Implementing Social Science Methods for Fisheries Decision-Making: CINAR Workshop Summary Report

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Executive Summary

Adoption of social science[1] data and methods in fisheries management is increasingly critical in light of renewed focus on clarifying fishery management goals and risk tolerance; increased calls at the local, regional and national level to enhance consideration of equity and environmental justice in fisheries management; potential revisions of the Magnuson–Stevens Fishery Conservation and Management Act's National Standards 4, 8, and 9; ongoing climate and industry shifts; and other developments. The CINAR-funded workshop, "Implementing Social Science Methods for Fisheries Decision-Making," was held May 16-17, 2024 in Woods Hole, MA to explore barriers to the use of social science in fisheries management decision processes and consider approaches to overcome these barriers. Building on previous efforts, this workshop focused on identifying: (1) specific barriers; (2) particular nuances of the New England region; and (3) concrete steps to operationalize solutions. Workshop participants discussed challenges related to data infrastructures, data formats, understanding, communication, multi-objective management, and process/institutions. This report summarizes these discussions and three non-mutually exclusive approaches for addressing barriers: (1) enhance the use of social science in existing tasks, processes, and working groups within and beyond SSC; (2) establish a SSC subgroup dedicated to developing social science advice for management; and (3) build a more connected social science ecosystem. These approaches merit further exploration and, together, would go a long way toward advancing the role of social science in fisheries decision-making in New England.

Workshop Context and Overview

While the social sciences (see footnote 1) can clearly contribute to enhancing fisheries decision-making, pathways for implementing such approaches within the current science and management regime remain limited and only marginally effective. In the Northeast, social scientists have engaged with the broader fisheries science and management community across a range of fora and special meetings, offering compelling and well-received recommendations for improving the informational and analytical bases for fisheries decision-making. Yet, despite a strong consensus that greater social science input could help fulfill regional and national management goals, data collection, analysis, and decision-making continue to be driven primarily by the biological sciences.

The New England Fishery Management Council (NEFMC), through its processes, staff projects, and Scientific and Statistical Committee (SSC) advice, has held formal and informal discussions about the use of social science over the past several years. For example, a 2012 staff assessment considered the use and evolution of social impact assessments and found that, while steps were being taken to improve efforts, further dialog and process improvements could benefit the work (Feeney, 2013). In 2014, SSC social scientists made recommendations to the Council regarding their potential role, including defining "social science information that can inform development of ABC advice, and a process for producing and communicating that information," as well as creating a "roster of social science experts for short-term appointment to the SSC for specific needs" (NEFMC-SSC, 2014). A 2018 NEFMC program review also recommended that the Council focus greater attention on meeting National Standard 8 (Communities) and other mandates to consider social information as part of management decisions (Hull et al., 2018). A

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[1] "Social science" is an umbrella term used here to include the fields such as anthropology, demography, economics, geography, law, political science, psychology, sociology, and where these fields intersect.

2020 follow-up report on Consideration of Social Information in New England Fisheries Management found that, while progress had been made since 2012, areas for improvement remained, in part due to acknowledgment by Council members that the social sciences are the area in which they often have the least technical expertise (although they are able to draw on extensive practical experience in many cases). Recommendations included having "more socio-economic discussion at the table," increasing Council's "general social science awareness," and enhancing communication and stakeholder buy-in (Williams et al., 2020).

While the Council and staff continue efforts to ensure access to social science data and information for decision-making by working closely with Plan Development Team (PDT) staff and others from the NOAA Northeast Fisheries Science Center (NEFSC) and the Greater Atlantic Regional Fisheries Office (GARFO), challenges remain. The Council continues incorporating social science both through the data and information provided to advisors and managers through the PDTs for specific management decisions, as well as through processes like providing advice on the NEFSC's *State of the Ecosystem Reports*, research recommendations, Council goal-setting, and social science-focused sub-panels (e.g., 2021 SSC Subpanel Review of Groundfish and Scallop Specifications).

At the same time, efforts to collect, synthesize, and report fisheries social science data and findings have intensified in recent years, expanding opportunities for the application of social science to decision-making. For example, tools and resources ranging from dealer data, fishing footprint maps, oral histories, fishing community profiles, vessel trip report data (and associated analyses such as Communities at Sea), social indicators , and more are now available (see Appendix C for summary index). Most, however, have not been used in decision-making, or only used minimally at the end of a process (e.g., in the "Affected Environment" section of a Council action document). The national socio-economic Aspects in Stock Assessments Workshop (SEASAW) Report (Chan et al., 2022) notes that the Northeast does not have less data than other regions (and may in fact have a longer history of collecting social science data than other regions), yet this region lags others in using social science in stock assessments (in part due to more robust biological data than other regions).

In addition to the growing range of data and tools and the ongoing discussions on the use of social science in our region, broader shifts underway in the fisheries management landscape suggest opportunities to rethink institutional processes and policy frameworks. These include but are not limited to: 1) efforts to revise and update the NEFMC Risk Policy to more intentionally consider Council goals and risk tolerance for biologic and social/economic factors; 2) considerations of equity and environmental justice in fisheries management processes and decision-making at the local, regional, and national levels, including both Council-driven and federal efforts; 3) potential revisions to NOAA Fisheries guidance on implementation of National Standards 4 (Allocations), 8 (Communities), and 9 (Bycatch) under the Magnuson-Stevens Act; 4) NOAA Fisheries' Stock Assessment Improvement Plan (SAIP) (Lynch et al., 2018) and Ecosystem and socio-economic Profiles (ESP) efforts to consider how and when social science included in stock assessment and other processes (Shotwell et al., 2023); 5) increased focus on preparing for/adapting to climate change (e.g., East Coast Climate Scenario Planning project, NOAA Fisheries' Changing Ecosystems and Fisheries Initiative, or CEFI); and 6) additional local, regional, and national trends that affect human dimensions of fisheries, such as expansion of the aquaculture and offshore wind industries and "graying of the fleet" (Szymkowiak & Rhodes-Reese, 2022).

The coupling of increased calls for use of social science data with their increased availability indicate that a focus on the potential barriers to the use of social science information might yield fruitful discussions

and recommendations for next steps. As such, we convened a workshop, "Implementing Social Science Methods for Fisheries Decision-Making," in May 2024 to further explore this concept (see Appendix A for workshop agenda and participants). While this workshop was not formally organized by fisheries science or management bodies, the organizers currently serve in advisory roles on the NEFMC-SSC. Workshop participants included social science experts from the NOAA Northeast Fisheries Science Center, NEFMC staff, faculty with academic appointments focused on fisheries social science, and others with state and federal fisheries management advisory roles. The workshop, which was supported by the Cooperative Institute of the North Atlantic Region (CINAR), focused on the following:

Workshop Goals

1. **Develop shared understanding of existing tools and data sets.**
2. **Explore the range of barriers to use of social science in decision processes.**
3. **Identify characteristics of barriers and approaches to address them.**
   a. Identify where (at what stage) each barrier exists within the science-to-decision-making process, and the nature of the barrier.
   b. Brainstorm approaches to address barriers and enhance consideration of social science information in decision-making.
4. **Develop initial recommendations for follow-up.**
5. **Strengthen connections and dialog for future opportunities.**

This report summarizes challenges and barriers as presented and discussed in breakout groups at the workshop, followed by the options to address barriers that participants brainstormed. It is meant to document ideas and further catalyze discussions and opportunities for future action.

Understanding Barriers

Day 1 of the workshop ("Challenges and Barriers"; see Appendix A) framed the workshop's focus on barriers by briefly reviewing selected recent initiatives that call for greater integration of social science information and expertise in fisheries decision-making. These past and ongoing initiatives (see description above and Appendix B) offer recommendations that broadly include:

- *Collaboration and Process Improvement* across committees and institutions to clarify roles and define social science needs, resources, and available expertise, and to foster collaboration between stock assessment scientists, social scientists, and managers.
- *Integration of Social Science Information* earlier and iteratively in the deliberative process through the incorporation of social context and impact presentations, and the consideration of the interaction of biological and social uncertainty (note that "social" refers to the broad suite of disciplines and data noted in footnote 1).
- *Data Enhancement* to better integrate socio-economic data and methods, and to contribute relevant fishing practices data to assessment models.
- *Projection and Management* of where socio-economic data can contribute to stock projections and the development/review of harvest control rules.

While workshop participants were largely familiar with these recommendations, they were also aware that such recommendations are rarely implemented despite general consensus that more thoughtful and consistent integration of socio-economic information into decision-making would improve ecological and community outcomes.

To begin understanding why this is the case, the workshop foregrounded the experience of workshop participants as actors in the New England fisheries science/management system. The goal was to identify where and how particular practices, processes, scientific parameters, and other approaches come to act as barriers to the effective integration of social science data and analyses in fisheries decision-making. The workshop invited participants to think of possible barriers in terms of data formats, units of analysis, questions of scale (temporal and spatial), knowledge production practices and processes, and the development and use of specific knowledge objects, boundaries, and bridges. A tentative "typology of barriers" was presented and used to structure the remainder of the workshop.

A Tentative Typology of Barriers

Type	Examples
Redirecting capacity / prioritization / tradeoffs	Given constraints on researcher and staff capacity, redirecting capacity to where it might be more impactful (e.g., from "back end" social impact analyses and report writing to "front end" social context setting)
Data infrastructures (content, design, systems of use)	Inconsistent periodicity of data collection / baselines The Paperwork Reduction Act presents multiple barriers to the representativeness and timeliness of socio-economic data collection.
Data mismatch in scale / resolution / format / units of analysis / etc. (i.e., "square peg, round hole")	How to integrate data on targeting behavior in a multispecies fishery into a single-species stock assessment? Socio-economic data are often at fishery or community level, not species/stock level or specific to options presented.
Communication	Risk of siloed conversations based on disciplinary expertise and/or familiarity with certain fisheries Awareness /understanding of tools/needs
Process and institutions	Path dependency (i.e., "this is how work has always been done") and inertia of keeping the status quo, often resulting in leaving out social science. Timing of data needs and advice windows are "off" relative to the timing of decision- making.
Multi-objective management	Unclear how to balance different decision outcomes, like distribution vs. maximization of value, or conservation vs. value from harvesting (i.e., how to weight criteria)

Barrier: Redirecting capacity / prioritization / tradeoff

While researchers and staff can clearly do more with more inputs, the goal of the workshop was to be attentive to how capacities are used and barriers to (re)directing or (re)distributing capacity toward more impactful social science inputs into decision-making. While we are sensitive and sympathetic to the

reality that the NEFSC-Social Sciences Branch (SSB) and NEFMC staff are continually being asked for more data and analyses without additional resources, we also acknowledge that focusing on scarcity alone postpones the greater integration and use of socio-economic knowledge. Thus, we asked workshop participants to think past their immediate concerns about a lack of capacity to consider where and how *existing* socio-economic data and analyses are marginalized in decision-making. Furthermore, experience to date suggests that even those social science initiatives with substantial resources and support (e.g., Crew Survey) may not be effectively utilized. Indeed, enhanced capacities *per se* will not address the problem of institutionalized barriers to the effective use of socio-economic information.

Participants shared their experiences concerning capacity and how existing capacity is used. Both NEFMC staff and NEFSC-SSB scientists noted that much of their work is focused on data compilation and analyses that inform the production of (mandatory) impact assessments at the "back end" of the process (e.g., final recommendations of the Council) rather than entering into the deliberations at each stage. While insightful and relevant, much of the information presented in impact analyses is unavailable or marginalized at other, earlier ("front end") and often key moments in the decision-making process (e.g., SSC deliberations).

The focus of existing capacities, and the inability to redirect such capacities, results in an additive approach to social science knowledge production and its placement in/confinement to impact assessments, where its influence upon decision-making is highly constrained. That is, each request (e.g., by SSC social scientists) for more social science information to inform a deliberation (e.g., acceptable biological catch, or ABC, advice-setting) is additive and channeled into the impact assessment/report as the most relevant place for such information. Social science data that could effectively inform, even biological decision-making (e.g., community-level contexts and trajectories; employment and labor issues; socio-ecological histories; or cultural meanings and social importance), to the degree they are raised, are often relegated to the question of a final ruling's impact rather than as information to be considered along with biological information to develop effective rules and regulations that resonate with fishing communities.

Finally, some workshop participants noted that developing a boilerplate approach to impact assessments leaves little room for innovation and evolution in socio-economic analyses. More nuanced and dynamic approaches could provide richer understanding of socio-economic conditions over time (e.g., history and trajectory of fishing economies) and space (e.g., history and trajectory of fishing communities).

Barrier: Data infrastructures (content, design, systems of use)

While past workshops and other reflections on the use of social science data and analyses in fisheries management often cite "data gaps" as a core problem, this workshop sought to steer participants toward the processes, practices, and systems of data production and use, and how data gaps are produced and perpetuated by such "data infrastructures." That is, data gaps are often an outcome of existing infrastructures within the current regime of fisheries science and management rather than a simple lack that can be addressed by increasing capacities alone. For example, many workshop participants identified the Paperwork Reduction Act (PRA), a federal law intended to reduce the paperwork burden imposed by federal agencies on private citizens and businesses, as a barrier to gathering primary data. Complying with the PRA requires extensive documentation, approvals, and long wait times (of a year or more) that make collecting timely and repeatable primary data challenging. As a result, socio-economic

information derived from stakeholder interviews or surveys is unlikely to be available in time to inform the decisions for which it is relevant.

Participants also noted the problems associated with the lack of a baseline inherent to many social science data products. That is, without a past and consistent commitment to particular social science data products (e.g., the Crew Survey), analyses of change over time and deviation from (and return to) some baseline of social or economic well-being is impossible. When data collection and development is sporadic (and no baseline can be established), data products are less usable, leading to a lack of application and a lack of requests, which can further data gaps. Furthermore, there is less confidence in data that are collected irregularly or which might not be up to date even though there may be relatively high levels of certainty and usability from the perspective of the social scientist. Finally, workshop participants noted that while uncertainties are expected in stock assessment and other biological data, uncertainty in social science data and analyses is often treated with mistrust or perceptions of low quality or confidence due to differing conceptual approaches to addressing uncertainty in the different disciplines.

Several participants outside of NOAA Fisheries noted the challenges of gaining access to the extensive databases developed and maintained by NOAA Fisheries. Access agreements can limit the type and format of data made available, which can lead to challenges in conducting finer-scale analyses, such as calculation of intra-seasonal variability in harvest or distribution of fishing revenues among sub-portions of the fleet. Furthermore, the databases that exist are complex and have a significant learning curve associated with their use, making these tasks daunting even to the social scientists who can have direct access (i.e., NOAA Fisheries and Council staff) but who may not be immersed in the nuances of the data opportunities and limitations and/or may not be trained in the programming and quantitative approaches needed to effectively work with such data.

Barrier: Data mismatch in scale / resolution / format / units of analysis / repeatability

A related challenge is the frequent mismatch between the scale, resolution, format, timing, and units of analysis used by social scientists (consistent with their training and epistemological predispositions) and those of the management system. For example, qualitative interviews with fishermen designed to develop theories about why overfishing is occurring would be challenging to combine with region-wide quantitative understandings of fish stock decline. Furthermore, when such socio-economic information is requested, it is often needed within a relatively short time period (the time period of management council actions and decision-making), while interview-based qualitative survey takes much longer, particularly if it is necessary to first secure external or additional funding. Again, the PRA was named as a significant barrier to gathering such primary social science data. The PRA requirements for gathering data through surveys or interviews with fishermen mean the process for approval can be lengthy, limiting the potential for repeatability on a regular basis.

A mismatch of spatial scale is a challenge that has long been cited by both fishing community members and social scientists attuned to local experiences and local knowledge of place-based social and environmental processes. Fisheries science and management is, however, performed at the level of the Fisheries Management Plan (FMP) and individual fish stock units that don't often translate to social scales. Also, the problem of the mismatch in scale between social scientists' place-based knowledge and the knowledge developed for regional stock management is often compounded by the fact that fishing communities typically engage in multiple FMPs and target several stocks.

Further, there are potential mismatches related to the design and format of data collections, as information produced by social scientists is not always designed to provide statistical or model-based answers to specific management questions or concerns. That is, social science data is often qualitative and more narrative-based, which can be viewed as more challenging to incorporate than quantitative data, and its goals, via for example place-based engagement and interviews, may be more focused on theory-building and context specific understanding than the generalization of a particular phenomenon or model building.

Barrier: Understanding and communication

Workshop participants identified barriers to the collection, compilation, and use of social science information that emerged from challenges in communication and/or misunderstandings among parties. This included communication between social scientists and fisheries managers, social scientists and non-social scientists, and social scientists and fishermen, as well as between fishermen and managers.

Mistrust between fishermen and fisheries managers, which often includes fisheries scientists, can hinder social science data collection efforts (Williams et al., 2020). For example, when fishermen are skeptical of the motivations of social scientists, particularly those associated with management, they are reluctant to provide personal information or respond to surveys, skewing responses and the demographics of respondents. This barrier can lead to concerns about the validity of primary social science data collected from fishermen on the part of fishermen, managers, and non-social scientists.

A lack of awareness and understanding of the information and approaches used by social scientists results in fisheries managers having limited knowledge concerning social science datasets and products. While many such products exist (see data inventory, Appendix C), managers may not be familiar with how to use or access them because of a lack of communication. Moreover, social scientists have historically not played as central a role in advice-setting as their biological sciences counterparts; thus, social science data products are not always developed with management needs in mind and therefore may not adequately address management needs or prioritize the questions managers want to answer. This is exacerbated by challenges in identifying what information is needed for which decisions and how data availability (or lack thereof) influences these decision processes.

Given capacity constraints, it may be just as important to communicate what data products are not as effective at contributing to management decisions as it is to identify those which are, to prioritize data collection and analysis. It was also noted that PDTs and their processes tend to be siloed, so opportunities to coordinate and identify synergies across PDTs regarding social science work being done are being missed.

Barrier: Process/institutions

Several challenges related to the way that social science is incorporated in management were identified as being relatively unique to the process and institutions that exist within New England. It was noted that there are high levels of path dependency and inertia, where the way things have been done in the past tend to persist in the present, in how social science is considered in the management process, which have resulted from decades of centering particular types of knowledge (not just topic but also format and scale) within the SSC and the Council. Some Council members, for example, have in the past suggested that social science inquiry was unnecessary because their individual engagement with fishery

stakeholders already gave them sufficient understanding of the human dimensions involved, and that the science upon which decisions are based should be primarily biological.

Other institutional challenges to the production and use of social science information include the mandate of the SSB to serve both the New England and the Mid-Atlantic Management Councils, which limits the SSB's capacity to develop data products tailored to each region. Furthermore, the roles and responsibilities of NOAA staff relative to Council staff are often not clearly defined, thereby contributing to the incomplete and inconsistent social science analysis in the management process. Furthermore, workshop participants noted perceived challenges in performance incentive structures. Evolving approaches that more clearly define performance incentives are a positive evolution to address this mismatch.

Workshop participants highlighted differences between how social science data products are developed and how stock assessments are done. Whereas the Northeast Region Coordinating Council (NRCC) has built-in peer reviews of stock assessments (including SSC members as reviewers), a parallel peer review process does not exist for social science data products, except when they are submitted to a peer-reviewed journal. Many workshop participants emphasized that the SSC is set up to review stock assessments, but that this is not the case for social science outputs, which the SSC is infrequently asked to review.

A related challenge concerns the valuation of management-relevant data and analyses within the academy. Academic social scientists must be attentive to their institutions' promotion and tenure structures, under which applied research is often undervalued relative to theory-driven and/or methodologically novel research published in prestigious journals. This is also true for their collaborators at NEFSC-SSB, where applied research is focused on management-relevant information and data products, but journal publications are also rewarded. There have not always been consistent incentives in either setting to develop management tools that will require future time and effort to maintain and keep continually updated, but this situation is evolving.

Finally, pipelines are rare for social scientists to be prepared for fisheries management oriented work (with some notable exceptions in the interdisciplinary social sciences). Social scientists in academia conducting management-relevant research tend to be spread out, limiting the opportunities of training hubs, and there are few clear paths and funding opportunities for their students to become social scientists within existing management institutions. The wide diversity of disciplines and subdisciplines within the social sciences can also make it challenging to identify or train the needed expertise in any given area. Furthermore, academics may not always be aware of the most pressing social science needs for management, as they are less clear cut than the needs for stock assessment science, all of which can hinder meaningful contributions to fisheries management.

Barrier: Multi-objective management

One of the most challenging barriers for integrating social science comes from the intrinsic difficulties in achieving multi-objective fisheries management without clear processes to balance and trade off between these objectives. Workshop participants noted that social science expertise is called upon when there is no clear biologically determined answer to a problem; for example, when there is no established guidance on developing an ABC at the SSC for a stock whose assessment is highly uncertain or whose status is unknown, or when the needs of multiple stakeholder groups need to be considered and

balanced. In these scenarios, socio-economic information appears vital to the decision-making process. Yet, such information is often unavailable. In this case, the problems of ABC setting and, often, determining catch access and distribution are made *more* difficult by the lack of socio-economic information available for consideration.

It is often unclear how to trade off different goals and outcomes of fisheries management when setting catch advice. For example, ABC recommendations for stocks in poor health often come down to biological versus socio-economic risks, each with different magnitudes and probabilities. The updated Risk Policy can provide some guidance but will not fully eliminate this challenge; even within socio-economic objectives, there is an ongoing struggle to define which measures managers care about and how they should be prioritized relative to one another. Management decisions often produce economic "winners and losers," making human dimensions outcomes more ambiguous. Thus, the language of "economic harm" is commonly used without sensitivity to scale or scope in discussion of ABC options. Further, as described earlier, workshop participants noted their impression that fisheries managers accept and expect uncertainty on the biological side but are less comfortable with it in social science focused analyses.

Options for Addressing Barriers

Day 2 of the workshop ("Actions and Pathways," see Appendix A) was focused on brainstorming solutions to the barriers identified on Day 1, using the same breakout group discussion format. The stated goal of this session was to "specify a range of proposed actions, modifications, or methods designed to specifically address barriers and enhance consideration of social science information in decision-making." Participants were instructed to: (1) identify concrete steps to operationalize solutions; (2) be mindful of constraints and competing needs; (3) not discard ideas simply because they seem infeasible at present; and (4) consider their role in and shared responsibility for success. For each proposed solution, they were also prompted to consider where possible what enabling conditions would be required to implement it, the timescale at which it could be operationalized, and whether it would align with other existing efforts/initiatives already underway (e.g., CEFI).

While the workshop yielded a diverse array of ideas for improving the use of social science in fisheries management, there were repeated themes that emerged. In this section, we synthesize these ideas into three broad approaches, each of which has the potential to address multiple barrier types identified in the previous section. This is not meant to be an exhaustive list of the ideas proposed at the workshop; rather, we have endeavored to include examples under each approach that illustrate the breadth and depth of the discussions. The approaches below are not mutually exclusive, and any of them can be "piloted" experimentally to evaluate their efficacy and practicality prior to full/formal implementation.

Approach 1: Enhance/expand the use of social science in existing/established tasks, processes, and working groups within and beyond the SSC

Approach 1 is not designed to create new pathways for the use of social science in fisheries management; rather, it is intended to make better use of the pathways that already exist under the status quo. Possible avenues are discussed in further detail below.

Socio-economic context briefs

One popular idea to emerge from the workshop was the adoption of socio-economic context briefs. To supplement the ecosystem information provided, these quick-reference documents would provide snapshots of each fishery from a socio-economic perspective, covering information such as the number of fishery participants, proportion of fishing revenues by state/port, price and quota trends over time, cultural significance, and other relevant context from stakeholders. They might be compiled by NEFMC staff and updated on an annual basis, for example, and could help to shift the culture of fisheries management in New England to a new norm in which human dimensions are seen as critical considerations alongside biological factors. An example from the MAFMC's "Fishery Performance Reports" is provided in the Appendix D.

Priority- and standard-setting

The Council's annual process of setting work priorities is an opportunity for the SSC to elevate social science. During this process, the SSC could highlight socio-economic data needs, along with any existing data products and their appropriateness for answering relevant questions. Besides providing input on topics of importance, SSC social scientists can provide guidance on the data scales that would be most helpful for different types of policy questions and perhaps create a typology for easy communication of these preferences. For example, a social science subpanel of the NEFMC-SSC was asked to review scallop and groundfish impact analyses and offer suggestions for staff for future documents (NEFMC-SSC Social Sciences Subpanel, 2021). The goal of this type of feedback is to reduce time spent on analyses that do not significantly aid in decision-making and refocus efforts on alternative ways of presenting information.

Management Strategy Evaluation (MSE) input

A New England groundfish MSE incorporating an economic submodel is currently underway and could provide a proof-of-concept for building social science into future MSEs. For different harvest control rules, simulations of vessel-level behavioral responses are run to predict how the fleet might adapt to new circumstances by changing what and when it fishes. In contrast to the use of a single implementation error or fixed percentages representing harvest, the choice modeling approach reflects the complex, multispecies nature of the fishery and heterogeneity among its participants, in addition to the vast array of moving pieces affecting their decisions.

Risk Policy

While the Council's Risk Policy (current through 2024) focuses on the probability of overfishing, the Council is presently[2] revising the Risk Policy, including a new proposed scoring/weighting system and criteria. This is likely to leave more room for discussion and evaluation of socio-economic facets of fisheries. For example, social scientists are providing input on metrics pertaining to the economic performance of the fishery and how those translate to financial risks for participants and communities along with concepts related to community aspects of each fishery.

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[2] At the time of the workshop, this revision process was underway. The Council approved a revised Risk Policy in September 2024 to go into effect in 2025.

Research and management track assessments

Recently, increased attention has been given to expanding roles for social science in the stock assessment process. Incorporating fishermen's behavioral adaptations would improve predictions of bycatch species avoidance, impacts of offshore wind farms, and changes in targeting and timing of fishing effort. NOAA Fisheries' SAIP highlights the need for holistic stock assessments that incorporate more socio-economic data and methods (Lynch et al., 2018), and the SEASAW Report (Chan et al., 2022) details suggestions for achieving this end. NEFMC-SSC members are currently enlisted as peer reviewers for level 2 and level 3 management track assessments, and sometimes for research track assessments as well. If socio-economic models and data are to be included in stock assessments, these too should be reviewed by experts in these disciplines following a similar procedure. For several years, many of the North Pacific Fishery Management Council (NPFMC)'s "Plan Teams" have included an economist in the assessment review process to give more realistic and nuanced perspectives on fishing behavior and interpretation of data from fishery observers (Chan et al., 2022).

Approach 2: Establish a formal or informal SSC subgroup dedicated to developing social science advice for management

Social science is needed, called upon, and occasionally acted upon in SSC processes when there is uncertainty in the biological evidence, stock status, and other ecological parameters, but this is a limited scope of how it could be used to inform management decisions. Approach 2 would create a pathway by which that input can be regularly generated, vetted, and applied to issues at hand by experts in these disciplines drawn from NEFMC and NOAA staff along with SSC and other relevant expertise. Periodic (perhaps quarterly) social science subgroup meetings would create a space and time for strategic and anticipatory thinking about information needs, existing/ongoing relevant work, and future collaborations to address unmet research needs. Current NEFMC-SSC social scientists have informally met in a version of this approach over recent years and found it beneficial to have a forum in which to discuss social science dimensions of upcoming SSC agenda items. The ultimate goal of a social science subgroup would be to not only enhance preparedness in the event that social science is called upon ad hoc in SSC meetings, but also to foster a culture in which social science advice is considered a regular and essential part of the decision-making structure. While important to following all National Standards, this approach in particular would be beneficial to improve efforts to address National Standards 4, 5, 7, and 8.

Social science subgroups have already been used in fisheries management contexts across the country and can take many forms. We discuss three established examples in more detail below.

Example 1: ASMFC's Committee on Economics and Social Sciences (CESS)

The Atlantic States Marine Fisheries Commission (ASMFC)'s Committee on Economics and Social Sciences (CESS) was established in 1995 and codified in the Interstate Fisheries Management Program (ISFMP) charter. The CESS consists of state, federal, and university social scientists who provide technical guidance to the ISFMP and Atlantic Coastal Cooperative Statistics Program (ACCSP). The duties performed by the CESS include: development of socio-economic portions of FMPs; provision of socio-economic support to technical committees and PDTs; development of technical guidance/educational materials/standards on socio-economic data collection and use; and recommendations of studies or formation of work groups to fill unmet socio-economic data needs.

Workshop participants noted that such socio-economic information documents would provide valuable context for SSC and Council members and that examples produced by the CESS could serve as a model for New England.

Example 2: SAFMC- SSC's Socio-Economic Panel (SEP)

The South Atlantic Fishery Management Council (SAFMC) SSC's Socio-Economic Panel (SEP) meets in person at least once a year to develop advice for the SAFMC on socio-economic issues pertaining to South Atlantic fisheries. Brief SEP meeting summaries are then provided in SSC meetings, with agendas and other documentation made available online. Notably, membership in the SEP is not limited to active SSC members; this inclusivity allows for additional capacity and expertise on the subcommittee and for the barriers discussed above to be addressed from both within and outside the SSC. Currently, 12 SEP members are listed on the SAFMC-SSC website, of whom a quarter also serve on the region's SSC.

Example 3: WPRFMC's Social, Economic, Ecological and Management (SEEM) Uncertainty Working Groups

The Western Pacific Regional Fishery Management Council's Social, Economic, Ecological and Management (SEEM) Uncertainty Working Groups are created on an ad hoc basis to provide input on ACLs. The SEEM Working Groups contribute written reports contextualizing the social, economic, and ecological importance of the fishery, as well as the likelihood that the ACL can/will be enforced at the level at which it is set. Fishermen can be included as members, which may help facilitate use of industry-generated information and local ecological knowledge (LEK). Standardized sets of criteria and scoring systems are used to assess risks along these key dimensions.

Approach 3: Build a more connected fisheries social science "ecosystem"

The objective of Approach 3 is to improve linkages among the NEFSC-SSB, NEFMC-SSC, industry/public stakeholders, and the academic/research communities. Under the status quo, interactions among these groups occur sporadically, on a one-off or project-specific basis. This approach instead proposes continuous working relationships to address barriers related to communication and data formats.

Inspired by the interconnectivity in the population dynamics field, Approach 3 would strengthen relationships among those providing fisheries management advice, promoting long-term social science and economics research programs that are in line with management needs. Moreover, the flow of information can be improved by making explicit the interdependencies across different actors, as shown in Figure 1 below. More incentives for collaboration between academic researchers and the NEFSC-SSB, for example, can alleviate the barrier of data accessibility and help ensure that end products are not merely journal publications, but also useful tools and information on their use and maintenance. One place this could be improved and expanded is through the NMFS-Sea Grant Joint Fellowship.

Channels for communicating results to the Council and stakeholders must also be available to build shared understanding of social science methods, trust in the responsible generation and use of social science data, and public/industry buy-in. Outreach should occur regularly and proactively, not only when something is needed (e.g., survey responses), but also as inputs are analyzed and results are used in decision-making. Workshop participants noted the value of "meeting people where they are" and physically visiting ports/communities to share findings. Given the demands on everyone's time, the

responsibility of creating and sustaining a social science network should not fall on any one individual or organization, nor should this approach simply generate more emails and meetings that do not address the larger downstream inefficiencies identified in the [Understanding Barriers](#) section.
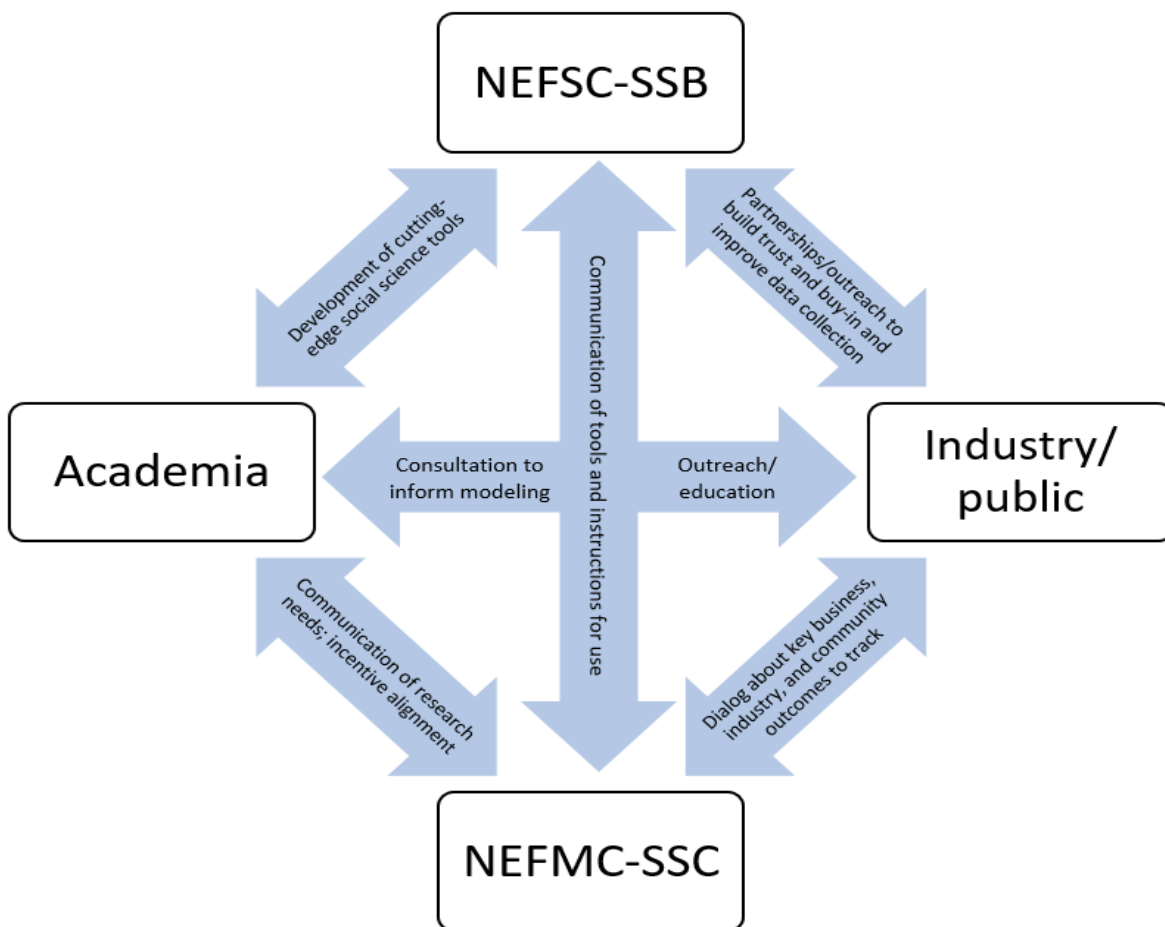

Figure 1. Vision for enhanced communication and collaboration among key stakeholders participating in socio-economic fisheries research in New England. The diagram illustrates bi-directional information flows between academia, industry/public stakeholders, the NEFSC - Social Sciences Branch (SSB), and the NEFMC - Scientific and Statistical Committee (SSC), emphasizing the proposed shift from isolated interactions to integrated, continuous working relationships.

A primary goal of Approach 3 would be to shift social science involvement from the "back end" to the "front end" of decision-making processes. Better communication and anticipation of management needs would allow social scientists in the SSC and academia to be better prepared for future meetings (PDT, SSC, and Council) and more responsive to upcoming data needs. This includes developing appropriate analyses and datasets. Several participants shared experiences in which SSC reviews of socio-economic models and analyses, often conducted by the SSB staff, occurred too late (e.g., at the end of modeling/analysis efforts), giving the impression that they were only done to "check a box." This can be avoided by early sharing of efforts that are underway and providing feedback in a more timely manner.

Earlier communication may also facilitate the funding of relevant socio-economic research projects, including student theses, dissertations, and academic papers–an important incentive for academics and the SSB. Operationalizing Approach 3 will require more than individual efforts around the margins, however, and there may need to be broader changes to workflow, development of accessible communication platforms, and expanded funding for social science research.

Another specific avenue for improving communication and connectivity would be to consolidate efforts to catalog social science tools in one place. Having a user-updated "one-stop shop" for information like the temporal and spatial scale, geographical scope, and point of contact for a data product, as well as any relevant publications or documentation could help ensure use of "the best scientific information available." It could also be a place to list ongoing projects seeking collaborative input or graduate/ postdoctoral researchers. Inspiration can be drawn, for example, from the North Pacific Fishery Management Council's searchable database of local and traditional knowledge (LKTK). Another example is the University of Colorado Boulder's Social Science Extreme Events Research (SSEER) network, which aims to "identify social science researchers and help them build connections—to one another, to interdisciplinary teams, and to communities affected by disaster and disaster risk."

Preliminary Conclusions and Next Steps

This workshop, "Implementing Social Science Methods for Fisheries Decision-Making," was convened to capitalize on past efforts and current windows of opportunity to enhance the role of social science in fisheries management. While the question of how socio-economic data products, tools, and methods can be better used cannot be solved overnight, we sought to advance the conversation through a novel focus on concrete, region-specific barriers and approaches that can be operationalized to overcome them going forward. The resulting discussions, which we have attempted to summarize above, speak to the appetite and enthusiasm for solutions and continued change in the Northeast region.

The workshop organizers presented this workshop summary report to the full SSC in its October 2024 meeting and solicited feedback from members and the Council. Taking this feedback into consideration, we will evaluate each of the options identified above according to criteria such as feasibility, cost-effectiveness, and alignment/complementarity with other new or ongoing efforts at the regional or federal level. Our analysis will draw on lessons learned from implementing these approaches in other SSCs around the country, case studies from the Northeast region, and the experience and expertise of the many contributors to this and previous related efforts. Our conclusions will be presented in a technical memorandum or academic paper for broader circulation.

Acknowledgments

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Appendices

Appendix A: Workshop abbreviated agenda

<u>*Day 1: Thursday, May 16, 2024 (full day)*</u>
- Welcome/Agenda Overview
- Introductions
- Workshop Rationale
- Overview of Inventory Project
- Challenges & Barriers to Use - Setting the Stage
- Challenges & Barriers to Use - Case Study Overviews
- Challenges & Barriers to Use - Case Study Q&A / Discussion
- Overview of discussion sessions / afternoon plan
- Challenges & Barriers to Use - Discussion Breakouts
- Report-Outs and initial discussions
- Wrap-Up / reminders for Friday

<u>*Day 2: Friday, May 17, 2024 (half-day)*</u>
- Welcome Back / Agenda Overview
- Actions & Pathways to Address Barriers - Breakouts
- Actions & Pathways to Address Barriers - Report-Outs
- Wrap-up / next steps

Challenges & Barriers to Use

Setting the Stage

Previous/Ongoing Efforts (selected)

1995 — **Committee on Economics & Social Sciences (CESS) established**
- State, federal, university social scientists provide technical guidance to Interstate Fisheries Management Program (ISFMP) and Atlantic Coastal Cooperative Statistics Program (ACCSP)

2012 — **NEFMC Council Staff review - Rachel Feeney**

2014 — **SSC members on role of social scientists**

2019 — **Social science use report for NEFMC**
- Based on member interviews (follow-up to similar work by R. Feeney in 2012/2013)
- Aims to address Council program review (Hull et al. 2018) recommendations re: NS 8, etc.

2021 — **Scallop and Groundfish review by SSC subgroup**

2022 — **SEASAW report on national workshop**

2023 — **Review by new ICES Working Group on Economics**
- Current work and future needs related to fisheries research and management advice

2024 — **Other workshops and initiatives, e.g.:**
- Fishing Community Adaptation
- Adding ecosystem and socioeconomic context to scientific advice for fisheries management
- Climate, Ecosystems, and Fisheries Initiative (CEFI)
- Scientific Coordination Subcommittee meeting in August

The Collection and Use of
Sociocultural Information
in
New England Fishery Management
Council Processes

Rachel Feeney
Social Impact Analyst
New England Fishery Management Council
September 25, 2012

The SocioEconomic Aspects
in Stock Assessments
Workshop (SEASAW) Report
Recommendations for Increasing
Assessment Accuracy and Improving
Management Advice

Summary of Previous Recommendations

1. **Collaboration and Process Improvement:**
   - SSC should collaborate with PDT and AP Chairs to define social science information and establish a communication process.
   - Avoid superficial social science tasks.
   - Encourage discretionary participation and develop a roster of social science experts for short-term appointments.

2. **Integration of Socioeconomic Information:**
   - Integrate socioeconomic information earlier and iteratively in the deliberative process.
   - Incorporate dedicated social impact presentations.
   - Consider the interaction between biological and social uncertainty.
   - Establish a centralized data source accessible to all / review confidentiality policies and implications for research.
   - Identify potential areas for future study.

3. **Data Enhancement:**
   - Augment data collection with socioeconomic factors and improve data processing by integrating socioeconomic data/methods.
   - Enhance stock assessment models with evolving fishing practices data.

4. **Projection and Management:**
   - Integrate socioeconomic data into stock assessment projections.
   - Include socioeconomic considerations in development and review of HCRs.
   - Facilitate effective communication of socioeconomic indicators to managers and stakeholders.

5. **Collaboration and Continuous Improvement:**
   - Foster collaboration between stock assessment scientists, economists, and social scientists.
   - Utilize processes like the SOE and involve NEFSC and GARFO for ongoing improvements.
   - Encourage researchers to align their work with Council research priorities.

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Activating Recommendations?

- Identifying need for *more* data, *more* engagement, more integration, *more* capacity…
- Acknowledging that *much has been* done to address this issue.
  - Our inventory.
  - Enhancing capacity (NEFSC, SSC, etc.).
  - Funded initiatives (Crew Survey, Community Profiles, Indicators Development, etc.).
  - Many workshops, reflections, comparisons to other regions, etc.
- Concerned about a *persistent limited use* and application of socio-economic data, analysis, and expertise.
- We seek to address this issue in terms of *understanding barriers*.

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Addressing Barriers

- Bringing together experiences (not just expertise).

- Focus on *specificity* in identifying *barriers* to use
  - Data formats, units of analysis, and scale (temporal and spatial).
  - Socio-technical devices and processes (e.g. mode of data delivery).
  - Integration into existing knowledge production processes.
  - Points of communication, common objects, boundaries and bridges.
  - Data and its use formats communities, economies, environments.

- Consider nuances of *New England* region.

  - Explicating cases.

- Identify *concrete* steps to *operationalize* solutions
  - Mindful of constraints and competing needs but foregrounding where and how to be effective.
  - Solutions are more likely to emerge from understanding barriers.

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NE social science community is robust but underutilized
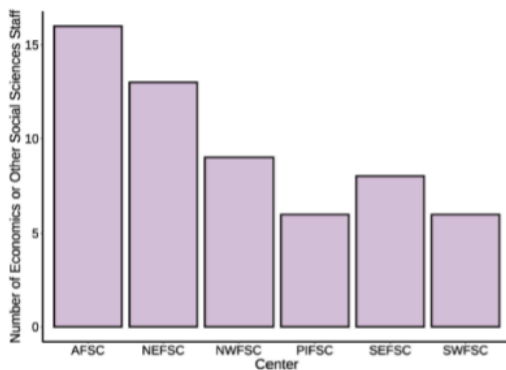
Figure A3: The number of permanent economists or other social scientists at each of the NOAA Fisheries science centers.
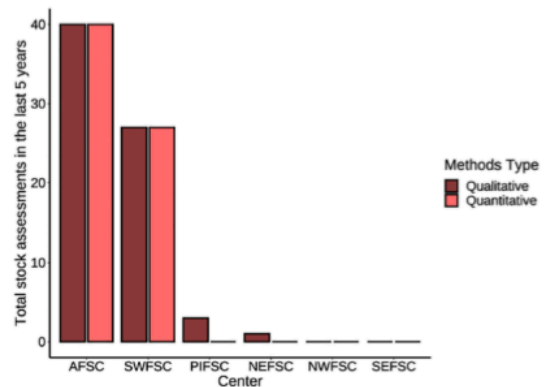
Figure A7: The total number of stock assessments (completed in the last five years) wherein socioeconomic information was considered in qualitative and/or quantitative ways.

Source: SEASAW Report (2022).

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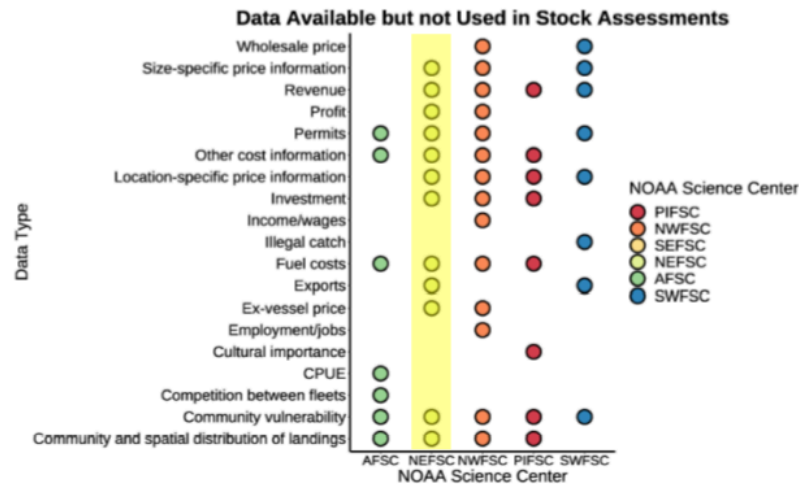# Data exist (also see inventory) but are underutilized

Figure A6: *Specific socioeconomic data types (y-axis) that are available but not currently used in any step of the stock assessment process at each NOAA Fisheries science center.*

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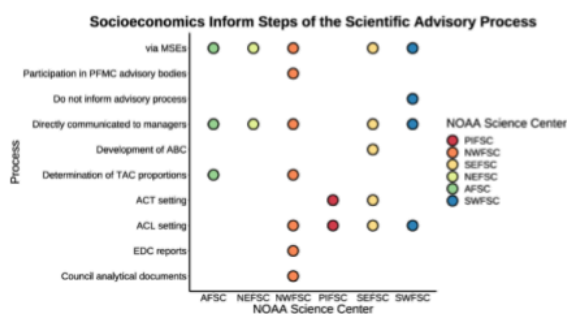---

Disconnect especially pronounced in this region

Figure A9: *Socioeconomic information enters the scientific advisory process through different steps (y-axis) depending on the NOAA Fisheries science center (x-axis and fill color).*
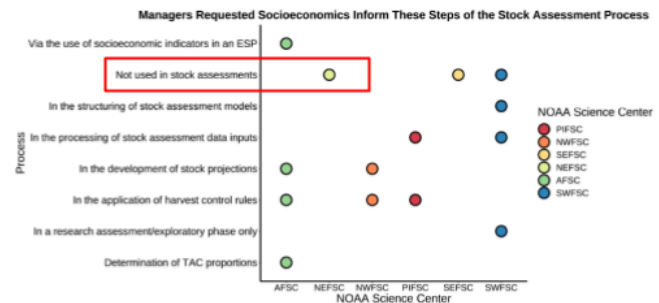
Figure A10: *Managers and stakeholders requested that socioeconomic information be incorporated in different steps of the stock assessment process (y-axis), depending on the NOAA Fisheries science center (x-axis and fill color).*

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Typology of barriers (starting point)

	#	Type	Examples
🐙	0	**Capacity / prioritization**	Insufficient time/staff; contributes to other barriers
🐟	1	**Data gaps**	Lack of availability, accessibility, representativeness, robustness (e.g., employment, future projections)
🔍	2	**Data scale / resolution / format / units of analysis / etc.** (i.e., "square peg, round hole")	How to integrate data on fisher targeting behavior from a multispecies fishery into a single-species stock assessment? Socioeconomic data often at fishery or community level, not species/stock level or specific to options presented
🐠	3	**Communication**	Awareness /understanding of tools/needs Path dependency in leaving out social science
🎣	4	**Multi-objective management**	Unclear how to balance different decision outcomes, like distribution vs. maximization of value, or conservation vs. value from harvesting (i.e., how to weight criteria)
?	5	Other?	

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Appendix C: Data inventory

The Inventory

- Social Indicators
- Crew survey
- Northeast multispecies (groundfish) performance reports
- Communities at sea
- Community profiles / Community snapshots
- Voices Oral Histories
- Fishing Business Cost Survey

- Fishing Footprint maps
- For-Hire survey
- VTR Data
- Permit Database
- Dealer Reports
- Study Fleet data
- Observer / ASM data
- Market News Data
- VMS commercial fishing density maps

Data summary

16 data sets - qualitative and quantitative
- 9 quantitative
- 1 qualitative
- 6 both

Continuous vs. one-time or sporadically
- 5 continuous data sets (VTR, Dealer, Permit, for-hire/MRIP, Observer/ASM)
- 7 active data sets updated sporadically/less than annually
- 4 no longer active

Spatial resolution
- 7 port or community level
- 8 individual vessel or fisher level
- 2 fleet level

Appendix D: Context summary examples

Mid-Atlantic Fishery Performance Reports: https://www.mafmc.org/fishery-performance-reports
Alaska: https://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisherySalmon.whatisbluesheet