

**Chair's Summary of Program Review of Economics and Human  
Dimensions Program  
Northeast Fisheries Science Center  
National Marine Fisheries Service  
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**Submitted by**

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**Background and Overview of Meeting General**

The NOAA Fisheries Service, Northeast Fisheries Science Center (NEFSC) asked the panel to review the activities of their Social Science Branch (SSB) and provide advice and recommendations on the alignment of the SSB strategic objectives and initiatives with the missions, strategic goals, and objectives of NOAA, NMFS, and the NEFSC; the direction and quality of SSB programs and research in relation to management needs; the ability of the SSB to conduct its programs and research; and the ability of the SSB to communicate about its programs and research. The panel considered informational materials provided for the review process, participated in presentations by SSB research staff and engaged in discussions with SSB research staff, stakeholders, and collaborators. This report reflects the observations, findings and recommendations of the individual panelists, with an overview by the Chair of the individual panel members' major recurrent observations and recommendations.

## **Panel Member's Major Recurrent Observations and Recommendations**

### **General Observations**

The NEFSC Economics and Human Dimension Program (SSB) scientists are doing a phenomenal job in terms of providing social science inputs for management decisions and in advancing the field of fisheries social science. The blend of educational background and professional experience of SSB scientists in the appropriate disciplines seems adequate and should be commended. The SSB seems to have a collegial environment that favors interdisciplinary research. There are indications that the demand for social science products far exceeds the resources available to the SSB. The NEFSC is challenged to balance the need to provide social scientific products to the fisheries management process while also allowing time for conducting research, publishing scholarly articles, attending professional meetings and professional development. The need for economic and human dimension inputs to the management process is likely to increase as managers strive to meet the requirements of various statutes. This argues for rethinking how to restructure the SSB workload so that work could be conducted more effectively and efficiently, allowing scientists adequate time for their professional development while meeting their management-related responsibilities.

### **Common Themes Organized by Questions Posed to the Review Panel**

#### **1.A. Does the Center have clear goals and objectives for an economic and sociocultural science program?**

There was general agreement that the SSB has clear goals and objectives, although that clarity was not uniform across the research themes. For example, the SSB was only addressed in two of the Center's goals and objectives.

#### **1.B. Do the Center's Programs provide information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils, Fisheries Management Commissions, and other stakeholders that require economic and human dimensions -related information to achieve their mission?**

Yes, subject to personnel and other resource constraints: BLAST, support for IEAs and Protected Resources were specifically noted. Addressing of priority needs also varied across the research themes. The lack of social science expertise in the Greater Atlantic Regional Fisheries Office (GARFO) was noted as a constraint in the use of SSB products.

#### **1.C. Do the Center's Programs have a strategic research agenda that anticipates evolving and long-term economic and sociocultural science needs including research to support adapting to climate change and implementation of ecosystem-based fishery management?**

There was evidence of significant strategic thinking in the SSB (Community Resilience, Ecosystem Based Fishery Management (EBFM) and Climate Change were noted in particular). It is also true, however, that there is no formal strategic planning process or document in the SSB.

## **Recommendations for Question #1**

**R.1.1.** A formal strategic planning process should be initiated within the SSB.

**R.1.2.** Consideration should be given to the SSB workload allocation structure and process. All assignments should go through the Branch Chief to ensure coordination, and expectations of each SSB member should be made clear.

**R.1.3.** Clients should help support work relevant to their needs with dollars and other assistance (i.e., staff time), including clear contracts or Memoranda of Understanding. The work in the individual themes (Seafood Networks, Protected Resources) should be more closely connected to local/regional needs.

**R.1.4.** Consideration should be given to the use of BA, BS, MA or MS-trained social science ‘technicians’ for such tasks as writing Social Impact Assessments to free up scientist time for research and more sophisticated management analysis and support.

### **2.A Are the Center’s economic and sociocultural programs appropriately integrated with each other and with other science activities within the Center?**

Integration appeared to be good within the SSB and to a lesser extent between the SSB and the rest of the Center. Areas such as Sustainable Fisheries (SF) and EBFM were noted as well-integrated, with other areas such as Protected Resources (PR) and Seafood Networks (SN) less so. The physical isolation of the SSB from the rest of the Center was noted as a potential impediment to integration. Lack of a formal strategic planning process was again noted.

### **2.B. Are research efforts integrated, where relevant, with efforts at the regional offices and headquarters?**

Integration appeared to be excellent between the SSB/Center and headquarters, in large measure because of the amount of resources for the SSB that come directly from headquarters and the subsequent need to coordinate on the acquisition, distribution of and reporting for those resources. Integration between the SSB and the GARFO and NEFMC and MAFMC appeared to be less well integrated, in part because of physical distance and the above-noted lack of social science expertise in the GARFO.

## **Recommendations for Question #2**

**R.2.1.** Better engagement and more frequent contact among SSB, Center, GARFO, Council and stakeholder personnel, not only on specific management-related tasks but also in more informal settings such as informal lunches, seminars and topical work groups. Consider the use of incentives to increase coordination and contact, both ‘hard’ (time and resources) and ‘soft’ (food and drink at informal lunches, seminars) incentives.

**3.A Is the status of data collection related to commercial fisheries, recreational fisheries, fishing participants, and communities adequate to fulfill economic and sociocultural science research needs?**

There was concern over the lack of primary data, largely due to primary data collection resource constraints, and the consequent heavy use of secondary data, much of which was originally collected for purposes other than fisheries management. It was also noted that internal research funding culture sometimes values novel projects over updating data or gathering time series information, reducing the longer-term value of the resulting data sets.

**3.B. Has the Center developed strategies to obtain, manage, and make data accessible?**

The lack of a centralized, accessible data platform for social science data and information was noted. The development of the Plan for Public Access to Research Results (PARR) within NOAA was noted, along with the existence of the Center's Research Communications Division and the Stakeholder Engagement Division of the GARFO. The SSB clearly follows NOAA data protocols. The challenges of dealing with confidential human data was noted, with which the SSB appears to be dealing very well.

**3.C. Are there barriers that impede data collection and access to data held by other entities (e.g. states, commissions, other federal agencies, etc.) that could be used to support the Center research, and how can these barriers be overcome?**

Except for the above-noted resource constraints on primary data collection and normal bureaucratic inefficiencies, there did not appear to be major constraints to access to data held by other agencies.

**Recommendations for Question #3**

**R.3.1.** Formal protocols should be established that maintain platforms where data collected by others agencies reside so that SSB scientists can have adequate access to them.

**R.3.2.** External funding and partnerships and cooperation with universities and other entities should be sought to enhance primary and other data collection capabilities.

**R.3.3.** In addition to funding high-quality novel research, NOAA internal funding for research should also strategically support the development of the most valuable social science time series data.

**R.3.4.** Centralized data storage platforms for social science data and information should be developed, along with established protocols for data sharing, access and use.

**R.3.5.** Conduct a workshop that would evaluate the utility of primary time series data collected for modeling activities and input to management decisions to determine the right mix of primary data that should be collected on a long-term basis. This would make primary data series collection more efficient and effective.

**4.A. Are the Centers using appropriate models and research tools to analyze data and provide management advice?**

The Panel was highly complementary with respect to the use of appropriate, up to data and sophisticated models and research tools by the SSB. BLAST, the Climate Change and EBFM work were noted as examples. The natural tension in terms of resource allocation between model development and model maintenance was noted.

**4.B Are they developing and using methods and models that contribute to the evaluation and exploration of ecosystem based fisheries management and other emerging issues?**

The Panel was also highly complementary on this topic, subject to the difficulty of obtaining appropriate data to ‘populate’ the models.

**4.C. Are their barriers to adapting to address emerging issues?**

The general lack of sufficient resources; the inability of the SSB to cover all areas of appropriate expertise, for example spatial analysis; and the tension between time allocation to research as opposed to management support were noted as potential barriers to addressing emerging issues.

**Recommendations for Question #4**

**R.4.1.** Initiate a formal research prioritization process that includes leveraging resources and external partnerships in concert with a long-term data plan.

**R.4.2.** Provide clear end goals for model development along with resources for model maintenance.

**R.4.3.** Address gaps in SSB expertise within the SSB such as spatial analysis.

**5.A. Is the Center’s social and economic information being used in living marine resource management advice?**

Yes, and in fact the demand for social science data and information clearly exceeds the supply.

**5.B. Are the existing mechanisms sufficient for ensuring this information is used appropriately?**

Generally yes, but the system needs improvement such as easier access to the data and information. Mechanisms for integrating socioeconomic information into management products are complex and, in some cases, confused, unpredictable and inefficient. Communication channels through the Research Communications Division and the Stakeholder Engagement Division of GARFO are well-developed. Other relationships, such as those with the Councils, could be further developed. There are no mechanisms in place to ensure that research not directly focused on management questions is available to or used by GARFO or the Councils.

**5.C. Are there barriers to the uptake of science provided by the Center and what steps can be taken to overcome these?**

As is noted above, GARFO has little capability in interpreting social science data and information; this is also true to some extent with the Councils. There is a lack of sufficient contact among the personnel in the various constituent agencies and organizations. SSB staff are often asked to provide analysis only “after the fact”, i.e., after decisions have already been made. It was noted that the SSB website could usefully be updated and made more user-friendly.

**Recommendations for Question #5**

**R.5.1.** Consideration should be given to hiring social science expertise in GARFO.

**R.5.2.** Emphasis should be placed on the desirability and effectiveness of regular contact with constituent agencies and organizations.

**R.5.3.** Update and further develop the SSB website.

**R.5.4.** Create regularly scheduled opportunities (seminars, workshop, etc) to highlight SSB research activities and invite Regional Office staff, Council staff and members, and staff at other Center branches to attend.

**6.A. Is the Center providing the Best Available Science?**

Yes: “novel work” which is “at the forefront” of fisheries social science: BLAST, Social Indicators, and the Capital Value project were notable. As noted above, more strategic planning would make the SSB even more effective in providing the best available social science.

**6.B. Are the Center economic and sociocultural research products adequately peer-reviewed?**

Yes, in particular the external publications. The Panel was assured that internal publications also receive thorough review.

**6.C. Are the appropriate processes being used to ensure that scientific products meet professional standards and are of high caliber?**

Yes.

**Recommendations for Question #6**

**R.6.1.** Prioritize time-series or repetition of existing surveys and data gathering over development of novel data.

**R.6.2.** Evaluate proposed new scientific projects to ensure that they contribute to the best available science mandate and that they fit within the specific strategic goals and objectives of the SSB.

**R.6.3.** When new data collection is undertaken, ensure collaboration across SSB staff to allow for coordination and opportunities to gather data across research foci.

**7.A. Does the Center’s program use the best tools to appropriately communicate research results to various managers, partners, stakeholders and the public?**

Communication activities at the SSB appear to be ad hoc and opportunistic. The website appears rather “dated” and in many places is confusing and difficult to navigate. Presence on other social media is limited or non-existent. Key partners appear to be unaware of the range and strength of SSB. Communications through the Research Communications Division and the Stakeholder Engagement Division of the Greater Atlantic Regional Office (GARFO) are notably successful conduits of information.

**Recommendations for Question #7**

**R.7.1.** Work with the Research Communications Division to develop a SSB communications strategy with input from interested parties such as the Center, stakeholders, clients, etc.

**R.7.2.** Increased use of using social media to communicate some research results should be explored.

**R.7.3.** SSB should review its website and ensure that it conveys the most up-to-date and important information about SSB activities. In addition, when thinking about web content and links, SSB should carefully think about different groups of potential users, recognizing that different user groups will be looking for different types of information on their website and on social media.

**R.7.4.** Provision should be made for more time and travel resources for SSB personnel to have contact with their constituents.

**Other Comments and Recommendations**

**Other Comments (OC).1.** There appears to be some tension in the Branch with respect to the assignment of research versus management-related tasks. Some tension of this sort is to be expected in a research unit where for many if not most of the personnel research and publication of that research is the highest-value activity. However, the Branch exists in a mission-oriented federal agency a significant portion of whose charge is support of policy and management activities. Therefore, it is entirely reasonable for some portion of some or all of the personnel time and effort to be devoted to management-related activities. Such time allocation assignments appear to be made by the Branch Chief in collaboration with the individual employee and in light of the management-related demands on the agency. It appears that such proportions of time allocation to management-related activities is between 20-30%, which does not seem unreasonable. Such time allocations are always ‘targets’, and are of necessity adjusted as time-critical new assignments of requests come to the Branch. There are three FTE in the Branch that

have been approved to be filled, and the Branch Chief expressed the desire to have those new individuals have significantly higher management-related time allocations. There was some concern among the panel members and expressed by some other constituents (i.e., the Council) about this. For the panel, the concern focused around the potential creation of two 'classes' of researcher, one (the new employees) with significantly higher proportions of management-related activities.

**OC.2.** The 'mass balance' of personnel within the Center – and this is not unique to the Northeast Center – should be considered in terms of the number of biophysical compared to social science personnel. The information we were given indicates that the SSB has 14 out of approximately 240 total research personnel.

**OC.3.** The NEFSC and the SSB in particular should be commended for the efficient and professional way the review was organized and conducted. It is gratifying to note that the NEFSC has diversity and inclusion as a priority moving into FY2018. The NEFSC would benefit immensely from the breadth and depth of a more diverse workforce.

**Other Recommendations (OR).1.** Careful thought should be given to the relative advantages and disadvantages of assigning new hires significantly higher management-related time allocations, as opposed to assigning them time allocations similar to the other Branch personnel and, if more management-related effort is necessary within the Branch, making more general adjustments across the entire Branch personnel.

**OR.2.** Given that the need for social science data and information is substantial, growing, and historically under-represented in the Centers (and realizing that new FTE may not be forthcoming to the Center), consideration should be given to the potential re-programming of biophysical to social science FTE over time within the Center.

**OR.3.** The NEFSC as a whole would benefit from developing relationships with academic institutions with STEM programs that target diverse groups of students.

**OR.4.** Support for the SSB relative to Information Technology should be improved. The branch should continue to explore strategies and platforms for data storage and public service.

**OR.5.** The SSB should engage in a process of comprehensive workforce planning. The SSB staff includes a good number of scientists who are eligible for retirement. It is good to note that there have been relatively recent hires resulting in a mix of young and competent scientists who are being mentored by the more senior scientists. It would be useful and would position the SSB well in terms of staffing if there is some effort directed towards succession planning.

**OR.6.** The NEFSC is unique in the sense that it is probably the only NMFS Science Center that has a directed protected resources social science program, even though it is staffed by one employee. However, it is understood that there are communication issues that needs to be worked out with the protected resources management side. It is recommended that the NMFS Office of Protected Resources take the lead in including social scientists in its quarterly management meetings. This could be

facilitated by the Office of Science and Technology. This will help to improve communication and bridge the gap between the biological and social scientists.

### **Conclusion**

As we said at the outset, The NEFSC Economics and Human Dimension Program (SSB) scientists are doing a phenomenal job in terms of providing social science inputs for management decisions and in advancing the field of fisheries social science. We were also impressed with and appreciative of the dedication and expertise of the entire Center staff and the support they gave to our review activities.

**Reviewer Report on Program Review of Economics and Human  
Dimensions Program  
Reviewer#1  
Northeast Fisheries Science Center  
National Marine Fisheries Service  
Woods Hole, MA  
May 1-4, 2017**

**Introductory Comments:**

The Social Science Branch (SSB) is a small but critical part of the Northeast Fisheries Science Center. It comprises only about 5-6% of the Center Staff, but plays a critical role in providing basic and applied research, as well as many of the services needed to meet the Center's mission to support its stakeholders. SSB has a large range of stakeholders and is affected (and sometimes bound) by a large number of legislative and regulatory requirements. In this sense, it is a complex branch with many demands on its time. It has limited base resources, and heavy reliance on relatively short-term funding allocations from NMFS headquarters to conduct much of its core research. In addition, SSB is facing a changing environment and set of expectations and needed capacity as a result of emerging issues and the move toward ecosystem-based management. It thus faces a number of significant challenges in both the short and the long run.

Overall, SSB is doing well in meeting its goals and objectives. Clearly, the SSB staff are very engaged and heavily invested in the work of the branch. In addition, they are strongly committed to their stakeholders, while at the same time appreciating the need for basic, mission-relevant research to support not only current but also future critical needs. However, there are clearly opportunities for greater integration with other parts of the Center, as well as an over-arching need to think more strategically about a number of issues, such as the types of management support that they can (and cannot) provide, the types of data collection that are most critical both in the short run and in the long run (over time), the appropriate balance between model development and updating/operationalization, and the need for future in-house or contractor capacity to meet foreseeable needs. In addition, there are potential opportunities for SSB to leverage its resources and expertise more, for example through greater collaboration with non-NOAA researchers (particularly university faculty and associated graduate students).

**Overarching Questions for Reviewers:**

1. *A. Does the Center have clear goals and objectives for an economic and sociocultural science program?*

The SSB program has a set of six research theme areas (community resilience, seafood networks, recreational fisheries, protected species, performance measures, and ecosystems) that form the basic structure for their economic/socio-cultural science program. These research themes appear to guide the overall direction of the research program. Although SSB does not have a strategic plan of its own, these six research themes are broadly tied to the main topical elements of the Center's strategic plan

(sustainable fisheries, protected resources, and ecosystem-based management). In addition, it appears they are also designed to fit with existing expertise within the SSB scientific staff.

The over-arching goals of the program are to conduct research in support of fisheries management, which includes both research geared toward advancing the science that will improve management in the future and providing more direct research-based input into current management-related activities. This is a clear and appropriate program goal/objective. Understandably, given limited time and resources, there is some tension between these latter two components of the overall goal/objective, which the branch recognizes and is trying to address. See more discussion on this below.

*B. Do the Center's Programs provide information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils, Fisheries Management Commissions, and other stakeholders that require economic and human dimensions -related information to achieve their mission?*

Clearly, the Center is providing a great deal of support to meet the priority needs of the regional office, the Councils under its jurisdiction, and other stakeholders. Leadership for both the regional office and the Councils expressed great appreciation for the work products provided by SSB. Some examples that were particularly notable include Social Impact Analyses, the work on fishing communities and social indicators, and the use of the cost data generated by SSB. In addition, it appears that the BLAST model for recreational fisheries has been extremely useful in management decisions.

Because there are no social scientists at the regional office, the SSB staff provide the management support that in other regions would be performed by the regional office. This has both advantages and disadvantages. Clearly, because of this, the SSB staff are providing more management-related services than would be typical of their counter-parts in other regional science centers. This appears to have created strong links between the SSB and stakeholders. The SSB staff are integrated into management planning teams and can provide both formal and informal input to fisheries managers throughout the management process. It is clear that this input is viewed as very useful for management. At least in some cases, it appears also to have spurred and enhanced research, as the staff look for new, innovative, and better ways to address management needs through basic research (e.g., related to methodologies, data collection, etc.) and tool development. However, in some cases, the level of participation in management-related activities represents a significant time commitment, which clearly takes time away from other activities.

Because of limited time, the SSB staff have not always been able to meet (or meet in a timely way) all of the requests for needed or desired input that they receive. Some Council staff expressed frustration at not getting the kind of help from SSB that they had asked for, at least within the timeframe that they had hoped. This frustration was not widely expressed, and seems to have been the result of unexpected demands on the limited time of SSB staff (to deal, for example, with the needed response to Hurricane Sandy). However, it is clear that there is tension between what the regional office and Councils would

like (in an ideal world) and what the SSB is able to provide, given their limited time and other responsibilities (in particular, their research mission/mandate). In addition, in some cases (such as Protected Resources), there appears to be a mismatch between what the regional office feels it needs and what SSB can provide, which has apparently caused them to contract out some of the work related to their PR needs.

Some (but not all) SSB staff feel that they (or their colleagues) are currently doing more direct management support than is “optimal”, and expressed the concern that some of this work does not require the advanced skill sets that these individuals have. In fact, the branch director identified this as one of the branches most important challenges. The time allocations implied by the staff performance plans suggest that the SSB staff allocate at most 30% of their time to direct management support (at least on paper). Although this clearly takes away from “pure research” time, this percentage does not appear to be out of line with research-focused positions in universities that include, for example, a teaching or extension component. In addition, in some cases, the percent of time allocated to direct management support appears to be only about 10%. Some individuals appear to have been able to lower the amount of time they allocate to direct management support by hiring contractors to do some of the more routine tasks that do not require advanced skills, while still being the supervising or “point person” who oversees and ensures the quality of that work. This appears to be working well as a way to address the related time demands. It is not clear if there is scope to increase this approach to dealing with management support needs.

An alternative approach that SSB is currently considering is the hiring of three additional staff with primary responsibilities (e.g., 60-70% of their time) devoted to management support. These positions might be akin to positions for “extension specialists” in land grant universities. Although this would be an alternative way to meet the highest priority needs of the regional office and Councils, it raises a number of questions and potential concerns about the role and status of these individuals vis-à-vis the other research scientists in the branch, especially if they are hired at the same level and hold similar degrees to other recently hired individuals (e.g., both hold PhDs).

*C. Do the Center’s Programs have a strategic research agenda that anticipates evolving and long-term economic and sociocultural science needs including research to support adapting to climate change and implementation of ecosystem-based fishery management?*

The SSB leadership recognizes that requirements and expectations are changing rapidly, due to increased focus on multiple (rather than single) species management, ecosystem-based perspectives, climate change, etc. In addition, there is a recognition that this will require the SSB to adjust to these new requirements and in some cases retrain or seek to adjust their capacity to position themselves to be able to meet these new demands.

Some work related to these emerging issues is already underway using current staff expertise. The two examples that were presented are the current work on community vulnerability and sea level rise, and the work on ecosystem-based management.

Because SSB does not have a strategic plan for the branch, it is unclear if it has a specific plan that is forward-looking for addressing evolving science needs. For example, although the branch anticipates significant turnover due to retirements in the not-too-distant future, it is not clear what type of expertise would be sought in new hires to replace retiring staff (or if SSB has a long term plan for its future capacity needs).

*Recommendations:*

Clearly, there is some tension about the allocation of SSB staff time between direct management support and more fundamental mission-related research. Although this tension is inevitable in this context, it is important that it be addressed and managed. SSB should consider the following as possible ways to help with this:

- Make clear to all staff what is a reasonable expectation regarding the amount of time that would be devoted to direct management support on average, recognizing that this could vary by individuals depending on a number of factors such as their contributions and/or responsibilities in other areas, research productivity, subject matter capacity, comparative advantage, and professional interests and goals.
  - Ensure that rewards (in the form of promotions and salary increases and/or bonuses) appropriately reflect an individual's assigned responsibilities, recognizing that individuals with more management responsibility will have a lower bar for defining the level of research productivity that would be viewed as "meritorious" (and vice versa).
  - Make use of protocols that ensure that management-related requests are funneled through and vetted by the SSB director (rather than having the regional office or Council staff making direct requests to staff), so that work can be appropriately assigned and workloads can be managed.
  - Consider developing some sort of formal or informal "memorandum of understanding" to delineate the scope of the management support that SSB can reasonably be expected to provide (and, by implication, what it cannot provide).
  - Consider greater use of short term and/or long term contractors to meet more routine management-related needs, while still maintaining a supervising or "point person" on the SSB staff who could oversee this work and be responsible for quality and primary stakeholder contact.
  - Consider hiring masters level staff (instead of contractors) for this same purpose, again with supervision by SSB staff.
2. *A. Are the Center's economic and sociocultural programs appropriately integrated with each other and with other science activities within the Center?*

Some SSB programs appear to be integrated with other units at the Center. The one notable example is the work on Ecosystem-based Management, which is being done jointly with the Ecosystems Dynamics and Assessment Branch. In other cases where one might expect some integration, such as Protected Resources, the integration appears to be very limited. This could reflect a number of factors, such as different perspectives on the important/relevant research questions and the role that economics and other social sciences can play in informing PR-related management decisions.

Both the Center and Division (READ) leadership appear to be taking steps to enhance integration, such as regular meetings to discuss current activities within the divisions/branches or simply to provide a forum for people to come together. The fact that SSB is located 5 miles away from the main Woods Hole NEFSC facility makes daily informal association with other units more difficult.

*B. Are research efforts integrated, where relevant, with efforts at the regional offices and headquarters?*

Because the regional office does not employ any social scientists, the question of integration with research efforts at the regional office is not relevant here. There is some integration with research-related activities at headquarters. An example is the ecosystem services valuation work on Chesapeake Bay oysters. However, working directly with headquarters staff on research projects did not emerge as a key component of SSB's work.

It was clear that SSB interacts regularly with headquarters through applications for and heavy reliance on S&T funds to fund research at SSB. Since the base budget appears to be used almost exclusively for staff salaries, SSB relies very heavily on other NOAA funds, such as funds from S&T and SF, to support its research (primarily through contract work). Because these funds are often of limited duration (e.g., must be spent within one year), this heavy reliance sometimes serves as a barrier to doing work that requires a longer term commitment.

In other research organizations, the allocation of funds has been used as a means to promote interdisciplinary work and integration across disciplines. It does not appear that the Center or SSB is currently creating explicit incentives to enhance integration, for example, through prioritization of integrated projects.

*Recommendations:*

If they seeks to encourage integration, the Center and SSB should:

- seek to facilitate integration through a continuation of efforts to promote communication and information flows across units. In addition to the executive level meetings, one possible mechanism would be a series of one-day or half-day research forums designed to expose individuals to related work being done in different units (through, for example, a series of short presentations with discussion). This can help individuals see the types of questions and related

work being done on a given topic from different disciplinary perspectives.

- consider rewarding evidence of integration in some tangible way. One possibility is to assign a *ceteris paribus* higher ranking in terms of funding priority for proposed projects that involve integration across units or across disciplines.

3. A. *Is the status of data collection related to commercial fisheries, recreational fisheries, fishing participants, and communities adequate to fulfill economic and sociocultural science research needs?*

SSB gathers and uses both primary and secondary data. The primary data collection activities include a wide range of surveys, most of which have been conducted on a one-time or occasional basis. The only surveys that are conducted on a regular basis, with the intention of creating a time series database, are the cost and vessel owner surveys. The data from these surveys are extremely useful for not only SSB research (including but not limited to the calculation of some of the economic performance measures) but also for management support.

One advantage of surveys conducted on a regular basis is the ability to use the data that are collected consistently over time to track trends in certain variables or construct performance measures based on those data that can be tracked over time. SSB staff are developing a variety of performance measures that are categorized as Tier 1 through Tier 3, depending on the current availability of data needed to construct the measures or the difficulty of getting data that are not currently available. It is not clear if the availability of data is driving the prioritization of performance measures, or, rather, the prioritization of performance measures (based, for example, on research or management needs) is being used to strategically identify and prioritize data collection needs. It seems important to have data collection governed by a strategic process and data collection plan that identifies the most critical primary data collection needs, especially regarding regularly collected as opposed to occasional data, and then seek regular funding (from headquarters, for example) to maintain those critical data collection efforts. It is likely that the cost and vessel owner data would be viewed as among the most critical data needs, but there may be other top priority needs as well.

B. *Has the Center developed strategies to obtain, manage, and make data accessible?*

Data accessibility has two parts: accessibility to the general public, and accessibility to other researchers outside NOAA (e.g., university researchers). With regard to the former, much of the data that SSB collects is confidential and can only be made publicly available at a level of aggregation that does not violate confidentiality. SSB appears eager to report aggregated results of their surveys in a manner that is easily accessible to the public, including individual fishermen (especially those who have voluntarily answered surveys and thereby contributed to the data collection efforts). This is primarily for informational (rather than research) purposes. Currently, some information, such as a brief pdf summarizing data from the most recent cost survey at a very aggregate level, is posted on the SSB website. Presumably, more detailed (but still not confidential) results from the cost and other surveys

are available somewhere else, but this is not readily apparent from the SSB website. The primary interactive web-based data access tool is the one that presents the Community Social Indicators.

With regard to data access for research purposes, it would certainly be desirable for non-NOAA researchers to be able to make arrangements to gain access to disaggregated data that has been stripped of identifying codes. Gaining access to these type of data can be extremely valuable to university and other researchers. It is not clear if, or how, researchers outside NOAA could get access to some of the SSB primary data, such as the data from the cost survey.

*C. Are there barriers that impede data collection and access to data held by other entities (e.g. states, commissions, other federal agencies, etc.) that could be used to support the Center research, and how can these barriers be overcome?*

The primary barriers appear to be resources (staff time and funding) and the sometimes onerous approval process faced by all researchers seeking to do primary data collection. It is not clear that anything can be done to reduce the time and energy consumed by the approval process. However, the SSB staff indicated that the potentially long approval times can impede data collection efforts that are funded through relatively short (i.e., one year) funding periods, simply because there isn't sufficient time to both get approval and do the work before the funds expire.

One mechanism that has been successfully used by at least one SSB staff member to overcome resource constraints related to data collection is to partner with university faculty and graduate students working with those faculty. This strategy is something that can be mutually beneficial, allowing SSB staff to leverage their time and other resources, while at the same time providing a source of funds for faculty and student research. In addition, it builds relationships that can have long run payoffs, in terms of not only research but also staff recruitment.

*Recommendations:*

- SSB should have a data collection plan that strategically identifies the highest priority data collection needs. This would likely include data that, if collected on a regular basis, could be used to identify important trends over time and provide critical input into research and/or management decisions. In particular, SSB should consider whether there are other surveys in addition to the cost and vessel owner surveys that rise to the level of critical data needs and, if so, seek commitments for funding for those data collection efforts (similar to what has been done for the cost survey).
- Once data are collected, SSB should look for ways to ensure the widest possible use of the data for research purposes, including use by non-NOAA researchers. This could be done either through data-sharing or access agreements, or through data-based collaborations between SSB staff and non-NOAA researchers (e.g., university researchers).
- SSB staff should be encouraged to partner with university faculty and their graduate students to

try to leverage resources available for data collection and analysis and build long run, mutually beneficial relationships.

4. *A. Are the Centers using appropriate models and research tools to analyze data and provide management advice?*

SSB uses a suite of models/tools for research and management support. Some are designed to provide descriptive information (such as the social vulnerability indices), while others are more explicitly decision support tools (based, for example, on optimization methods or statistical analysis, such as BLAST or the productivity models). In addition, a combination of qualitative information (e.g., the oral histories) and quantitative tools are used. This combination seems appropriate and well-balanced, given the SSB mission and stakeholder needs. Most of their models and tools are not explicitly ecosystem-based, at least for their economic models, although in many cases they don't necessarily need to be (depending on the purpose and research questions they are designed to address).

For decision support tools, there appears to be some tension regarding who will do the model development and who will/should be responsible for subsequent "maintenance" and application of those tools. Some SSB staff believe that their comparative advantage is in developing tools, not in maintaining or operationalizing the use of those tools. However, clearly the "return on investment" is greater when a model initially developed and applied in one context can continue to be used (with appropriate updating or modification) in other contexts. Of course, it takes resources to maintain and update models.

The BLAST model is obviously a big success and the SSB staff seem committed to maintaining the model and expanding its use. There is some question about transferability to other regions (i.e., what would be required). The social vulnerability indices, which are now being used nationally, are another example of a tool developed at SSB that has wide applicability and use in other regions. Tools that are transferable in this way are extremely useful. However, clearly the application and use of these tools in other regions requires funding.

*B. Are they developing and using methods and models that contribute to the evaluation and exploration of ecosystem based fisheries management and other emerging issues?*

SSB's work on ecosystem-based fisheries management is done primarily within its ecosystems research group. This group is developing coupled models and integrated ecosystem assessments that are based on an ecosystem-based perspective. They have done some novel work in conjunction with the ICES WGNARS. This seems to be cutting edge, interdisciplinary research and very policy-relevant. SSB has played an important role in getting "Humans" and "Human Dimensions" elevated to a prominent place in the ecosystem-based framework being used, so clearly their impact is being felt. This was a very good example of how bringing people from different disciplines together can change the framing and scoping of work related to fisheries management.

The sea level rise component of the community vulnerability indicators is also clearly designed to address an emerging issue.

C. *Are their barriers to adapting to address emerging issues?*

One area where SSB and the ecosystem group have not done much to address emerging issues is the valuation of ecosystem services. It is not clear that SSB currently has the in-house capacity to do non-market valuation. In addition, SSB staff expressed concern about the cost and time involved in doing ecosystem services valuation. The work on oysters in the Chesapeake Bay is a good example of overcoming some of these barriers.

*Recommendations:*

- All model development should have a clear “end goal”, i.e., is the model being developed for a single research product or for continued use for, for example, decision or management support? For models that are intended to provide continued decision support, SSB should have a plan for model maintenance and updating when models are being developed.
- SSB should assess whether it currently has the necessary in-house capacity to conduct ecosystem-based research more broadly across the branch, including valuation of ecosystem services. If not, efforts should be made to partner with researchers outside NOAA (e.g., university faculty) and/or target future hires to secure that capacity.
- The development of tools that are transferable to other regions should be encouraged, but SSB should get a commitment of additional funding from outside the branch (e.g., from headquarters) for expanding the use of its tools beyond the region.

5. A. *Is the Center’s social and economic information being used in living marine resource management advice?*

This was largely answered under Question 1 above. Clearly, SSB’s work is frequently used to support management decisions and advice. This comes both through SSB-generated products (e.g., surveys and analyses) as well as through the integral participation by SSB staff in the planning groups working on various regulatory activities (such as the example of Amendment 18 to the Groundfish Plan).

B. *Are the existing mechanisms sufficient for ensuring this information is used appropriately?*

There seems to be considerable communication and interaction between the SSB staff and the regional office and Councils. Although more and better communication is always possible, the level of interaction seems to be sufficiently high to ensure that information from the SSB gets to these stakeholders. In addition, the integral participation of SSB staff in the various stages of the regulatory process where that information is used ensures that the information is used appropriately. This is a key

advantage of SSB staff working directly and collaboratively with the regional office and Councils and being embedded in the various stages of the management process, rather than simply “handing off” information that SSB has generated to the fisheries managers without knowing (or worrying about) how that information is used.

*C. Are there barriers to the uptake of science provided by the Center and what steps can be taken to overcome these?*

Again, the integration of SSB staff in the management process and the support they provide helps to ensure the appropriate uptake of the science and expertise provided by SSB. However, in the case of protected resources, SSB staff indicated that they are sometimes asked to provide analysis “after the fact”, i.e., after decisions have already been made. Clearly, in such cases the science that is being provided is not being used to inform those decisions.

*Recommendations:*

- SSB leadership should work to ensure that the branch’s expertise is used to inform (rather than justify *ex post*) management decisions not only for fisheries management but also for protected species.

6. *A. Is the Center providing the Best Available Science?*

SSB staff most directly involved in publication are working at the forefront of their fields and using best available methods and data. Working with researchers outside NOAA and participating in professional development activities (such as attending and presenting their work at major conferences, including major disciplinary conferences as well as more fisheries-focused ones) will ensure that SSB staff are aware of and able to incorporate Best Available Science into their work. There appears to be some participation in major conferences by SSB staff, but the available evidence on this is spotty.

*B. Are the Center economic and sociocultural research products adequately peer-reviewed?*

They seem to follow the standard NMFS procedures for peer-review.

*C. Are the appropriate processes being used to ensure that scientific products meet professional standards and are of high caliber?*

This seems again to be asking if there is an adequate review or quality control process in place. The answer seems to be yes. Products goes through multiple layers of review and approval.

*Recommendations:*

- SSB should prioritize participation (both attendance and presentation) at major scholarly conferences, not only those related to fisheries/marine resources but also more disciplinary-focused conferences (such as the Agricultural and Applied Economic Association’s annual conference, or the Association of Environmental and Resource Economist’s summer conference) to ensure that SSB staff remain “current” about cutting-edge research (both methodological and topical) and best available science.

7. *A. Does the Center’s program use the best tools to appropriately communicate research results to various managers, partners, stakeholders and the public?*

One tool that SSB staff said they rely on for communication is their website. However, the website appears rather “dated” and in many places confusing. For example, much of the material on the web appears to be rather old or looks like it has not been updated recently (e.g., list of “recent” publications), and several of the links are “broken”. In addition, the information on the various pages does not seem consistent with current major activities of the branch. For example, the SSB home page with Highlights has a link for “Protected Species Economic Research”, but this link takes you to the main S&T website on protected resources with sub-links for work on the value of protecting these resources that provide little, if any, information and no information about work being done specifically at the SSB. Given this, it is not clear why this is highlighted on the SSB home page.

The review panel was told that the maintenance of the website is contracted out. It is not clear how much attention the SSB gives to its website. However, if this is viewed as an important communication tool and presents the “face” of SSB to the public (and potentially other researchers), then maintaining an updated and more “dynamic” website is important for that purpose.

*Recommendation*

- SSB should review its website and ensure that it conveys the most up-to-date and important information about SSB activities. In addition, when thinking about web content and links, SSB should carefully think about different groups of potential users, recognizing that different user groups will be looking for different types of information on the SSB website. This should guide the structure that is used when designing the website (e.g., the appropriate left hand side tabs).

**Additional Comments or Recommendations**

- Some SSB staff have partnered with non-NOAA researchers (particularly university faculty) in a way that has been very productive – enhancing their productivity, leveraging limited resources (especially time), increasing the visibility of the Center and its activities, and creating mutually beneficial learning opportunities. This should be strongly encouraged and expanded, if possible.
- A unique perspective that SSB brings to the Center is an understanding of the

important role that consumer demand and seafood markets play in creating the incentives to which fishermen respond. Thus, when taking a “systems” approach to fisheries, it is important to recognize that the appropriate system is not just the bio-physical ecosystem, which is part of the “supply side”, but also the structure of consumer demand and markets, which affect the “demand side”. The work on “Following the Fish” is an important step toward increasing awareness of the importance of demand-side factors, as is the work on Seafood Networks. With regard to the latter, it appears that SSB has done some high quality work in the past and has some ideas about future work, but it was unclear that there is a well-formed set of explicit activities planned for this research theme over the next 1-3 years.

**Reviewer Report on Program Review of Economics and Human  
Dimensions Program  
Reviewer #2  
Northeast Fisheries Science Center  
National Marine Fisheries Service  
Wood's Hole, MA  
May 1-5, 2017**

**Introductory Comments:**

The Economics and Human Dimensions Program of the Northeast Fisheries Science Center is in many ways an exemplary program within the National Marine Fisheries Service. Although some improvement might be made in certain aspects noted below – in particular increased personnel and programmatic resources for the social science tasks within the Center – the program is an effective example of the provision of social science data and information to the fisheries management process.

**Overarching Questions for Reviewers:**

8. *A. Does the Social Science Branch (SSB) have clear goals and objectives for an economic and sociocultural science program?*

Yes, the goals and objectives are clear.

*B. Do the SSB's programs provide information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils, Fisheries Management Commissions, and other stakeholders that require economic and human dimensions -related information to achieve their mission?*

Yes. The Center is resource-limited in terms of staff and in particular program funding, but does provide data and information to the above entities.

*C. Do the SSB's programs have a strategic research agenda that anticipates evolving and long-term economic and sociocultural science needs including research to support adapting to climate change and implementation of ecosystem-based fishery management?*

Not in the sense of a formal document. There was an attempt to develop such a strategic plan under the previous Branch Chief, but the effort was never completed and was not resurrected under the current Chief. Such a formal process and document may be useful to the Branch in the future. However, in light of the lack of such a formal plan the SSB does appear to be engaged significantly and effectively – with some variation -- in all of the NMFS/Center theme areas.

*Recommendations:*

-A formal strategic planning process would be useful to the Branch in the future.

9. *A. Are the Center's economic and sociocultural programs appropriately integrated with each other and with other science activities within the Center?*

There is quite a bit of interaction, coordination and integration within the Branch, but this is less clear between the SSB and other parts of the Center. Some relationships, for example in the area of Ecosystem Based Fisheries Management, appear to be quite good. Others, for example in the area of Protected Species program, appear to need attention.

*B. Are research efforts integrated, where relevant, with efforts at the regional offices and headquarters?*

In general, yes, but improvement could be made in the coordination between the SSB and the Regional Office (and with the Council). Coordination with headquarters appears to be good largely due to the portion of the staff and research resources that come to the Branch from headquarters and the resulting necessary interactions.

*Recommendations:*

More regular contact among Center, and between Center and Region, personnel.

10. *A. Is the status of data collection related to commercial fisheries, recreational fisheries, fishing participants, and communities adequate to fulfill economic and sociocultural science research needs?*

In general, no. This is primarily due to a lack of personnel and resources, not to the lack of awareness of the need for more such data. Recurrent data collection programs are few. In light of the lack of resources for primary data collection, much use is made of secondary data, some of which is dated or collected for other purposes.

*B. Has the Center developed strategies to obtain, manage, and make data accessible?*

In general and within the resource constraints of the Branch, yes. The progress the Branch has made with secondary data and the primary data it does collect is impressive (for example, the work on climate change and social vulnerability). In terms of accessibility, the Branch's relationships with the Research Communications Division and the Stakeholder Engagement Division of the Greater Atlantic Regional Office (GARFO) are notable. There does not appear to be a centralized data architecture, in particular one that is publically accessible.

*C. Are there barriers that impede data collection and access to data held by other entities (e.g. states, commissions, other federal agencies, etc.) that could be used to support the Center research, and how can these barriers be overcome?*

Although there are always bureaucratic processes involved in inter-entity data collection and sharing, the Branch appears to have good relationships with the relevant entities.

*Recommendations:*

Consideration should be given to seeking external funding and cooperation (i.e., with universities and other agencies and foundations) for more primary data collection resources.

11. *A. Does the Branch use appropriate models and research tools to analyze data and provide management advice?*

Yes, the models and research tools used by the Branch appear to be appropriate and up to date.

*B. Are they developing and using methods and models that contribute to the evaluation and exploration of ecosystem based fisheries management and other emerging issues?*

Yes, subject to the lack of sufficient data for many ecosystem components that makes it difficult to 'populate' the models.

*C. Are their barriers to adapting to address emerging issues?*

The Branch appears to be making significant progress on some emerging issues, such as climate change-related issues and EBFM. The main barriers are related to the lack of resources and current project commitments, the latter of which is a natural tension.

*Recommendations: None*

12. *A. Is the Center's social and economic information being used in living marine resource management advice?*

Yes.

*B. Are the existing mechanisms sufficient for ensuring this information is used appropriately?*

Certain aspects of the use of information, such as the channels through the Research Communications Division and the Stakeholder Engagement Division of GARFO, appear to be

well-developed. Other relationships, such as those with the Councils, could be further developed. Although there is a great demand by the Councils for social science data, information and analysis, these needs are not always communicated effectively nor does the information available always find its way to the user in a timely and useful manner.

*C. Are there barriers to the uptake of science provided by the Center and what steps can be taken to overcome these?*

The main barriers appear to be related to the lack of sufficient contact among the personnel in the various constituent agencies and organizations.

*Recommendations:*

Emphasis should be placed on the desirability and effectiveness of regular contact with constituent agencies and organizations.

13. *A. Is the Center providing the Best Available Science?*

Subject to personnel and resource constraints, yes. Certain products, such as the BLAST model and the Capital Value project and Performance Measures program are notable.

*B. Are the Center economic and sociocultural research products adequately peer-reviewed?*

For externally published material, yes. For internal publications such as technical memoranda, the panel was assured that an internal review process exists but did not hear about the details of this process.

*C. Are the appropriate processes being used to ensure that scientific products meet professional standards and are of high caliber?*

In general, yes.

*Recommendations: None*

14. *A. Does the Center's program use the best tools to appropriately communicate research results to various managers, partners, stakeholders and the public?*

Yes, and again the Branch's relationships with the Research Communications Division and the Stakeholder Engagement Division of the Greater Atlantic Regional Office (GARFO) are notable.

*Recommendations:*

Even though the above is true, it is especially important for social scientists to have frequent and substantial contact with their constituents. The Wood's Hole location of the Center unfortunately mitigates against that, and provision should be made for more time and travel resources for Branch personnel to have contact with their constituents.

### **Additional Comments or Recommendations**

1) There appears to be some tension in the Branch with respect to the assignment of research versus management-related tasks. Some tension of this sort is to be expected in a research unit where for many if not most of the personnel research and publication of that research is the highest-value activity. However, the Branch exists in a mission-oriented federal agency a significant portion of whose charge is support of policy and management activities. Therefore, it is entirely reasonable for some portion of some or all of the personnel time and effort to be devoted to management-related activities. Such time allocation assignments appear to be made by the Branch Chief in collaboration with the individual employee and in light of the management-related demands on the agency. It appears that such proportions of time allocation to management-related activities is between 20-30%, which does not seem unreasonable. Such time allocations are always 'targets', and are of necessity adjusted as time-critical new assignments of requests come to the Branch. There are three FTE in the Branch that have been approved to be filled, and the Branch Chief expressed the desire to have those new individuals have significantly higher management-related time allocations. There was some concern among the panel members and expressed by some other constituents (i.e., the Council) about this. For the panel, the concern focused around the potential creation of two 'classes' of researcher, one (the new employees) with significantly higher proportions of management-related activities.

#### *Recommendation:*

Careful thought should be given to the relative advantages and disadvantages of assigning these new hires significantly higher management-related time allocations, as opposed to assigning them time allocations similar to the other Branch personnel and, if more management-related effort is necessary within the Branch, making more general adjustments across the entire Branch personnel.

2) The 'mass balance' of personnel within the Center – and this is not unique to the Northeast Center – should be considered in terms of the number of biophysical compared to social science personnel. The information we were given indicates that the SSB has 14 out of approximately 240 total research personnel.

#### *Recommendation:*

Given that the need for social science data and information is substantial, growing, and historically under-represented in the Centers (and realizing that new FTE may not be forthcoming to the Center), consideration should be given to the potential re-programming of biophysical to social science FTE over time.

**Report on Program Review of Economics and Human Dimensions Program**  
**Reviewer #3**  
**Northeast Fisheries Science Center**  
**National Marine Fisheries Service**  
**Woods Hole, MA**  
**May 1 - 4, 2017**

**General Observations and Recommendation**

The NEFSC Economics and Human Dimension Program (SSB) scientists are doing a phenomenal job in terms of providing science inputs for management decisions. The blend of educational background and professional experience of SSB scientists in the appropriate disciplines seems adequate and should be commended. The SSB seems to have a collegial environment that favors interdisciplinary research. There are indications that the demand for science products exceed the resources available to the SSB. The NEFSC is challenged to balance the need to provide scientific products while also allowing time for staff professional development – conducting research, publishing scholarly articles and attending professional meetings. It is perceived that staff career development is being sacrificed in favor of meeting the needs of managers. The need for economic and human dimension inputs to the management process is likely to increase as managers strive to meet the requirements of various statutes. This argues for rethinking how to restructure the SSB workload so that work could be conducted more efficiently, allowing scientists adequate time for their professional development.

To increase efficiency and improve satisfaction of SSB scientists it is recommended that future recruitments consider a mix of science technicians who have proficiency in doing data collection and maintenance, quality control / quality assurance, data manipulation, basic analyses, etc. This would free up time for science professionals to engage in more relevant research that would benefit the management process while at the same time advance their professional careers.

**Overarching Questions for Reviewers:**

**15. A. Does the Center have clear goals and objectives for an economic and sociocultural science program?**

- The NEFSC Economics and Human Dimension Program (SSB) has clear goals and objectives. These are aligned with the NOAA Strategic Plan, the NESFC Strategic Science Plan, Northeast Regional Climate Plan, and other documents that were referenced during presentations.

**B. Do the Center's Programs provide information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils, Fisheries Management Commissions, and other stakeholders that require economic and human dimensions -related information to achieve their mission?**

- To varying degrees the SSB's programs provide a variety of information including data, analysis, indicators, models, and other tools that support and inform management decisions and actions for their stakeholders. In addition, SSB staff are involved in drafting regulatory documents, particularly sections pertaining to E.O. 12866, Regulatory Flexibility Act, National Standards,

Social Impact Assessment, and NEPA for both Councils. However, due to limiting resources there are gaps that exist. In some cases, these gaps are due to unexpected short-term requests, and in other cases due to the inability to direct resources to develop products to fill those gaps.

***C. Do the Center's Programs have a strategic research agenda that anticipates evolving and long-term economic and sociocultural science needs including research to support adapting to climate change and implementation of ecosystem-based fishery management?***

- The SSB conducts research activities that are germane to evolving long-term needs, including supporting climate change and ecosystem-based fishery management (EBFM). Some of the presentations elaborated on research being done to develop Performance Measures, including indicators for fishery (resources and communities), Measuring Capital Values in some commercial fisheries, Coupled Models that address community vulnerability, etc., Portfolio analysis, Trade-Off Analysis, Ecosystem Service Valuation. Some of this research have been applied to management processes, including international management organizations such as ICES.

***Recommendations:***

- It is recommended that a SSB participates in a formal process for prioritizing research activities with the stakeholders so that such efforts will result in more relevant and useful products to stakeholders.
- The SSB program activities are mainly funded by NMFS Headquarters through a competitive process. It was indicated that for some surveys and research work, funding is guaranteed for a number of years. However, for the most part funding is realized on a year to year basis. It is recommended that some of the funding that goes towards supporting proposals should be provided as base funds so that the NEFSC can engage in long term programmatic planning for the SSB. This will align research activities more with priorities and better serve the needs of the Regional Office, Councils, and other stakeholders.

***16. A. Are the Center's economic and sociocultural programs appropriately integrated with each other and with other science activities within the Center?***

- There is some degree of integration of the SSB's programs. A number of SSB scientists have worked, and are working on joint projects that cut across different disciplines and themes. However, it was not clear that there is a planning process that ensures that these programs are appropriately integrated. It appears that the level of integration observed is more opportunistic than intentional at the Branch level.

***B. Are research efforts integrated, where relevant, with efforts at the regional offices and headquarters?***

- The Northeast Fisheries Management Council (NEFMC) provided its research priorities and data needs for 2017-2021. This is an update from the 2010-2014 research priorities. It appears that the document was prepared by the NEFMC's Plan Development Team and Species Committees. There was no indication of whether the NEFSC was requested to review the draft and provide

comments. NEFSC staff acknowledged during various presentations by SSB staff that the research efforts for the most part informed and added value to their management decisions. Given the economics and human dimension research priorities outlined in the NEFMC current document, it appears that the SSB is addressing most but not all of the Council's needs. There are some gaps that remain. Efforts should be coordinated to explore ways to fill those gaps given the resource constraints.

It was stated several times that funding for practically all programmatic activities (research, etc.) comes from headquarters through a competitive process - Request for Proposals. This process does set priorities and guidelines that guides the selection of proposals that are funded each year. As such, there is some integration of SSB research efforts with headquarters efforts.

***Recommendations:***

- It is recommended that SSB engage with other appropriate divisions/branches in center-wide planning activities to better coordinate resources and efforts, integrate and strengthen connections with these divisions/branches.
- Also, that SSB engage with major stakeholders in setting research priorities to better align stakeholders needs with their research portfolio.

***17. A. Is the status of data collection related to commercial fisheries, recreational fisheries, fishing participants, and communities adequate to fulfill economic and sociocultural science research needs?***

Given the dynamic nature of the resources and the need to improve on the quality of the science that informs management decisions, there would always be a need to collect more data and to maintain, update and provide stakeholders access to databases. This was recognized by the scientists and some stakeholders. However, the current status of data collection goes a long way in enabling SSB scientists conduct analyzes, develop indicators, provide performance measures, etc., that inform and reduce uncertainty in management decisions.

***B. Has the Center developed strategies to obtain, manage, and make data accessible?***

- The SSB has different platforms for obtaining, managing and making data accessible to stakeholders. Some data are collected regularly, i.e., annually, some at other regular intervals, some have been collected on a one-time basis. Data are collected through contracts, in house via established processes – observers, logbooks, dealer reporting, etc. More recently, some data are being collected on real time basis via electronic means. Also, surveys are conducted to obtain data that feeds into the management process. The mechanisms available for making data accessible to stakeholders are through web sites, publications, direct outreach by SSB scientists and presentations at professional meetings. It is not apparent that there is a centralized data management system, or that there are adequate resources dedicated to manage and make the significant volume of data accessible to stakeholders in easily accessible platforms.

***C. Are there barriers that impede data collection and access to data held by other entities (e.g. states, commissions, other federal agencies, etc.) that could be used to support the Center research, and how can these barriers be overcome?***

- It appears that there is quite a bit of inter agencies collaboration involving the exchange of data. It was indicated that funding is provided by the agency to state institutions to collect fisheries data that feeds into the management process. Unfortunately, commissions and states' personnel were not at the program review to inform the Review Panel on how these programs are working and their usefulness. Discussions with some SSB scientists point to some issues with accessing some data collected by these agencies due to the types of applications used and the platforms these data reside. However, it was acknowledged that data collected by these agencies are vital inputs to the management process.

***Recommendations:***

- It is conceivable that the demand for data for management purposes would continue to increase. Given the resource limitations facing the SSB, it is unlikely that the branch would get to the point where stakeholders requests would be closed to being fulfilled. It is recommended that the NEFSC SSB work with major stakeholders/partners to establish protocols for data collection so that expectations are set to avoid surprises.
- To improve the accessibility of data it is recommended that the SSB work with the Science Communication and Information Technology Divisions to leverage resources so ensure improvements to the accessibility of data.
- It is recommended that formal protocols are established that maintain platforms where data collected by others agencies reside so that SSB scientists can have adequate access to them.

***18. A. Are the Centers using appropriate models and research tools to analyze data and provide management advice?***

- The SSB has developed quite an impressive set of models and tools to analyze data, run simulation models to predict impacts of management measures, conduct sensitivity analyzes, etc. These have provided scientific inputs and value added to management decisions. In addition, the SSB leverages with other NMFS Science Centers, academic Partners, and research organizations to avail scientists the opportunity to utilize models, scientific tools developed by these groups, and exchange expertise.

***B. Are they developing and using methods and models that contribute to the evaluation and exploration of ecosystem based fisheries management and other emerging issues?***

- Based on the work that was presented there has been substantial progress in this area. For example, the scientific input being provided to ICES. It is encouraging to note that the SSB guidance for ecosystem research comes from the NMFS EBFM Policy and EBFM Roadmap. It appears that the methods and approaches SSB is using such as Integrated Ecosystem Assessments,

coupled models, and ecosystem service valuation are appropriate and would contribute to advancing EBFM.

**C. *Are their barriers to adapting to address emerging issues?***

- Even though there has been progress, there are still challenges and barriers that have to be overcome and worked out. Ecosystem models are complex and require certain inputs such as welfare measures (market and non-market). Also, certain indicators that would add value to these models are not yet available. The current single species management which the Magnuson-Stevens Act mandates, does not make for efficient use of these models. Ecosystem models address a variety of issues that are not under the jurisdiction of fisheries managers. However, results from these models can be used to inform managers and policymakers with other jurisdictions. Also, there has not been much management engagement in ecosystem research. Efforts should be stepped up to encourage and increase the interest of managers.

***Recommendations:***

- The SSB should work with the Center's Research Communications Division to increase outreach efforts to give visibility. This will improve the communication of the ecosystem research products to managers and increase their awareness of the utility of these tools.

**19. A. *Is the Center's social and economic information being used in living marine resource management advice?***

- Yes, SSB's economic and human dimension information are being used in informing decisions for living marine resources management. The NMFS Headquarters /Regional Office, two Regional Councils, Commissions, international organizations, and several stakeholders use SSB's products and tools in their management decisions and regulatory processes. In addition, SSB scientists collaborate with scientists at other NMFS Science Centers, universities and other groups to collect information and develop tools that are used widely in making management decisions. SSB scientists have developed some novel tools that are at the cutting edge of their disciplines.

**B. *Are the existing mechanisms sufficient for ensuring this information is used appropriately?***

- The mechanisms that exist for ensuring that information is used appropriately should be improved. Information should be packaged in formats that will enable easy access to stakeholders. They should know where information resides and can use query tools that will enable them to get at the right information needed. This will reduce the burden on SSB scientists in terms of frequent contacts by stakeholders to make information available to them.

**C. *Are there barriers to the uptake of science provided by the Center and what steps can be taken to overcome these?***

- The Regional Office and Councils have few staff that have some expertise in interpreting and using the science products from the SSB scientists. This necessitates considerable involvement of SSB scientists in the management process. They should consider restructuring their staffing so that they include social scientists who have the capability to interpret and use these products and tools just like their staff does on the biological side.

***Recommendations***

- It is recommended that the agency encourage and support the Regional Office and Councils to develop in-house expertise so that they have the capability to utilize SSB's products and tools with minimal assistance provided by SSB scientists.

**20. A. *Is the Center providing the Best Available Science?***

- Yes, the SSB is providing the best available science. They are doing novel work. Their publication record speaks to the level and quality of the science that they are doing. Also, Regional Office and Council staff acknowledged the value and utility of the science that the SSB produces.

***B. Are the Center economic and sociocultural research products adequately peer-reviewed?***

- Yes, the NEFSC has an internal peer review process which is adequate for Quality Control / Quality Assurance and meets required standards. Also, it is understood that NMFS will soon implement a process that will standardize peer review across the agency. The online Research Publication Tracking System (RPTS) will incorporate the manuscript peer review process.

***C. Are the appropriate processes being used to ensure that scientific products meet professional standards and are of high caliber?***

- Most results of SSB scientists research efforts end up as publications in peer review journals, NMFS Science Bulletins, NOAA Technical Memoranda. Manuscripts go through rigorous peer reviews to ensure that they meet professional standards before they are published.

***Recommendations:***

- None

**7A. *Does the Center's program use the best tools to appropriately communicate research results to various managers, partners, stakeholders and the public?***

- The main avenues for communicating research results are the NEFSC website, outreach by SSB scientists to stakeholders, presentations at professional meetings. The SSB should leverage with other divisions in-house and with The utility of using social media to communicate some research results should be explored.

### ***Recommendation***

- The recommendation under # 3 applies.

### **Conclusion**

- The NEFSC and the SSB in particular should be commended for the efficient and professional way the review was organized and conducted. It is gratifying to note that the NEFSC has diversity and inclusion as a priority moving into FY2018. The NEFSC would benefit immensely from the breadth and depth of a more diverse workforce. Also, the NEFSC would benefit from supporting academic institutions with STEM programs that target diverse groups of students.
- The SSB staff includes a good number of scientists who are eligible for retirement. It is good to note that there have been relatively recent hires resulting in a mix of young and competent scientists who are being mentored by the more senior scientists. It would be useful and would position the SSB well in terms of staffing if there is some effort directed towards succession planning.
- The nature of regulatory actions sometimes creates disproportionate or unanticipated workload for scientists. The NEFSC is very much aware of this and should have contingency plans, when possible to deal with such situations when they arise to minimize disruptions.
- NMFS in general should work with its Partners to develop in-house capabilities that would enable the management staff to develop proficiency in transforming research products into operational products.
- The NEFSC is unique in the sense that it is probably the only NMFS Science Center that has a directed protected resources social science program, even though it is staffed by one employee. However, it is understood that there are communication issues that needs to be worked out with the protected resources management side. It is recommended that the NMFS Office of Protected Resources take the lead in including social scientists in its quarterly management meetings. This could be facilitated by the Office of Science and Technology. This will help to improve communication and bridge the gap between the biological and social scientists. Also, because of the mandates that drive protected species management and recovery, focus is mainly on estimating the costs of protected species recovery. However, the agency would be better served if capabilities are developed to estimate benefits from recovery too.

**Reviewer Report on Program Review of Economics and Human Dimensions Program**  
**Reviewer #4**  
**Northeast Fisheries Sciences Center**  
**National Marine Fisheries Service**  
**Woods Hole, MA**  
**May 1-5, 2017**

**Introductory Comments:**

The SSB at the NEFSC is performing with excellence on extremely limited fiscal resources. This reviewer was impressed by the breadth and depth of work engaged in at the Branch. The scientific innovations made by SSB staff are very exciting. The diversity of roles, responsibilities and activities across the branch are also noteworthy. It is obvious that the SSB makes significant contributions to the Center, regional office and FMCs, as well as other stakeholders and informational customers. While the SSB program is strong, there are some issues in need of attention by leadership at the Center and Branch level. Additionally, there are opportunities for improving connections between research and management in some cases.

In the comments below, this reviewer has highlighted strengths of the SSB, as well as identified areas for improvement. Recommendations are offered. Please note that recommendations are offered in a general sense because, ultimately, decisions about changes to the program will require an in-depth knowledge of the context and possibly additional assessment by leadership. The hope is that recommendations included will provide ideas to help Center leadership begin conversations where deemed appropriate and necessary.

**Overarching Questions for Reviewers:**

21. *A. Does the Center have clear goals and objectives for an economic and sociocultural science program?*

Programs at the Center are guided by strategic planning documents at the Center, Line Office and bureau level. Additionally, there are a number of legislative and policy drivers that are used to prioritize programmatic work. Within the SSB, it is evident that the Branch Chief and individual researchers are aware of and use these drivers to prioritize and orient their research and other programmatic activities. The SSB has a strategic plan in place, but this legacy document is no longer active. The SSB does, however, have strategic programmatic goals and objectives, which include provision of support to fishery management, conduct of management-relevant research, and conduct of anticipatory research responsive to future issues/needs (e.g., climate change, food systems, etc.).

While the strategic goals and objectives of the Branch are clear, the clarity of goals and objectives across the thematic areas are not uniform. For example, the Sustainable Fisheries goals and objectives for programmatic activities related to Recreational/Commercial Fisheries are more

evident than those governing project activities in the Seafood Networks and Community Resilience themes. That is not to say that the latter themes are not nested in strategic goals because they certainly are, only that connections to obvious management priorities at the regional level are not yet fully developed. As these thematic areas continue to mature, such connections will likely become stronger.

*B. Do the Center's Programs provide information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils, Fisheries Management Commissions, and other stakeholders that require economic and human dimensions -related information to achieve their mission?*

Yes, it is clear that the SSB provides valuable information to its primary clients, including GARFO and the FMCs, through its research program and management-oriented service activities, especially in economics. The SSB's clients are heavily dependent on the SSB for range of services, including scientific/expert consultation, economic impact analysis, other economic analysis, social impact analysis, stakeholder outreach/engagement, document review/verification and tool development/support/maintenance.

Unfortunately, the almost exclusive reliance of these primary clients on the branch for a host of support services appears to be creating:

- inefficiencies in the development/transfer of informational products,
- reductions to allocation of SSB staff time for other programmatic priorities,
- an inability of the SSB to meet other project deadlines, and
- heightening frustration among staff from each of the organizations involved.

As importantly, it appears that the burden of management support is disproportionate across staff at the SSB, which is problematic if such inequities lead to differential professional and promotional opportunities (e.g., fewer publications for staff more often supporting management, as opposed to conducting research). The question of what is the appropriate level and nature of management support services appears to be paramount for both the SSB and its primary clients. This question needs immediate, thoughtful attention and engagement from Center leadership.

The SSB is commended for their work benefitting stakeholders outside of the region and NMFS. For example, their work on vulnerability indicators supports other NMFS regions. Similarly, their innovation of the BLAST model is being adopted by other NMFS regions. A final example, their work related to IEAs and Protected Resources has tremendous potential to serve the management needs of other NOAA Line Offices, as well as state and federal agencies.

*C. Do the Center's Programs have a strategic research agenda that anticipates evolving and long-term economic and sociocultural science needs including research to support adapting to climate change and implementation of ecosystem-based fishery management?*

The SSB, particularly in the context of the Community Resilience and Ecosystems research themes, is conducting extremely useful anticipatory research related to climate change and ecosystem-based fisheries management. The community vulnerability work is poised to provide the NE region with critical information on the degree and type of vulnerabilities of fishing communities to climate change. Moreover, this line of work will help managers to understand risks from climate change in conjunction with other social and economic vulnerabilities, particular to fishing communities. The Ecosystems research theme includes a robust collection of projects that, in addition to moving the NE toward implementation of ecosystem-based fishery management, also helps the Center achieve its goal of integrating the social and natural sciences. This line of research is incredibly important and valuable.

*Recommendations:*

- The Center, meaning leadership at all relevant levels, should convene to investigate and illuminate the question of what is the appropriate level and nature of SSB responsibility for management-oriented work, in service to primary clients. Information should be obtained to understand how much staff time is actually dedicated, in practice, to management-oriented work relative to other programmatic goals. Objective impact analysis of this workload allocation should be conducted to understand the opportunity costs, if any, as well as effects on the SSB, its staff and the primary clients. If findings from this assessment indicate that some change is necessary, the SSB's primary clients should be engaged to discuss and co-develop proposals, such as reprogramming of vacant FTE positions, limiting the types of services offered to clients, or the shifting of more support responsibility to the clients themselves. An agreement should be negotiated between all parties and, once developed, monitored and enforced by Center leadership at all levels.
- If not presently done, all tasks or requests from clients should go through the Branch Chief for consideration and assignment. Tasks should be logged and tracked to completion. This would help leadership understand the actual labor allocation to management-oriented activities relative to other programmatic goals and objectives (and by staff member). It may also improve accountability for timely completion of discrete tasks and allow leadership to flag tasks that are delayed because of other pressing priorities, enabling prompt communication with clients about possible delays.
- Clients should financially support, at some level, management-oriented work at the SSB. Presently, because SSB services are essentially free and on-demand, clients have no incentive to vet or prioritize tasks that they send to the SSB. Staff at the SSB are highly skilled and their services should be utilized accordingly. Under a client-based organizational model, projects funded by clients external to the Center should take precedence over unfunded work. In other words, if base or discretionary funds are not available to support management-oriented work, this body of work should not necessarily take precedence over other contractual obligations. If the services offered by the SSB are critical, it is incumbent on its primary clients to help pay for those services.

- Programmatic activities in some thematic areas, such as Seafood Networks and Protected Resources, could be more closely connected to local and regional management needs. As these themes evolve, strategic effort should be made to identify and build-out management connections or, alternatively, retool research priorities to address priority management needs. Management needs is defined broadly and could extend beyond the SSB's primary clients, particularly in the case of Protected Resources.

22. *A. Are the Center's economic and sociocultural programs appropriately integrated with each other and with other science activities within the Center?*

SSB research themes contribute most strongly to the Sustainable Fisheries priority at the Center. In particular, the SSB's commercial and recreational fishing research programs are comprehensive and critical to the Center's overall scientific portfolio in Sustainable Fisheries. This line of research complements research and monitoring in the natural sciences. The SSB's Ecosystem theme clearly contributes to the EBFM goal at the Center. In particular, the coupled models project emphasis area in this theme is innovative and highly integrated science at the project level.

Two SSB themes could be more effectively integrated with other science activities at the Center, including Seafood Networks and Protected Resources. In the latter case, a lack of integration is extremely unfortunate because this is one of the Center's core thematic areas, the goals of which are to improve:

- 1) the accuracy and efficiency of data collection and enable seamless public access to our data and data products.
- 2) the quality, efficiency and responsiveness of stock assessments and other science-based advice.

With increased effort to enhance communication and integration, this SSB thematic area of research could make significant contributions to Center strategic goals. Leadership and staffs at the Center may need to be patient, creative and flexible as options for integration are explored and attempted.

There are plans at the SSB to better integrate across the economic and social science thematic areas. For example, in the Performance Measures theme, there will be collaborative development of new economic indicators for the vulnerability index.

*B. Are research efforts integrated, where relevant, with efforts at the regional offices and headquarters?*

The SSB has done an excellent job integrating with scientific efforts and priorities at the headquarters level through engagement with the NMFS Office of Science & Technology. In particular, programmatic activities in Community Resilience, Ecosystems and Protected Resources

have made contributions to address research needs at the regional and national level. Further, it is evident that programmatic activities in all themes nest under national and bureau strategic goals.

*Recommendations:*

- Make efforts to better integrate SSB Protected Resources activities with other scientific activities at the Center. Because of the territoriality and sensitivity related to research and management activities in this thematic area, leadership at the Center will likely need to first engage in conversations about the best approach for further integration. If integration is to succeed, sustained support and commitment from leadership will likely be required.
- Continue the innovative work underway in the Ecosystem thematic area. Expand this work to include additional species, including protected species. Consider if and how habitat condition might be further integrated into models.
- The SSB might consider expansion of its research efforts relative to ecosystem service valuation in the context of increasing its cross-disciplinary collaborative research activities across the Center.

23. *A. Is the status of data collection related to commercial fisheries, recreational fisheries, fishing participants, and communities adequate to fulfill economic and sociocultural science research needs?*

On the balance, it does not appear that data streams are adequate to fully realize the strategic goals and objectives of the SSB. While the SSB has engaged in a number of primary data collection activities, many of these collections are now somewhat outdated. Repeat collections are planned in some cases, but base funding is not available for research. Rather, funding opportunities for data collections are dependent on the success of staff in competition for funds from only two sources. While staff have been highly successful at winning funds from existing sources, if budgets decline, decreasing availability of these funding sources could severely limit the ability of the SSB to sustain existing data streams or create new ones to meet emerging needs. Diversification of funding sources and strategies is imperative.

Staff at the SSB have made tremendous use of secondary data in their programmatic activities, particularly in the Community Resilience and Performance Measures themes. Additionally, the SSB has effectively leveraged partnerships to expand their ability to collect data that are needed, such as in the Recreational Fisheries theme. This type of leveraging could become increasingly important if budgetary challenges increase in the future.

The SSB conducts planned collections, as well as deploys surveys to collect data in disaster contexts, meaning studies are planned but data is collected in a very short period. In both cases, SSB staff described the OMB PRA Clearance process requirement as an impediment to necessary

data collections. In the case of planned research, budget cycles make it difficult for staff to prepare and clear surveys quickly enough to utilize funds. For collections related to disaster contexts, the need to enter the field is pressing and time required for clearance affects the nature and quality of data obtained. There is a need to explore options to mitigate these impediments, if possible. One staff member indicated a plan to develop a survey or question bank at the national level that would be cleared and made available to staff at any FSC. This and other strategies might help SSB staff to anticipate, plan for and manage the clearance requirement more effectively.

Some data collections appear to be less applicable in the contemporary research and management context. For example, while investment in baseline community profiles was important in the past, this type of collection does not appear to be of tremendous value today because there are new data streams and methodological approaches that get similar data more efficiently, and at less of a cost. Other collections do not appear to have a significant management application warranting investment in ongoing investment in data collection, such as the Voices of the Fisheries project. While archiving and hosting data collected by others might be an excellent role for the SSB at this point, there appears to be other collection efforts that may take priority in a resource-constrained environment.

*B. Has the Center developed strategies to obtain, manage, and make data accessible?*

Yes, the Center and SSB have procedures for managing and making data accessible to stakeholders and members of the public. Additionally, the Public Access to Research Results (PARR) initiative is underway. Through PARR, the SSB is actively developing strategies to make data as readily available as possible. This is strategic area of development for the branch as they recognize the value of serving their data to the public and stakeholders.

The SSB has done a nice job of developing models and tools, some of which are online, to help stakeholders gain access to valuable information. However, in some cases, these models and tools become outdated or obsolete. In other cases, SSB staff create useful tools, but then must maintain them perpetually, as opposed to transitioning them to partners, etc. This is problematic because long-term support/maintenance of tools requires resources and may curtail innovation for creation of new tools.

*C. Are there barriers that impede data collection and access to data held by other entities (e.g. states, commissions, other federal agencies, etc.) that could be used to support the Center research, and how can these barriers be overcome?*

The SSB does not appear to have any difficulties procuring, accessing or using data held by other entities. To the contrary, they have done an excellent job using existing data to develop incredibly useful methods and tools to the benefit of clients, stakeholders and communities.

*Recommendations:*

- The SSB should consider diversification of its funding sources, exploring opportunities to secure funding from state and federal agencies with similar or compatible research goals. For example, the SSB has secured funds from BOEM in the past. These types of partnerships could help reduce budgetary dependence on a limited number of sources in a fiscally constrained environment.
- Efforts should be made to structure budgets to accommodate the OMB PRA clearance process for planned research. For example, provision of multi-year funds. This may not be possible, but could be explored.
- The idea to develop an OMB cleared question bank or survey for use by NMFS FSCs is excellent and should be pursued.
- The Center should provide resources to assist the SSB with tool development and transition to operations. When work plans for projects are developed, plans should include strategies for the transition of tools to operation, including identification of partners to host or deploy the tools with minimal support and oversight from SSB staff. Plans should also stipulate data updates, maintenance, etc. Finally, plans should include criteria that will trigger the renovation, sunset, or retirement of a tool, such as expiration of the “shelf-life” for data provided or confirmed lack of use by target users.
- The SSB should continue its use of existing, secondary data sources for innovative management-relevant research.
- In a fiscally constrained research environment, the SSB should consider sunset of data collections for some projects, such as the community profiles and Voices from the Fisheries. Partnerships with external researchers, such as universities and non-government organizations, could still be leveraged to continue population of the Voices from the Fisheries data collection. Sunset of these collections and products would make room for new data collections, projects and programs.

24. *A. Are the Centers using appropriate models and research tools to analyze data and provide management advice?*

Yes, it is evident that the SSB is using data, models, methods and research tools appropriate to their research questions. Consequently, the information that they are producing is useful in a management context, in addition to contributing to scholarship in their respective fields. Most particularly, the statistical models developed by researchers in the Seafood Networks, Recreational Fisheries, Performance Measures and Ecosystems themes are impressive and produce valuable information for resource managers. The conceptual models associated with the Seafood Networks (i.e., Following the Fish) and Ecosystems (i.e., IEA) are very exciting and hold promise for these lines of inquiry as they mature.

*B. Are they developing and using methods and models that contribute to the evaluation and exploration of ecosystem based fisheries management and other emerging issues?*

Yes, the SSB is focusing a portion of its research portfolio, particularly in the Community Resilience and Ecosystems themes, on the development of methods and models to support EBFM and other emerging issues, such as climate change. The program is doing a good job at anticipating emerging issues and, as possible, channeling resources to address these issues. It was noted during the Recreational Fisheries presentation that the transition to the new MRIP effort survey will substantially affect programmatic activities in this thematic area, although it was not clear that the SSB had yet a plan to address these issues.

*C. Are there barriers to adapting to address emerging issues?*

The primary barriers noted by this reviewer to addressing emerging issues are as follows:

- Limited fiscal resources to undertake new primary data collections or to continue existing collections that could be used for monitoring.
- Some staff have less time to devote to anticipatory research and development because they are focused on supporting tools/collections that cannot be transitioned to partners and/or a large portion of their time is devoted to management support services.
- Possible concern and resistance from primary clients about the SSB diverting a portion of its programmatic activities to work other than management support services.
- An annual process of “priority-based resourcing” at the Center for prioritization of research could be problematic for addressing emerging issues. There could be a tendency to favor immediate, short-term research needs (i.e., putting out fires) over long-term needs. The Center must determine how anticipatory science can most effectively be evaluated in a priority-based resourcing process with limited fiscal resources and restrictions on how funds must be used.
- Lack of research expertise at the SSB in the area of spatial econometrics, which will likely be necessary to evaluate the economic impact of climate change on the fishing industry in relation to other factors, at a spatial scale more useful to managers over time.

*Recommendations:*

- Develop a research prioritization process at the branch and Center level that balances current research needs with the need to conduct anticipatory research.
- Continue to look for ways to leverage current or new applied collections to address anticipatory research needs.
- Continue to look for external partnerships to leverage for anticipatory research activities, especially model development, testing and refinement.
- Develop a long-term plan for collection of data for monitoring purposes relative climate

change, etc.

- Develop a plan to address the new MRIP effort survey, in terms of fiscal and human resources required to transition this program.
- Consider carefully the expertise present in the SSB and determine if there are gaps in specialty that would be needed to address emerging issues.

25. *A. Is the Center's social and economic information being used in living marine resource management advice?*

Yes, it is evident that a majority of the socioeconomic information being produced by the SSB is used by resources managers, including GARGO and the FMCs, for management purposes. However, there are some lines of inquiry at the SSB that do not appear as well integrated into the management process presently, although there is tremendous potential for this to occur. It is equally evident that the SSB's primary clients would like additional information to integrate into their processes to address requirements and mandates.

*B. Are the existing mechanisms sufficient for ensuring this information is used appropriately?*

Judging from feedback from the SSB's primary clients, the mechanisms for integrating socioeconomic information into management products is complex and, in some cases, confused, unpredictable and inefficient. The actual and appropriate role of the SSB staff in this process, that is the infusion of information into management forums, is unclear to this reviewer. Having said that, it appears evident that all parties agree that communication, particularly peer to peer communication, is good between SSB staff and management staff.

*C. Are there barriers to the uptake of science provided by the Center and what steps can be taken to overcome these?*

A significant barrier to the uptake of SSB science by primary clients, particularly information for social impact assessments, appears to be their dependence on SSB staff to do this for them. The SSB's primary clients appear to lack the requisite expertise and, therefore, the capability to effectively identify, evaluate and integrate information into their processes in the absence of guidance from SSB staff. Another barrier appears to be a lack of interest and timely engagement with SSB research staff by managers, most especially relative to the Protected Resources theme.

*Recommendations:*

- Clarify the role of SSB staff in terms of integrating information into the management process. Make sure this role is understood by all parties, including SSB staff and staff from client organizations.
- Improve communication and integration between the SSB and relevant management staff from client organizations in areas where connections between research and

management are weak, such as Protected Resources.

26. *A. Is the Center providing the Best Available Science?*

Yes, judging from the presentations and records of publication, the SSB is providing the Best Available Science for management decisions. Additionally, SSB staff demonstrated commitment to improving their science to more effectively serve the management community.

*B. Are the Center economic and sociocultural research products adequately peer-reviewed?*

Yes, the Center has a rigorous internal peer review process. Additionally, SSB researchers regularly publish in peer reviewed journals within their respective disciplines, although the publication effort across research themes and years is uneven.

*C. Are the appropriate processes being used to ensure that scientific products meet professional standards and are of high caliber?*

Yes, research at the SSB is grounded in theoretical frameworks of governing disciplines, as well as vetted with management, peer scientists and stakeholders in many cases. Research methods and products are subject to internal and external peer review.

*Recommendations:*

No recommendations.

27. *A. Does the Center's program use the best tools to appropriately communicate research results to various managers, partners, stakeholders and the public?*

Communication activities at the SSB appear to be ad hoc and opportunistic. There is no Center or branch communications plan, nor does there appear to be communication strategies within SSB research themes. Having said that, it is clear that SSB staff do undertake communications. For example, they present research findings in professional venues, such as through publication of technical reports and journal articles, along with giving conference presentations. Individual SSB staff talked about engaging with fishermen on a one-to-one basis, as well as attending meetings to provide seminars and briefings. SSB staff also provide presentations to council staff, etc. Many SSB projects have a presence on the internet. Finally, the Center communications team does assist SSB staff with communications activities when requested. They also solicit SSB staff for stories, etc.

*Recommendation*

- Work with the Center communications team to develop a SSB communication strategy with input from interested parties, such as the Center, stakeholders, clients, etc.

### **Additional Comments or Recommendations**

- It is important to recognize that the Center recently undertook a reorganization, which means that programs and staff are still settling into a new organizational structure. Additionally, the SSB has had fluctuations in leadership since 2011. This instability has likely resulted in slower progress on recommendations offered during the 2011 review. With a stable organizational and leadership structure at the Center and Branch levels, progress in organizational improvement will undoubtedly be much easier for the SSB.
- Support for the SSB relative to Information Technology should be improved. All staff should be using the same operating system and version of Microsoft Office, for example. Technical support for tool development should be made available, as well as for web communication interfaces to keep them current.
- The branch should continue to explore strategies and platforms for data storage and public service, if appropriate.
- Engage in a process of comprehensive workforce planning to determine current and future needs relative to new FTE and, possibly, contract positions in terms of disciplines, grade, type of work (e.g., management versus research focus), etc. Fill vacant FTE positions.
- Consider developing and implementing annual or bi-annual performance reviews at the Branch level. Identify performance metrics that can be tracked to monitor progress toward achievement of SSB strategic goals. Findings from these evaluations would be useful to measure success of the program, identify areas for improvement, and help branch leadership build a case for additional investment of resources to support the program.

**Reviewer Report on Program Review of Economics and  
Human Dimensions Program**

**Reviewer #5**

**Northeast Fisheries Science Center  
National Marine Fisheries Service**

**Woods Hole, MA**

**May 1-5, 2017**

**Introductory Comments:**

It was a pleasure and a tremendous learning experience to participate in this review of the NEFSC SSB's Economic and Human Dimension Program. This group of dedicated researchers clearly has tremendous responsibilities and is deserving of continuing and additional support for their important and often innovative work.

*For this reviewer, the theme that emerged from the review was a need for strategic thinking by leadership and staff. Understandably (given the recent history of multiple leadership changes) SSB has become rather "ad hoc" or reactive in management and research efforts. The best approach to ensuring the long-term growth and intellectual strength of this unit is the thoughtful development of a strategic plan that will allow the SSB to focus on its goals and objectives when making decisions (be they daily personnel allocation, annual work plans, or decisions about research funding and personnel).*

This theme is echoed many times throughout this document, and should be seen as a recommendation for strengthening the unit and leadership, rather than a critique of personnel or leadership.

**Overarching Questions for Reviewers:**

28. *A. Does the SSB have clear goals and objectives for an economic and sociocultural science program?*

At the national level, there are clear goals and objectives for the economic and sociocultural science program (e.g., NOAA Social Science Vision & Strategy). However, at the Center level, the strategic plan (Northeast Fisheries Science Center Strategic Science plan 2016-2021) outlines four strategic themes (organizational excellence, science in support of ecosystems based fisheries management, protected resources, and sustainable fisheries). While the intention clearly is for this to be a document that integrates across disciplines, economics and socio-cultural is only addressed in two goals (B2 and G3). There is not currently active strategic documentation at the Branch level to supplement this with more specific strategy or goals to guide the Branch. In sum, while the goals and objectives for SSB can be deduced, they are not explicitly defined. More explicit goals and objects could help in addressing conflicting visions of the SSB role.

*B. Do the SSB's Programs provide information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils, Fisheries Management Commissions, and other stakeholders that require economic and human dimensions -related information to achieve their mission?*

The SSB has a role unlike other SSB programs around the country. In other regions, the regional offices provide scientific support for the management process, while the Science Center primarily focuses on applied research. In the NAFSC, the SSB is responsible for both management support and applied research. Thus, this SSB is in a unique and potentially problematic position trying to address the multiple goals and assess what is an appropriate level of information provision for their constituents listed above.

Regarding Management: In both public comment and presentations from FMCs and the Regional Offices, we heard frustration about the responsiveness of SSB. However, in informal discussion, satisfaction was also voiced. It also appears that management processes continues to move forward, without disruption or delay due to not receiving scientific information. Thus, it appears that the SSB is providing an appropriate level of information, but there is a problem with communicating or agreeing upon reasonable expectations for services provided by the SSB.

Regarding Research: SSB is clearly well regarded within NOAA and beyond for their provision and innovation in providing scientific research. Many of these projects are forward-thinking and will in the long-term be valuable to NOAA and other constituents in the region and beyond in achieving mission goals.

*C. Do the SSB's Programs have a strategic research agenda that anticipates evolving and long-term economic and sociocultural science needs including research to support adapting to climate change and implementation of ecosystem-based fishery management?*

As discussed in 1a, there is a lack of a formal strategy document at the SSB level. However, it is clear that SSB staff is very conscientious in mapping research so that it is in line with national and regional priorities and with a clear eye towards long-term objectives. Both climate change and ecosystem-based fishery management are diligently and appropriately addressed.

*Recommendations:*

Recommendation 1: Engage in a meaningful strategic planning process both within SSB and with key stakeholders to produce a meaningful vision of SSB's management and research roles, as well as vision long-term objectives. Use this document to guide short and medium term decision-making. There is a difference between being responsive and being reactive. Until SSB has a meaningful strategic plan, it will continue to be in danger of being reactive rather than responsive.

Recommendation 2: Because SSB's management constituents (particularly Councils and Regional Office) are directly not paying for SSB services, there is a natural tendency for them to expect or demand more services. (For example, asking for an elaborate number of options to be evaluated, rather than making the hard political decisions about which limited options are most relevant.) Center/SSB leadership (at the appropriate level) needs to engage these constituents in frank discussions of both constituent wants and needs and SSB's capacities and limitations. If possible, negotiations should be held over appropriate levels of services (given resource constraints), then leadership should enforce this agreement as necessary to ensure that an appropriate (not expansive) management support is provided.

29. *A. Are the SSB's economic and sociocultural programs appropriately integrated with each other and with other science activities within the Center?*

SSB economic and sociocultural programs are internally extremely well integrated. Indeed the amount of collaboration between staff and projects was truly impressive. This was demonstrated in publication lists, presentations on research, and observing interaction of staff with each other during the review. It is a remarkably collegial organization.

Regarding integration with other science center activities, it appears that there are mixed results. For ecosystems, there has been considerable effort by both SSB and other branches, and the results appear to be strong. However, SSB staff engaged in other activities explicitly mentioned working for greater integration, but being denied the ability to attend regular staff meetings, etc. These are often issues that are beyond the capability individual staff to address.

*B. Are research efforts integrated, where relevant, with efforts at the regional offices and headquarters?*

The SSB research and management activities appear to be broadly in line with the draft NEFMC scientific priorities shared with this review committee, and research efforts will support the long-term interests of the regional office. It should be noted that given the lack of social scientists at the regional offices, there understandably little active research efforts integrating the two organizations. This is not an SSB issue, but rather an artifact of the unique institutional arrangement in the region.

*Recommendations:*

Recommendation 3: Center leadership (above the branch level) needs to clearly and consistently message the value of SSB work and the expectation that SSB work will be integrated as appropriate with other division work.

Recommendation 4: Consider additional "soft" activities that could support these integration efforts. Michael Simpkin's (Resource Evaluation and Assessment Division Chief) informal lunches are a good

example of such activities. Programming such as regularly scheduled multi-disciplinary center wide brownbag seminars attended by leadership could be another activity.

*A. Is the status of data collection related to commercial fisheries, recreational fisheries, fishing participants, and communities adequate to fulfill economic and sociocultural science research needs?*

SSB staff (either directly or through contract work) is engaged in significant data collection across the multiple strategic themes of the agency. The result is a comprehensive data collection, however it appears that many of the data sets are collected once, then shelved. This allows the data to become dated and significantly less useful. It appears that NOAA's internal research funding culture values the novel over updating data or gathering time series information. This is unfortunate because it is the information about changes over time that are valuable to management, and can also result in high-impact publications.

*B. Has the SSB developed strategies to obtain, manage, and make data accessible?*

There is no SSB-level strategy in place expressing these priorities. However, SSB staff are clearly being guided by overall national and center priorities in data collection. While the issue was not explicitly discussed, it appears that data management follows clearly defined NOAA protocols.

Data accessibility appears mixed. At the research level, there are the usual (and appropriate) confidentiality issues surrounding disaggregated data, but SSB staff discussed how they regularly encourage outside researcher to use their data and work with them to expedite the process to gain access to data. Data access to the public is more limited. While selected programs with support and hosting from Headquarters have significant access (e.g., Voices from the Fisheries, CVSI, Community Snapshots) data dissemination reliant of Center-level resources is more limited. Indeed, the SSB website under "Latest Survey Updates" highlights a 2012 annual cost survey, and the most recent publications listed on the front page are three years old. SSB staff and leadership are clearly aware of the importance of making data more accessible to the public and are searching for more opportunities to do so. This issue, which is one of support, is discussed in more detail and recommendations are made in Question 7.

*C. Are there barriers that impede data collection and access to data held by other entities (e.g. states, commissions, other federal agencies, etc.) that could be used to support the Center research, and how can these barriers be overcome?*

In extensive presentations and discussions with SSB staff, this concern was not raised. This may be due to SSB's service provider/client relationships with many of these agencies. However, given agency resource limits, it may be advantageous to partner with other agencies in data gathering. This is discussed more below in Recommendation 6.

*Recommendations*

Recommendation 5: In addition to funding high-quality novel research, NOAA internal funding for research should also strategically support the development of the most valuable social science time series data.

Recommendation 6: Explore opportunities for partnering with other agencies (especially Councils) to gather new (or making better use of existing) management-relevant data. The MAFMC's Fishery Performance Reports <http://www.mafmc.org/fishery-performance-reports/> (or making better use of) are an example of policy relevant data regularly collected by Council staff that could be of use SSB, and other Councils could be encouraged to collect. Other opportunities may also be available. An added benefit of this approach long-term would be changing the relationships with other agencies from clients to partners.

30. A. *Is the SSB using appropriate models and research tools to analyze data and provide management advice?*

Yes, SSB is using models and research tools to analyze data that range from standard to cutting edge.

B. *Are they developing and using methods and models that contribute to the evaluation and exploration of ecosystem based fisheries management and other emerging issues?*

SSB is actively engaged in the NEFSC's ecosystem based fisheries management efforts, and appears to be working well across branches in that effort. Other emerging issues well-addressed include climate change, and social vulnerability.

C. *Are their barriers to adapting to address emerging issues?*

SSB is reliant on contractor support for addressing spatial analysis and modeling. As these knowledge and skill sets are becoming more important and more integrated into all aspects of science and management, lack of a full-time on staff with spatial skill will be a barrier to addressing emerging issues.

*Recommendations:*

Recommendation 7: Hire an economist or social scientist with significant spatial analysis skills and experience. This person should be able to contribute to both traditional analysis/management and emerging issues that require spatial analysis.

Recommendation 8: Although it is challenging in a budget and time constrained environment, continue to invest in SSB staff training and development to ensure that skills are continually updated.

31. A. *Is the SSB's social and economic information being used in living marine resource management advice?*

Yes, SSB information is clearly informing management advice.

B. *Are the existing mechanisms sufficient for ensuring this information is used appropriately?*

Because the SSB is providing management support to the Regional Office and Councils, there are mechanisms in place in this center to ensure information use that are not in place in others. However, there are not mechanisms in place to ensure that research not directly focused on management questions are available to or used by Regional Offices or Councils. Both these groups expressed interest in knowing more about SSB research activities.

C. *Are there barriers to the uptake of science provided by the Center and what steps can be taken to overcome these?*

Barriers to uptake are in place, as is discussed in question 5B. One significant barrier is issues with the website (discussed in 3b and addressed more directly in recommendations after question 7). More specifically examining uptake of science by Regional Office and Councils, there appear to be cultural barriers created by the focus on and tension over levels of management support provided by SSB that may be inhibiting the ability of the organizations to see SSB as a science provider rather than just a management support provider. Recommendations for steps to address these issues are presented below.

*Recommendations:*

Recommendation 9: Ensure that current scientific information is easily accessible on the SSB website. This should be in formats useful to both management (Regional Office, Councils) and the broader public (fishing interests, general public, etc)

Recommendation 10: Create regularly scheduled opportunities (seminars, workshop, etc) to highlight SSB research activities and invite Regional Office staff, Council staff and members, and staff at other Center branches to attend.

32. A. *Is the SSB providing the Best Available Science?*

From a broad perspective, the SSB is meeting the basic legal/technical standards of "Best Available Science." Appropriate peer review is occurring and most staff are actively publishing in high caliber research journals for their sub-fields.

However, the SSB has opportunities to be more strategic in how its conducts science. While not immediately impairing the "Best Available Science" standard, the following issues could compromise these standards if not addressed. As is noted in Question 3B, there is a clear value in SSB research interests and Headquarters funding priorities on new projects. Specifically, it appears that

opportunities to gather time series data are often missed as development of new surveys is preferred. Similarly, there appears to be little coordination within SSB when designing research. Given the current resource constrained environment and the likelihood that resources will be further constrained in the future, SSB, Branch and Center leadership should think strategically about where to invest research time and efforts in the future to ensure that research best meets strategic and mission needs rather than individual or team interests.

*B. Are the SSB's economic and sociocultural research products adequately peer-reviewed?*

SSB is following standard NMFS peer review procedures, which appear adequate.

*C. Are the appropriate processes being used to ensure that scientific products meet professional standards and are of high caliber?*

Appropriate NMFS processes are in place to ensure that scientific products meet standards. The strong performance of SSB staff in peer review academic publications confirms this.

#### *Recommendations:*

Recommendation 11: Prioritize time-series or repetition of existing surveys and data gathering over development of novel data gathering that may be unsustainable in the long term. This is necessary to ensure that the SSB is able to meet its mandate of providing best available science going forward.

Recommendation 12: Evaluate proposed new scientific projects to ensure that they contribute to the best available science mandate and that it fits within the specific strategic objectives of SSB.

Recommendation 13: When new data collection is undertaken, ensure collaboration across SSB staff to allow for coordination and opportunities to gather data across research foci. This could result in fewer surveys that would address multiple research objectives.

33. *A. Do SSB's program use the best tools to appropriately communicate research results to various managers, partners, stakeholders and the public?*

As discussed in question 3b and question 5, SSB faces significant barriers to communicating results to various managers, partners, stakeholders and the public. The website does not appear to be up-to-date and can be difficult to navigate, presence on other social media is limited or non-existent. Moving beyond on-line presence, key partners appear to be unaware of the range and strength of SSB. Addressing these issues will require longer-term more hands-on approach to building trust and communications with key constituents.

#### *Recommendations*

Recommendation 14: Develop a scientific and public communications strategy aimed at on-line and traditional media as well as relationship building with key stakeholders. As part of this strategy carefully consider whether communication personnel (if available) are best housed in SSB or the communications division

Recommendation 15: Better technical support of SSBs on-line presence is clearly needed.

Recommendation 16: Focus effort on building personal communication between key stakeholders and SSB about research. Recommendation 10 is one example of a strategy that could be used.

### **Additional Comments or Recommendations**

#### *SSB Staff Management vs Research Balance*

A recurring (but not universal) theme among SSB staff is the “management burden” they have, especially compared to other Science Centers. While it is clear that SSB staff does have considerable management responsibility, it was difficult for us to quantify exactly what that level of responsibility is, and how much it impedes on other SSB duties.

Recommendation 17: Conduct a systematic review of SSB’s management support responsibilities. Ideally this should be a significant part of a larger strategic review. This should include:

- a. Documenting and measuring staff responsibilities and time spent on various tasks to be able to accurately assess management responsibilities.
- b. Document staffing levels necessary to optimally run the SSB.
- c. Assess whether management responsibilities are distributed appropriately among staff
- d. Consider whether some more routine management analysis responsibilities can be shifted to other to Masters-level support personnel while more senior (research scientists) remain the contact points for Councils and Regional Offices. This would free up Research Scientist time for more complex projects and in the long run reduce expenditures as the support personnel would be less highly qualified and thus less expensive.
- e. Consider whether SSB should remain responsible for management support or if these responsibilities (and presumably some personnel lines) should be shifted to the Regional Office (as is the model in other NMFS regions).

Recommendation 18: If SSB remains responsible for management support, have a transparent approach to assigning management responsibilities and for understanding diverse levels of management responsibilities.

Recommendation 19: If SSB remains responsible for management support, SSB needs to think about its approach to management from a cultural perspective. Right now, there is a clear premium on research over management. Just as how in academia, there needs to be an understanding about how research and teaching inform each other, SSB culture could be strengthened if there was a greater appreciation (already held by some staff) of how engagement with management can and does drive research innovation. Essentially, the current culture of a management/research dichotomy needs to be broken down and replaced by one recognizing a spectrum of complementary activities. This will be a significant leadership challenge and the Branch level and higher.

## *Future Staffing*

It is clear that presently SSB has significant responsibilities for both management and research. SSB is also scheduled to hire three new scientists (who will largely make up for recently lost personnel, not growing.) Outside of a formal staffing review (see Recommendation 17), it is difficult to assess exactly how much additional new staff is necessary. However, it is reasonable to expect that significant additional staffing will be needed. Presently, SSB is scheduled to hire three new research scientists (largely replacing recently lost personnel). It was explained that this staff will primarily have management responsibility; “freeing up” other staff time from the “management burden” and towards preferred research activity.

Recommendation 20: Carefully consider the long-term implications of hiring in new SSB staff with significantly different responsibilities (that are widely considered to be less desirable) than those held by current staff. There is a significant danger that long-term this will create or institutionalize “second-class citizens” that will build tension (and hurt morale) within the SSB. An alternative action with less danger of hurting SSB cohesion is to hire these positions with the same responsibilities and existing staff and reduce everybody’s management responsibilities.

Recommendation 21: Significant hiring opportunities like this (3 FTEs) should be seen as strategic events, and not just opportunities to reduce workload. New hires should be forward thinking and reflect NMFS, Center, and SSB priorities. Even if it means delaying hires until an SSB strategy is in place, hiring should be linked to strategic priorities.

- a. One reasonable hiring priority (depending on strategic review outcome) would be a economist/social scientist with significant spatial analysis skills. This was previously discussed in Section 5 and Recommendation 7
- b. Consider some lower lever (Masters) support hires to support management responsibilities and take over routine management tasks (previously mentioned in Recommendation 17b)