishery catch levels. Sociocultural experts are being utilized more frequently and engaged earlier in FMP development. Expectations for SIA content and quality are being clarified. Regional and national dialogue among providers of SIAs is elevating product quality and consistency. Increased public discourse about the role of social science in fisheries management would help councils define how potential sociocultural impacts can be weighed against biological impacts in decision-making.

Next steps. This report contains many recommendations to ensure more effective consideration of sociocultural impacts. Some can be implemented by individuals or offices and others require the coordination of the NEFMC, NMFS, and other entities. If agreement about concision does not occur, the recent drive to report on fishery performance could result in having four reports per fishery per year for the public to juggle (from NMFS headquarters, NERO, SSB, and the SAFE reports). Care must be taken to ensure that efforts to improve do not outpace the need for efficient and sustainable use of public resources.

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The following resources were cited specifically by informants:

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Pickering E, Gist JB. 2011. Fisheries of the Pacific Islands Region: A Contemporary Social Perspective and Annotated Bibliography of Relevant Literature. Honolulu (HI): NOAA Fisheries Service, Pacific Islands Regional Office.
Compendium of social science created by NOAA Hollings Scholars regarding the federal fisheries of American Samoa, Northern Mariana Islands, Guam, and Hawaii.

Websites:

Centro Interdisciplinario del Estudios del Litoral (<http://amp-pr.org/ciel/>).
This research partnership between NOAA, Puerto Rico Sea Grant, the Caribbean Coral Reef Institute and the University of Puerto Rico has conducted much social science on fisheries and fishery management in the Caribbean.

NOAA Coastal Services Center, Social Coast (<http://www.csc.noaa.gov/digitalcoast/socialcoast>).
Contains sociocultural and economic data and analytical tools specific for coastal management.

Human Dimensions.Gov (<http://www.humandimensions.gov>)
A portal for links related to the human dimensions of natural resource management, geared primarily for managers, including data, tools, and publications.

"It's always good to be aware of what other people are doing, and how you can benefit from their experiences."

- MAFMC staff

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APPENDIX I. DEFINITION OF ACRONYMS

A	Amendment
AA	Assistant Administrator
ABC	Acceptable Biological Catch
ASMFC	Atlantic States Marine Fisheries Commission
CFMC	Caribbean Fishery Management Council
EA	Environmental Assessment
EBFM	Ecosystem-Based Fishery Management
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
FCMA	Fishery Conservation and Management Act
FMP	Fishery Management Plan
FW	Framework
GMFMC	Gulf of Mexico Fishery Management Council
MAFMC	Mid-Atlantic Fishery Management Council
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NEFSC	Northeast Fisheries Science Center
NEFMC	New England Fishery Management Council
NEPA	National Environmental Policy Act
NERO	Northeast Regional Office
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fishery Management Council
NRCC	Northeast Regional Coordinating Committee
NS8	National Standard 8
OFL	Overfishing Limit
PDT	Plan Development Team
PFMC	Pacific Fishery Management Council
PIRO	Pacific Islands Regional Office
RFA	Regulatory Flexibility Act
SAFE	Stock Assessment and Fishery Evaluation
SAFMC	South Atlantic Fishery Management Council
SBRM	Standard Bycatch Reporting Methodology Omnibus Amendment
SERO	Southeast Regional Office
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SSAC	Social Sciences Advisory Committee
SSB	Social Sciences Branch
SSC	Science and Statistical Committee
TMG	Technical Monitoring Group
VEC	Valued Ecosystem Component
WPFMC	Western Pacific Fishery Management Council

APPENDIX II. MOST RELEVANT NATIONAL LEGISLATION AND MANDATES

National Environmental Policy Act requires that *“all agencies of the Federal Government shall ... utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man’s environment” (NEPA 1970).*

Magnuson-Stevens Fishery Conservation and Management Reauthorization Act

Findings: *“The fish off the coasts of the United States...constitute valuable and renewable natural resources [which]...contribute to the food supply, economy, and health of the Nation...”*

Purposes: *“...this Act...provide(s) for the preparation and implementation, in accordance with national standards, of fishery management plans which will achieve and maintain, on a continuing basis, the optimum yield from each fishery...”*

The National Standards: *“Conservation and management measures shall...*

“(4) ...not discriminate between residents of different States...allocation shall be fair and equitable...; reasonably calculated to promote conservation; and carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

“(5) ...consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

“(8) ...take into account the importance of fishery resources to fishing communities by utilizing economic and social data... to provide for the sustained participation of such communities, and to the extent practicable, minimize adverse economic impacts on such communities.

“(10) ...promote the safety of human life at sea” (MSFCMA 2007).

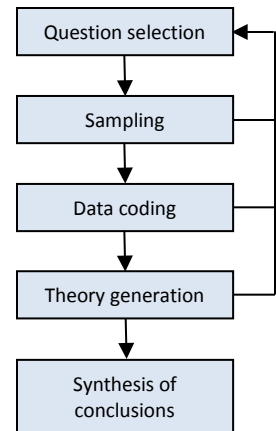
The Regulatory Flexibility Act requires agencies to minimize adverse impacts from burdensome regulations and record-keeping on small businesses, organizations and government entities. The Act requires a regulatory flexibility analysis to include impacts of a regulation on small entities (RFA 1980).

Executive Order 12866 on benefit/cost analyses provides guidelines to ensure that agency regulations are efficient and cost-effective. It requires agencies to consider the costs and benefits of management measures, including factors such as equity and the distribution of impacts among different people. To be in compliance with this order, NMFS requires the preparation of a regulatory impact review for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan (EO 12866 1993).

Executive Order 12898 on environmental justice provides guidelines to ensure that potential impacts on minority populations and low-income populations are identified and mitigated, and that these populations can participate effectively in the NEPA process (EO 12898 1994).

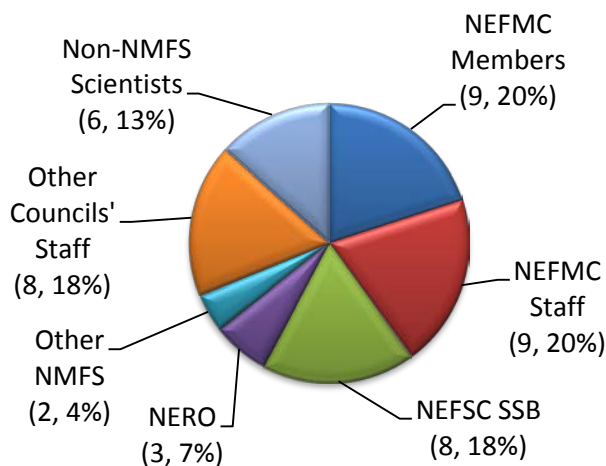
APPENDIX III. METHOD DETAILS

This project employed grounded theory case study methods, systematic but flexible approaches to collecting and analyzing qualitative data about a specific case, in order to construct broader conclusions (Charmaz 2006). Within the overarching areas of inquiry (participation, content, process, communication), specific yet open-ended questions were developed. Semi-structured interviews with primary informants were conducted simultaneously with transcribing, sorting, and synthesizing data through coding. Study of early data illuminated areas to explore through subsequent data collection and analysis. This resulted in an iterative process of: question selection, purposive sampling, data coding, tentative theory generation, question refinement, theoretical sampling, code and theory refinement, and synthesis of conclusions.

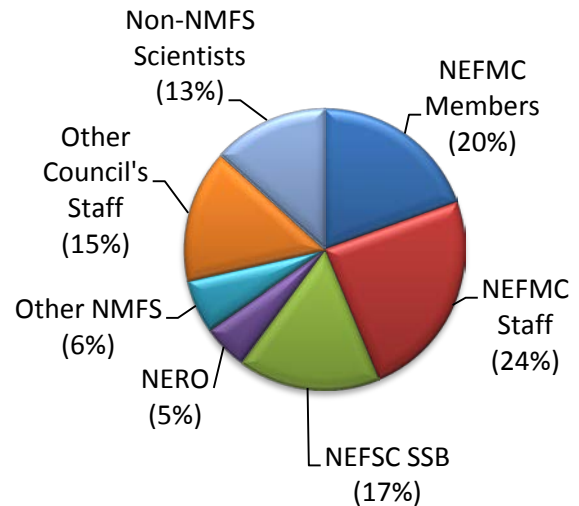


Data sources. In total, 45 people (i.e. primary informants) participated in interviews that were 13-75 minutes in length (34 min. average, 26 hrs. total, 170,000 words total) between March and July 2012. In the interviews, questions were administered in a semi-structured, conversational format, such that the specific wording varied between interviews, and the selection of questions varied depending on the specific role the informant plays in fisheries science and/or management. A list of the most frequently asked questions is provided in Appendix IV. Interviews were conducted in person for NEFMC staff and by phone for all others. Audio recordings were made when permission was granted (all but one case) and then transcribed to ensure accurate note taking.

Primary Informant Type



Interview Word Count



Primary Informant Region
Northeast (36, 80%)
Mid-Atlantic (2, 5%)
New England (23, 51%)
Regional (11, 24%)
Southeast (4, 9%)
Caribbean (2, 5%)
Gulf of Mexico (1, 2%)
South Atlantic (1, 2%)
Pacific (4, 9%)
Contiguous (1, 2%)
North Pacific (2, 5%)
Pacific Islands (1, 2%)
National (1, 2%)

The primary informants were diverse stakeholders involved in either the creation or use of fisheries social information. Of these, 76% (n=34) live or work in New England. Informants include four social scientists from the NEFMC Science and Statistical Committee (current or former). To contextualize the New England case, one or two people (n=11) were interviewed from each of the other US Fishery Council regions.

Most of the informants were selected purposively, but some were selected through a “snowball” approach, at the recommendation of initial contacts. Within each category of informant, sampling proceeded until either 100% of the population category was interviewed (e.g. NEFMC fishery analysts) or until theoretical saturation was reached (e.g. NEFMC members), when new data revealed little new insight (Corbin and Strauss 2008). As questions arose through data

analysis, informants were resampled via e-mail, and their responses were coded for inclusion in analysis. In total, over 40 follow-up email exchanges with 18 primary informants were coded.

Other data sources were used to supplement the primary interviews, many of which were referred to by informants during the interviews: notes from two conference calls and the Fisheries Leadership and Sustainability Forum, “Socioeconomic Considerations and Human Dimensions of Fishery Management” (FLSF 2012); minutes of the NEFMC (2007-2012) and the Northeast Regional Coordinating Council (NRCC; 2012); and NOAA policy and fishery plan documents (1985-present). Secondary informants (n=10) were asked individual questions by email or in person; these included staff from NERO, NEFMC, and SERO, as well as an independent scientist.

Data analysis. QSR NVivo 9 software (Bazeley 2007) was used to sort and synthesize data, a tool increasingly used in the qualitative social sciences (Hutchison, Johnston and Breckon 2010). In order to manage the iterative process of grounded theory, a research diary memo was utilized to record reflections on the data and project decisions. Interview transcripts, email correspondence, and relevant literature (e.g. public meeting minutes, publications) were imported for organization, coding and analysis. Concepts were identified through initial coding of text, or attaching meaning labels to data segments through the creation of nodes. Memos were written for each node and linked to the research diary to describe defining ideas emerging from the data and record hunches to investigate further.

Coding and analysis of the first interviews facilitated the iterative process, because sampling could be targeted at finding answers to questions as they arose. As the number of nodes

increased, they were sorted into hierarchical branches according to common properties or relationships. Text was studied throughout analysis to be sure that coding was complete.

The coding of data sources resulted in the creation of 162 theme nodes, organized into ten parent nodes with up to five levels of child nodes. The overarching research questions formed four *a priori* parent nodes: “participation,” “process,” “content,” and “communication,” but as coding progressed, *in vivo* nodes were derived directly from the data. Nodes were both descriptive (e.g. Herring Amendment 5) and thematic (e.g. data gaps). Nodes were reviewed and refined to more accurately characterize the data.

Data analysis followed standard qualitative practices (Bazeley 2007; Miles and Huberman 1994). Theoretical development was advanced by asking questions of the data, revisiting the interview questions and using the coding query function. Informants were categorized by type, so that queries could be made to see how a concept looked for different groups of informants, within the Northeast and nationally. Node memos were used to record insights. The number of respondents mentioning a particular viewpoint on an issue was noted in the memos, which helped make judgments about the general drift of the data.

Chains of evidence were built where several informants with different roles emphasized an issue, logical relationships could be plotted, and claims could be verified and refined. Thus, analyses proceeded through a series of inductive steps: a.) establishing individual findings, b.)

identifying patterns by relating findings to each other, and c.) drawing conclusions. In data collection, findings were checked during new informant interviews or follow-up email correspondence. Feedback from informants was used to confirm the validity of results as they emerged throughout analysis.

Coding Data Sources		
Parent Node	Child Node #	Word Coding Frequency
Participation	49	25%
Content	10	17%
NEFMC FMPs	34	13%
Process	26	13%
Ideas for improvement	0	9%
Products besides SIAs	28	10%
Communication	5	7%
Example sociocultural impacts	0	3%
Good quotes	0	2%
Research ideas	0	0.5%

APPENDIX IV. MOST FREQUENT SAMPLING QUESTIONS

Note: The selection and wording of questions were specific to each interview.

Participation:

1. For the FMPs you work on, describe who is involved in the SIA and their role.
2. Who should be involved in the SIA process (data collection, analysis, communication) that is not already?
3. What is the role of social science on the SSC?
4. Should there be greater room on the SSC agenda for social issues?
5. Describe the function of the now defunct Social Science Advisory Committee. Should this committee be revitalized?

Process:

1. At what stage in the FMP development process do social impacts get considered (before, concurrent with or after the economic and ecological analyses)?
2. Do council members use the SIAs in documents to inform decisions? How else do they learn about potential social impacts?
3. Does the scoping process reveal social structures and issues that could feed into an SIA?
4. Could the connection between scoping and FMP development be improved?
5. Describe a case where social consideration in management was not effective. What hindered the collection, analysis, or use of data?
6. Describe a case where social consideration in management was effective. What were the elements that were keys to success?

Content:

1. How accessible and adequate are baseline data about fishing communities? Do you know where to find the data? Are the current baselines sufficient? How frequently should baseline information be updated?
2. To what level of detail is there information available about social variables to construct social factor analyses and SIAs? Is that scale appropriate?
3. How has social data been analyzed for the SIAs?
4. What timeframes for impact projections are possible?
5. What are the data gaps?
6. What consistencies or variations exist for SIAs across FMPs? Should the FMP SIAs be more consistent? If so, how do you suggest accomplishing this?

Communication:

1. Describe what you hear members of the PDTs, council, and public say about SIAs. Do they feel that the SIAs are sufficient? Should other information be included?
2. Can information to construct SIAs be organized and presented in a more useful manner?
3. Is there a better way to communicate information about fishing communities and other social information on the websites of the NEFMC or SSB?

APPENDIX V. ORGANIZATION OF EIS SECTIONS OF FMP DOCUMENTS

FMP	Action	Date	Section Title	Structure⁶
Groundfish	FW47	3/12	<i>"Environmental Consequences – Analysis of Impacts"</i>	Impact type/ Alternative
	A16	10/09	<i>"Environmental Impacts of the Management Alternatives"</i>	Impact type/ Alternative
Herring	A5	3/12	<i>"Environmental Consequences of Management Alternatives Under Consideration"</i>	Alternative/ VEC
	A4	4/10	<i>"Environmental Impacts of the Management Alternatives"</i>	Impact type/ Alternative
	A1	5/06	<i>"Environmental Impacts"</i>	VEC/ Alternative
Monkfish	FW7	5/11	<i>"Environmental Consequences of the Alternatives"</i>	Impact type/ Alternative
	A5	1/11	<i>"Environmental Consequences of the Alternatives"</i>	Impact type/ Alternative
Red Crab	A3	5/11	<i>"Environmental Consequences and Assessment of Impacts"</i>	Impact type/ Alternative
	FW1	4/05	<i>"Environmental Consequences and Assessment of Impacts"</i>	Impact type/ Alternative
Scallop	FW23	11/11	<i>"Environmental Consequences of Alternatives"</i>	Impact type/ Alternative
	A15	12/10	<i>"Environmental Impacts"</i>	Impact type/ Alternative
Skates	FW1	3/11	<i>"Environmental Impacts"</i>	Impact type/ Alternative
	A3	11/09	<i>"Environmental Consequences – Analysis of Impacts"</i>	Impact type/ Alternative
Whiting	A19	5/12	<i>"Environmental Consequences"</i>	VEC/ Alternative
	A12	3/00	<i>"Environmental Impacts"</i>	Impact type/ Alternative
SBRM	-	6/07	<i>"Consequences of the Alternatives Under Consideration"</i>	Alternative/ Impact type

⁶ Color denotes similar document organization.

PARTING COMMENTS

"I'm sure there's lots of data that we don't have given the difficulty people have in actually talking about social impacts." - NEFMC staff

"Fishermen don't open up at Council meetings...especially if there are mics involved... They don't like to share their opinions in front of a crowd, but you get them on-on-one on the dock, and you get a whole different story. I think more of that needs to be done if they want the true picture." - NEFMC member

"Is there anything that is not a data gap?" - NEFMC staff

"I get a sense, from a number of fishermen at this point that going to public hearings is an exercise in frustration. They just don't feel they can comment, because they don't understand how all this stuff fits together. So they just sit there and listen to the description of the alternatives, trying to understand that alone and then after an hour of listening to the description of all these hundreds of alternatives, their heads are swimming. Then they say "What do you think?" and everyone just sits there like a stone. Or they get the other extreme ... these well-organized campaigns ... that have hundreds of people trooped to the microphone and give a statement about which they personally know nothing. It's been written by a lobbyist and they've been told to put it into their own words, but you can tell by the statements they're all saying exactly the same thing. There's no independent thought there." - NEFMC member

"We have a handful of the usual suspect lobbyists that are there every time, but the rest of the industry isn't heard from. We bend over backwards trying to front-load the industry input into the management actions, but they take so blasted long to put together that it's a whole different animal from the time someone comments on them to the time for making our final vote, so that the industry is really disenfranchised." - NEFMC member

"There are [Council] members ... that don't want to have some of these issues examined. They don't want to confront the results of some of the work we've done. Because they have an agenda of moving that work forward, and these are inconvenient truths that might come out." - NEFMC member

"The Northeast Fisheries Science Center has a big group down there who have put out questionnaires, and are very much involved now in these sorts of analyses, but it's still not certain to what extent they will be useful, since they haven't been used in the past by the Council or by NOAA Fisheries as far as I can see, therefore, what are the odds that it will be used in the future?" - NEFMC member

"Right now, as you are well aware, we're just chasing our tail, following one bad piece of news after another." - NEFMC member

"In fishery management, we've been like a mouse in a maze. There's a piece of cheese out there, but we don't know how to get to it, and that's been a third of a century, of running down alley ways until you get to a dead end, and coming back part way and going down a different alley way, slowly moving your way into a feel for how we manage fish." - NEFMC member

"It's my more than full-time job right now to work on recovering the resource, and all else rests upon that. I've got over my desk here, just so you understand my dedication to this, a quote from Teddy Roosevelt, 1907, more than a century ago. "The conservation of natural resources is the fundamental problem. Unless we solve that problem it will avail us little to solve all others." - NEFMC member