

External Examination of Economic and Social Analyses Related to  
Amendment 13 to the New England Fishery Management Council's  
Multispecies Fishery Management Plan

Report of

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## **Executive Summary**

The economic analysis contained in the DSEIS is extremely thorough and of high quality. It provides more than sufficient information on which to base informed decisions on the range of economic impacts associated with the alternatives and options in Amendment 13.

Data used in the analyses are appropriate and can be considered best available data. The analysts make creative and reasonable use of data time series, many of which have origins and structures for purposes other than economic analysis.

Assumptions made in study design are reasonable adaptations to limits on data and analytical resources. The text of both the economic and social analyses is explicit and clear about limitations of the data, limiting assumptions of the analyses, and limitations on interpretation of results. This point is made particularly clear with regard to results that are comparative (ordinal) rather than absolute.

The overall approach to analysis of impacts is sound. Appropriate models and methods are used throughout. The findings produce information on relative impacts of rebuilding alternatives and a suite of management alternatives. Findings are reasonable, relevant and applicable to the decisions at hand. Economic impacts are exhaustively compared. The large number of alternatives and options analyzed and discussed make it difficult to derive general-level conclusions about impacts. There is no single alternative that is best for all sectors.

The evaluation of distributional impacts of alternate management measures is short-term. Since the rebuilding trajectories involve revenue losses in the short run, the vessels and port regions that bear the greatest short-term revenue impact of the alternatives are those most dependent on groundfish. The analysis is not able to look at distributional effects over the longer-term, when revenue gains will be realized, since it cannot account for adjustments in business patterns.

The social impact analysis is effective in identifying a reasonable range of social impacts, but does not constitute a social impact analysis because potential impacts associated with alternatives are not analyzed. It does, however, identify a range of critical social issues of concern to the affected communities in a way that is useful to decisionmakers.

The social analysis makes particular note of unknown but potential threshold effects, such as loss of shore-side infrastructure that could be the cumulative result of Amendments 5, 7 and 13.

Taken as a whole, the DSEIS provides information on the likely community economic impacts in relative, rather than absolute, terms. However, relative magnitude of short-term impacts of alternatives across port regions is informative for the policy choices represented in Amendment 13.

The DSEIS contains an extremely complex set of objectives, alternatives and options. The document has some difficulties in communicating the general sense of what is being done with a consistent structure and labeling. It is sometimes difficult to associate particular pieces of analysis with particular alternatives or options. This may be due to the long period of time over which Amendment 13 was developed and the large number of alternatives and options defined.

## **1. Introduction**

During December 2003 the External Review Panel for the Economic and Socioeconomic Analysis Contained in Amendment 13 DSEIS was provided the DSEIS, supporting analyses, public hearing records, and other related documents for review. After preliminary review of the DSEIS the Panel met on January 9-10, 2004 at the NOAA Fisheries Northeast Fisheries Science Center (NEFSC), Woods Hole, MA.

On January 9 a public meeting was held at the Aquarium Conference Room of the NEFSC, with presentations on Council operations, the Amendment 13 development timeline, economic data, modeling supporting the assessment of short and long-term economic impacts of Amendment 13 alternatives, and the social impact assessment. The agenda for the 9 January meeting is found in Appendix B of this document.

The format of the meeting was to take presentations from Council and NEFSC staff, with active discussion and question periods. Public comment periods provided an opportunity for other attendees to present their perspectives on the economic and social analysis. In addition, an email address and fax numbers were provided for submission of further information to the Panel.

Following the public meeting, the Panel met in executive session to discuss the presentations and identify remaining questions. On January 10 the Panel met with NEFSC staff to further discuss the economic and social analyses to pursue remaining questions.

The Panel has worked separately since January 10, preparing independent review reports, continuing the review of documents, and requesting additional clarification from authors of the analysis when needed.

## 1.1 Terms of Reference

The external review panel is asked to address four questions pertaining to the economic and social analysis:

A. Are the economic analyses in the DSEIS scientifically sound, based on the following considerations:

- appropriateness of the data used;
- assumptions made in study design, data collection, and analytical methods;
- overall approach to analyzing the impacts of each alternative and the economic and statistical methods and models employed in each analysis;
- accuracy, relevance and applicability of findings of impacts on fishing communities; and
- completeness of analyses given the available data, and as compared to other DSEIS for fishery management actions?

B. To what extent do the results in the DSEIS effectively compare economic impacts, overall and on individual communities?

C. Give your concise conclusion about the economic impact of the alternatives analyzed in the DSEIS, in terms of gross and net revenues and employment in the short term, long term, and overall:

- relative to each other;
- relative to conditions in the year 2002 (the most recent year for which complete economic data are available);
- relative to economic conditions since 1986 (the first year considered in the analysis); and
- on specific ports, gear sectors, shoreside industries and communities.

D. Does the DSEIS provide information on the likely economic impacts on communities in absolute terms (as opposed to providing comparative analyses) and on allocation consequences of the alternatives? If so, provide a concise summary of your interpretation of this information. If not, would you expect such information based on your knowledge of other DSEIS for fishery management actions?

## 1.2 Primary Review Issue

The primary issue underlying the review questions is whether the economic and social analysis is sufficient to inform decisionmaking. Sufficiency depends on the extent to which the analyses are based on the best available data, represent accepted practice in methods, are transparent in their documentation, and generate reasonable and replicable conclusions that are pertinent to the policy decision at hand. Sufficiency also relies on effective communication of these

elements so that alternatives may be considered and compared in an informed way.

Analyses can always be made more complete; models can always be improved. What is relevant for this review is whether the analyses are rigorous and comprehensive enough to provide the Council and NOAA Fisheries with the information they need about the economic and social consequences of proposed actions.

## **1.4 Report Structure**

The report is structured in the following way. Following the Introduction, Section 2 provides summary answers to the review questions that apply generally to all the analyses. Section 3 describes the guidance provided to economic analysts for the types of analyses they should conduct to meet a suite of legal and administrative requirements. Section 4 provides review findings specific to the various economic analyses. Section 5 summarizes guidance given to social analysts. Section 6 provides review findings specific to the SIA. Section 7 contains additional review comments related to the DSEIS. Appendix A lists documents I consulted in conducting this review. Appendix B contains the agenda for the January 9, 2004 review meeting.

## **2. Summary Answers to TOR Questions**

This section provides general review comments in response to the Terms of Reference questions that apply to all parts of the DESIE economic analysis. More specific comments on particular analyses are provided in Section 4.

*A. Are the economic analyses in the DSEIS scientifically sound, based on the following considerations:*

*Appropriateness of the Data Used;*

Data used in the analyses are appropriate. Overall, the analysts make creative and reasonable use of data time series whose origins and structures originate for purposes other than economic analysis. Lack of common elements among the databases make it difficult to correlate effort, location and landings data, essential for assessing the economic impacts effort controls and area closures, which are the primary management tools of the NEFMC.

An example is the absence of a unique identifier that can connect the vessel trip reports, with information on fishing location and effort, to dealer weighout files. Data on processing provided through the Processed Products Survey is not connectable to either the weighout files or vessel trip reports, nor are domestic landings differentiated from imports.

As in all council regions, issues of data completeness, quality and timeliness challenge the economic analysis of New England fisheries. Data on vessel fixed and operating costs, in particular, are notoriously thin. Throughout the council regions it is only relatively recently that resources have been invested in collecting systematic cost data for the purpose of economic analysis, and these efforts tend to ad hoc activities rather than a routine element of an ongoing data collection program. The level of cooperation among the industry in the provision of cost data is still quite variable.

Since 1996, the New England region has made an effort to enhance the cost database for a wide range of fishing gears and vessel sizes through university surveys and the at-sea observer program. New cost data continue to be collected

*Assumptions Made in Study Design, Data Collection, and Analytical Methods;*

Assumptions made in study design are reasonable adaptations to limits on data and analytical resources. It is useful to note that there are some areas in which assumptions that are reasonable to economists sound overly restrictive to people who work in “real world” applications of what is being analyzed. This suggests that care should be taken to present full discussions of assumptions with acknowledgement that they do not fully represent reality and a complete description of how the simplifying assumptions do not weaken the analytical results.

*Overall Approach to Analyzing the Impacts of Each Alternative and the Economic and Statistical Methods and Models Employed in Each Analysis;*

The overall approach to analysis is of impacts is sound. Appropriate models and methods are used throughout. The analyses, in evaluating impacts over different categories, do show the result of having been done at different points in time along a long path of Amendment 13 development. The social impact assessment uses sound methods in the identification of the range of potential social impacts, but stops short of analyzing the impacts.

*Accuracy, Relevance and Applicability of Findings of Impacts on Fishing Communities*

The findings produce information on relative impacts of rebuilding alternatives and a suite of management alternatives. Overall the findings are reasonable, relevant and applicable to the decisions at hand. Social impacts are identified but not analyzed.

*B. To what extent do the results in the DSEIS effectively compare economic impacts, overall and on individual communities?*

Economic impacts are exhaustively compared. Economic impacts in terms of sales, income, and employment are assessed for the region as a whole and for 12 disaggregated fishing regions (as opposed to individual fishing communities) classified on the basis of vessel activity, landings and home ports. The use of fishing regions is an appropriate adaptation to the county-level data aggregation in IMPLAN. Economic impacts are identified in detail for harvesters, processors, dealers, marine suppliers, etc.

The model is extremely useful in the identification of not only total economic impacts of regulatory alternatives, but also the distribution of those impacts across fishing regions, gear sectors, and marine-related businesses.

The large number of combinations analyzed and discussed makes the presentation of impacts difficult to summarize in simple conclusions.

*C. Give your concise conclusion about the economic impact of the alternatives analyzed in the DSEIS, in terms of gross and net revenues and employment in the short term, long term, and overall:*

- *relative to each other;*
- *relative to conditions in the year 2002 (the most recent year for which complete economic data are available);*
- *relative to economic conditions since 1986 (the first year considered in the analysis); and*
- *on specific ports, gear sectors, shoreside industries and communities.*

There is no single alternative that is best for all sectors. The relative distribution of estimated revenue loss is similar across all alternatives. However, there are some distributional differences among the alternatives in terms of sector sensitivities to closed areas vs. DAS reductions.

Relative to conditions in 2002, Figure 163 indicates that for a 2009 rebuilding date, the status quo (2002 fishing conditions) would not result in positive net benefits in any year of the projection period out to 2026.

Relative to conditions in 1986, looking at the projected landings streams in Figure 176, any of the rebuilding strategies will by 2008-2010 lead to landings that exceed 1986 levels. Revenues are likely to follow a similar pattern, depending on the price response to quantities landed

The evaluation of distributional impacts of alternate management measures is short-term. Since the rebuilding trajectories involve revenue losses in the short run, the vessels and port regions that bear the greatest short-term revenue impact of the alternatives are those most dependent on groundfish (relying on groundfish for >75% of their revenue). These are the ports of Boston, Chatham/Harwichport, New Bedford, Portland and Upper Mid-Coast Maine. The trawl sector will be more affected than other gear sectors. Employment impacts

are projected to be greatest for Alternatives 2A and 4 in the short term, with the greatest losses among large and medium trawlers and seafood dealers (Table 245). The analysis is not able to look at distributional effects over the longer-term, since it cannot account for adjustments in business patterns.

*D. Does the DSEIS provide information on the likely economic impacts on communities in absolute terms (as opposed to providing comparative analyses) and on allocation consequences of the alternatives? If so, provide a concise summary of your interpretation of this information. If not, would you expect such information based on your knowledge of other DSEIS for fishery management actions?*

Overall, the DSEIS provides information on the likely community economic impacts in relative, rather than absolute, terms. However, relative magnitude of short-term impacts of alternatives across port regions is extremely informative for the policy choices represented in Amendment 13.

In comparison to two recent groundfish FEIS prepared by the Pacific Fishery Management Council for actions encompassing large-scale changes in the groundfish fishery (PFMC 2003a;2003b), the analysis of community impacts contained in the DSEIS for Amendment 13 is much more complete. In the two PFMC FEIS socioeconomic impacts are addressed in a total of 18 and 14 pages respectively.

### **3. Guidance to Economic Analysts**

The scope and content of economic analysis for fishery management actions is described in OMB guidance for economic analysis under Executive Order 12866 (OMB 1996) and by a more general NMFS guidance for economic analysis to meet the requirements of E.O. 12866 and the Regulatory Flexibility Act (RFA) (NMFS 2000).

E.O. 12866 "Regulatory Planning and Review," (1983) requires that economic analysis (EA) of proposed or existing significant regulatory actions should inform decisionmakers of the consequences of alternative actions. According to the OMB directive the EA should provide information allowing decisionmakers to determine that:

- there is adequate information indicating the need for and consequences of the proposed action;
- the potential benefits to society justify the potential costs, recognizing that not all benefits and costs can be described in monetary or quantitative terms;
- the proposed action will maximize net benefits to society (including potential economic, environmental, public health and safety, and other advantages; distributional impacts; and equity), unless a statute requires another regulatory approach;

- where a statute requires a specific regulatory approach, the proposed action will be the most cost-effective, including reliance on performance objectives to the extent feasible;
- agency decisions are based on the best reasonably obtainable scientific, technical, economic, and other information.

OMB Guidelines require that an analysis include a statement of need, an examination of alternative approaches, and an analysis of the benefits and costs of alternatives.

Analysis of fishery economic considerations to address both E.O. 12866 and RFA requirements relates to how regulatory actions affect demand, supply and markets for fishery products and fishing opportunities. The overall fishery economic framework has four components:

- changes in price, quantity or activity with changing market demand and supply;
- changes in revenues and operating costs for fishery firms or individuals in response to management actions, biological conditions or markets
- fishing fleet response
- changes in fishing effort and its effect on fishing stocks

NMFS recommends that a “preliminary regulatory economic evaluation” (PREE) describing the general expected economic effects of the alternatives be done when the alternatives are developed. The PREE may be quantitative or qualitative, depending on the complexity of alternatives and the availability of data (NMFS 2000).

#### **4. Review Findings**

Question to Reviewers

Are the economic analyses in the DSEIS scientifically sound, based on the following considerations:

- appropriateness of the data used;
- assumptions made in study design, data collection, and analytical methods;
- overall approach to analyzing the impacts of each alternative and the economic and statistical methods and models employed in each analysis;
- accuracy, relevance and applicability of findings of impacts on fishing communities; and
- completeness of analyses given the available data, and as compared to other DSEIS for fishery management actions?

Sections 4.1 - 4.7 address this question.

## **4.1 Assessment of the No Action Alternative**

### **4.1.1. Summary of Existing Conditions**

The choice of regulations in place in the 2001 fishing year is understandable from the perspective of this year representing pre-settlement conditions. The sunset provisions on the agreement create a “default” baseline of whatever was in effect prior to the negotiated settlement. However, the choice is 2001 as a “no action” baseline poses difficult communication problems for the DSEIS as a decision document, because it means that alternative actions assessed in Amendment 13 are in reference to 2001, not to the most recent regulations. The result is that actions such as DAS reductions taken in 2002 are embedded in the proposed DAS reductions in Amendment 13, creating the impression that DAS reductions taken in 2004 will be larger than they actually will be in comparison to regulations in place in 2002-2003.

### **4.1.2. Appropriateness of Approach**

For all rebuilding strategies the assumption of perfect implementation is made. This is a reasonable assumption given the absence of any specific information to the contrary. It results in an estimation of potential economic yield of each rebuilding strategy under ideal conditions.

Assumptions made in the assessment of the no action alternative are that prices are upwardly affected by a time trend and that costs (fixed and variable) remain constant. These are reasonable assumptions given the data available: price analysis which suggests aggregate commodity price behavior for groundfish with upwardly trending prices over time, and a cost data base that associates variable costs of fishing in a constant way with level of effort.

### **4.1.3. Appropriateness of Data and Models**

The Monte-Carlo simulation approach to projecting streams of landings and revenues is entirely appropriate and is accepted as a standard method for randomly generating values for uncertain variables (such as landings or prices that have a known range of values but an uncertain value for any particular point in time) to simulate a model.

### **4.1.4. Appropriateness of Findings**

The estimation of economic impact of the no action alternative is appropriate and relevant to the question at hand: what do the time path of future landings, revenues and returns to income and owner profit look like under 2001 fishing conditions? The findings are reasonable within the bounds of the uncertainty about potential cost trends and market responses. The document is explicit about

limitations of the analysis and about its appropriate interpretation as a relative, rather than absolute, range of values.

#### 4.1.5. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

The simulation of the no action and other alternative rebuilding strategies pose a communication problem for the document. For reasons clearly specified in the document, the simulations are useful for relative comparisons of rebuilding strategies rather than point estimates of economic benefit at a given point in time. It is reasonable to assume that whatever changes in prices or costs that are unrepresented in the simulations would affect all rebuilding strategies in the same way, so relative comparisons among the alternatives can be made. But this is a difficult concept to get across when the natural tendency is to look for absolute values associated with future revenue streams.

### **4.2. Assessment of Rebuilding Programs for Overfished Stocks**

#### 4.2.1. Appropriateness of Approach

Three rebuilding strategies for mixed groundfish stocks were assessed for two rebuilding periods ending in 2009 and 2014. For all rebuilding strategies the assumption of perfect implementation is made. This is a reasonable assumption given the absence of any specific information to the contrary. It results in an estimation of potential economic yield of each rebuilding strategy under ideal conditions.

Assumptions are made that prices are downwardly affected by increased landings in the short run but upwardly affected by a time trend and that costs (fixed and variable) remain constant. These are reasonable assumptions given the data available: price analysis which suggests aggregate commodity price behavior for groundfish with upwardly trending prices over time, and a cost data base that associates variable costs of fishing in a constant way with level of effort.

#### 4.2.2. Appropriateness of Data and Models

The net benefits model is used to estimate the net present value (defined as the discounted stream of the sum of consumer surplus, and net return to profits, income payments and resource rent) of alternative rebuilding strategies, independent of the particular type of regulation chosen. It assumes that each rebuilding strategy is fully implemented over alternative time horizons. Output from the break-even analysis is used to determine average fixed and variable costs under the assumption that fleet composition and DAS remain constant. Values to groups other than commercial vessels, crew and consumers are excluded from the analysis. Projected landings are represented as theoretical

probability distributions based on empirical cumulative distributions of landings. The model uses the OMB-specified interest rate with which to discount the value of future benefits.

Because there is not yet a model of the dynamics of fleet composition and behavioral response to regulation, this model provides a way to assess the net benefits of alternative rebuilding strategies through their different time paths independent of the specific regulations through which those strategies are implemented. By holding prices, costs and fleet composition constant, the model isolates the essential effect on net benefits that different rebuilding strategies will have over time, allowing ordinal ranking of the alternatives.

This model is a useful approach to comparing the set (2 time horizons; 3 trajectories) of alternative rebuilding strategies.

#### 4.2.3. Appropriateness of Findings

Findings of the analysis of alternative rebuilding strategies are appropriate and predictable in the differences between the shorter (2009) and longer (2014) rebuilding periods. The analysis reveals different time paths of landings and net benefits resulting from differences in fishing mortality strategies. It shows the effect of different rebuilding points for different stocks as well as the counterbalancing effects of short-term price decreases with landings increases and long-term trends of price increases.

#### 4.2.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

Methods, limitations and findings are clearly presented. The large number of combinations assessed lead to detailed results that are difficult to convey. However, section 4.4.3 (p. I-552) is effective in synthesizing the results of the comparison of alternative rebuilding periods, and identifying the more important results for the question of choice of rebuilding period.

The main conclusions of this analysis are effectively presented in the Executive Summary.

### **4.3. Assessment of Fishery Program Administration Alternatives**

#### 4.3.1. Appropriateness of Approach

Seventeen different program administration elements, ranging from routine administrative matters to innovative management tools such as DAS leasing and Special Access Programs, are addressed with varying levels of economic analysis. Most program alternatives presented have several options.

The program administration alternatives are analyzed for their economic impacts to the extent that data exist and administrative detail is specified. In some cases a qualitative assessment of expected economic impacts is provided where specifics of an element are still to be developed. In other cases, economic impacts are expected to be similar to those already assessed in greater detail for management alternatives

The most complete economic analysis in this section exists for DAS leasing. Reasonable assumptions are made. The use of the break-even analysis as a way to assess the likely impact of an untested program is a reasonable way to approach the question of determining rock-bottom requirements for vessels of different scales.

Special Access programs receive qualitative economic evaluation, which is reasonable in that SAPs are as yet only developed at the concept level. To receive more complete economic assessment program details would have to be specified to a greater degree. At the qualitative level, a reasonable range of potential economic impacts of SAPs is identified for the Georges Bank yellowtail flounder and Southern New England/Mid-Atlantic winter flounder programs.

#### 4.3.2. Appropriateness of Data and Models

Data and models used to assess economic impacts of program administration alternatives are used appropriately throughout this section.

#### 4.3.3. Appropriateness of Findings

The assessment of likely economic impacts of these alternatives is reasonable and useful to inform decisions as to which to choose or which to flesh out in more detail.

Particularly interesting as new approaches are the market-based options such as DAS leasing to improve efficiency and flexibility for fishery participants and the special access programs that would allow selective utilization of healthy stocks. The economic assessment presented presents reasonable findings in detail for likely impacts across types and scales of fishing operation, and for ports and regions.

#### 4.3.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

The presentation of DAS leasing is particularly useful. It not only provides a thorough description of how the analysis was approached, it also includes discussion about what might reasonably be expected in distributional outcomes of such a program as well as detailed impacts across regions, ports and fishing operations.

Many of the program administration alternatives comprise a set of alternative institutional arrangements that exist as options for further development and specific application. As noted in the social impact assessment, many of these options, such as DAS leasing and special access programs, have the potential to mitigate some of the social and economic impacts of the main actions taken under Amendment 13. If accepted in principle by the Council and NMFS, they represent frameworks on which specific programs tailored to particular areas or operating strategies can be built. The opportunities offered by these options could perhaps be communicated more strongly in the document.

#### **4.4. Assessment of Alternatives to Control Capacity**

The economic analysis assesses the likely impacts of 6 alternatives for capacity reduction: permit absorption; permit transfer, DAS transfer, unused DAS freeze, and mandatory latent effort categorization.

##### **4.4.1. Appropriateness of Approach**

The analysis is clear about the uncertainty regarding the number of vessels who would be willing to buy or sell permits or DAS, given that this is a new management option for the groundfish fishery. Given this uncertainty, potential outcomes of the alternatives are assessed through simulation.

##### **4.4.2. Appropriateness of Data and Models**

Assumptions made in the analysis are reasonable. Data used are appropriate. Simulation modeling is an appropriate technique to address this question.

##### **4.4.3. Appropriateness of Findings**

Findings are consistent with what might be expected, particularly in terms of relative differences among the options.

##### **4.4.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats**

The text and tables in which results are presented are clear and specific. Results are shown in detail.

#### **4.5. Assessment of Management Alternatives to Address Rebuilding Requirements**

The economic assessment of impacts of the four management alternatives and several options to address the rebuilding requirements speak to several types of impacts: effects on financial positions of different categories of vessels relative to

break-even levels of return, revenue losses across vessel categories, effort shifts, and loss of recreational fishing revenues. These impacts are addressed in the short-term. It is important to note that the short-term analysis of regulatory impacts is separate from and independent of the long-term analysis of rebuilding. The short-term and long-term models are designed to answer fundamentally different questions.

The economic assessment utilizes several different types of analysis: an area closure model, estimation of vessel-level revenue changes, an input-output model (described above), a “hard TAC” model, a break-even analysis, and a recreational fishing I-O model.

#### 4.5.1. Appropriateness of Approach

Break even analysis: this is an appropriate approach to assessing the effect of DAS reductions on the groundfish fishing decision through its effect on a vessel’s financial position. The analysis does not look at a break-even point as a business objective but rather as a representation of the absolute minimum a vessel would have to earn to be able to continue to fish for groundfish.

Revenue loss model: the revenue loss model is a systematic and detailed approach to assessing revenue losses from a variety of alternative management actions as they affect a detailed set of economic categories and geographic areas.

Closed area model: use of a nonlinear programming model for reviewing options of fishing locations based on the grid system developed by the PDT is appropriate to generating a relative ranking of impacts from different closed area options. A weakness of the model, explicitly acknowledged, is that vessel adjustments to closed areas are limited to areas in which that vessel has a fishing history, so actual adjustments of displaced effort may be misrepresented.

Price forecast model: The price model is based on analysis assessing the extent to which exvessel prices of New England groundfish are co-integrated over the long-run and could be treated as a single commodity for the purpose of estimating price response to regulation (Roheim et al. 2003). The analysis found cointegrated prices for most New England whitefish species, and identified Atlantic cod as a dominant species leading the price of other species.

Input-output model: The I-O approach is appropriate for comparing impacts across regions and sectors. It captures impacts on both fishing and nonfishing sectors through business linkages between sectors.

Hard TAC model: the decision-based approach used to assess the hard TAC alternative and related discards is appropriate.

#### 4.5.2. Appropriateness of Data and Models

Break even analysis: reasonable use is made of cost data from surveys and at-sea observers. Vessel categorization is reasonable. Calculations of revenue are reasonable. The analysis takes a systematic, staged approach to addressing various components of costs and how they would have to be covered to continue fishing. DAS requirements are evaluated across vessel categories and types.

Revenue loss model: The revenue loss model uses reasonable data and a systematic stepwise approach to assessing revenue changes, using input from the closed area model, the price model, and other data.

Closed area model: the model is an appropriate approach as indicated above. Modeling assumptions are that DAS are fully utilized. The availability of new cost data will enable the analyst to address the limitation of the model of assigning vessel adjustments only to areas with fishing history. New cost data will enable the development of economic profiles of vessel sizes and types and allow optimization using profit maximization over these groups.

Price forecast model: The usefulness of this model is the treatment of a group of groundfish as an aggregate commodity. Because prices of several groundfish species are closely related and follow cod prices, cod prices can be used to represent a group of New England groundfish. Time is used as an instrumental variable for income. This is reasonable.

Hard TAC model: this model is appropriate for assessment of the hard TAC alternative as specified. It represents several decision points: whether to fish, whether to discard, and when to stop fishing. The model has been used to assess impacts of prior management actions and has been reviewed by the SSAC.

Recreational fishing model: This is an input-output model designed to estimate economic impacts of changes in recreational fishing regulations that lead to changes in expenditures by anglers. The model uses data from the MRFSS intercept survey model to account for number of angler trips.

#### 4.5.3. Appropriateness of Findings

Break-even analysis: The results of the analysis are reasonable, showing the relative effect of a management alternative on financial positions across vessel types. It shows in general that DAS reductions affect those with greater dependence on groundfish more than those who have more diversified portfolios. Tables 217-220 illustrate the relative impacts of alternative DAS allocations across vessel types.

Revenue loss model: revenue losses are calculated as relative, rather than absolute, losses across alternatives and as distributed across gear types, vessel size classes, and states. Findings are appropriate and provided in exhaustive detail across gear type, vessel size, state, port groups, and entity size. A

comparison of the four alternatives is presented (4.4.5.1.) in terms of relative revenue impacts by dependence on groundfish, entity size (gross sales), gear groups, vessel size, state and port groups. More than ample detail is provided for decisionmakers to assess the differences among the four alternatives.

Closed area model: outcomes of the model are reasonable and appropriate to the assessment of alternative 3. Compared to 2001 levels of fishing, results show improvement in profits and also increases in fishing mortality, both of which are reasonable conclusions. Fewer vessels and crew would fish, but profits to those fishing would increase.

Price model: Despite the limitations of the model explicitly identified (in particular, the exclusion of the influence of national markets), the model is useful in simplifying the representation of prices of mixed species landings and is a reasonable approach to understanding relative effects on revenues.

Hard TAC model: outcomes of the model are reasonable and appropriate to the assessment of alternative 4.

Recreational fishing model: the model calculates changes in expenditures by anglers by state and type of fishing in response to two levels of reductions in allowable recreational fishing trips. Expenditure changes are represented as economic losses – in sales, income and employment – by subregions. This is an entirely appropriate and informative way to assess the likely distributional impacts of reductions in recreational fishing opportunities.

#### 4.5.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

Break-even: Tables 217-220 are effective in communicating the distributional impacts across vessel categories of different levels of DAS reductions. The analysis is clearly and systematically presented, with explicit recognition that analysis by vessel categories does not represent individual vessel variation. It also recognizes that substitution effects of nongroundfish fishing opportunities are unknown.

Revenue loss model: detailed results of the relative revenue impacts across vessel categories and fishing locations are provided; in fact, the breakdown of changes in gross revenue into percentiles for each category may be more detail than is easily communicated. Table 177, showing relative losses for different states, would seem to be a key piece of information for decisionmakers and could effectively be highlighted and perhaps simplified. Potential sources of bias in the analysis are clearly and explicitly acknowledged and the distinction between relative (generated by this model) and absolute estimations of revenue loss is clearly explained.

Closed area model: limitations of the closed area model are explicitly acknowledged and described. In particular, the assumption of the ability to perfectly maximize revenue, the absence of information about non-groundfish revenues, the inability to allow vessels to shift into areas in which they have not previously fished, and the absence of representation of latent effort which could affect the results of activated. The discussion is clear that the model produces only relative comparisons of impacts of closed areas alternatives. Absolute impacts cannot be estimated.

Price model: the limitations of the model are explicitly identified, in particular, the exclusion of the influence of national markets and the likelihood of some misspecification.

Hard TAC model: limitations of the model were explicitly addressed in the January 9 presentation, although I am not sure whether they are included in the DSEIS text. The model can account for only single stock thresholds, assumes no behavioral change among fishermen, and it may not adequately represent the targeting behavior of fishermen under the derby system created by a hard TAC with no accompanying timing restrictions.

Recreational fishing model: the uncertainties affecting this analysis are made explicit and are clearly presented. Little is known about angler response to proposed changes in regulations, and there is little information with which to assess value of the loss of fishing opportunities to anglers.

#### **4.6. Assessment of Alternatives to Minimize Adverse Effects on Essential Fish Habitat**

The analysis assesses economic impacts of a series of closed area options to minimize adverse effects on EFH.

##### **4.6.1. Appropriateness of Approach**

The approach to assessing impacts is three-phased: 1. GIS and VTR data are combined to calculate value of catch by area; 2. Revenue losses from area closures are calculated; 3. Distribution of revenue losses is assessed through I-O modeling to determine direct short-term economic impacts across NE regions and across economic sectors.

The approach is thorough and appropriate.

##### **4.6.2. Appropriateness of Data and Models**

Data and models used are appropriate. GIS data provide location. VTR data link catch to location. Price data allow calculation of total revenues from a particular catch. The I-O model assigns revenue losses across regions and sectors.

Assumptions are made of no displacement effects: closed areas therefore lead to loss of revenue from that area with no substitution. The analysis acknowledges that this is unlikely but given that information about the type of displacement likely to take place is absent, this is a reasonable assumption. It is likely to bias results (in terms of magnitude of revenue loss) upward, but is likely to affect all the alternatives in the same way so relative impacts remain comparable across alternatives.

#### 4.6.3. Appropriateness of Findings

Findings are appropriate and consistent with data and models used. Losses of revenue from closed areas are calculated for a range of species: monkfish, scallops, groundfish, squid, whiting and others.

#### 4.6.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

The text is explicit about limitations in the data: e.g. missing or inaccurate location data in the VTR database, which may bias the results downward. It is also explicit about the upward bias effect of the assumption of no displacement effects.

Both text and tables give clear and detailed description of results. The tables provide extremely detailed information with which the relative impacts of alternatives on vessel revenue, coastal regions and economic sectors can be assessed. There is a good summary of which alternative is associated with the greatest impacts.

### **4.7. Assessment of Other Issues**

The “Other Economic Impacts” section (4.4.9) includes qualitative or additional assessments of alternatives that receive quantitative analysis in other sections.

#### 4.7.1. Appropriateness of Approach

In most cases, these are brief, qualitative assessments of general economic properties of programs that as yet only exist in concept. It is an appropriate approach for initial identification of key properties that will influence impacts.

#### 4.7.2. Appropriateness of Data and Models

Appropriate use is made of available data.

#### 4.7.3. Appropriateness of Findings

Findings are appropriate to the extent that they identify, at least qualitatively, the possible range of impacts of a program element could have. For example, the Georges Bank hook/gillnet sector allocation, which at this point can be described generally in terms of a reasonable range of economic impacts, but would need to have more program specifics identified before a complete assessment could be done.

#### 4.7.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

It is confusing to have the supplemental analyses of these program elements separated from the main body of analysis for each issue. It would be more clear if they were integrated with the sections in which the quantitative analyses are contained.

### **4.8. Comparison of Economic Impacts**

#### Question to Reviewers

To what extent do the results in the DSEIS effectively compare economic impacts, overall and on individual communities?

#### 4.8.1. The Input-Output Model

Short-term economic impacts of the four major management alternatives to address rebuilding requirements are assessed using an input-output (I-O) model. The I-O model is a sophisticated version of IMPLAN modified to represent the complexity of the New England fishing sector. In contrast to the usual approach, the model looks at how changes in fishery supply (as opposed to changes in final demand) affect related “forward linkage” economic sectors such as processing, wholesaling and distribution and “backward linkage” sectors such as marine supply, ice and fuel.

The model disaggregates the single commercial fishing sector into 198 subsectors (gear types, vessel sizes, processing, support services, etc), and geographically apportions the economic impacts of a change in fishery landings to subregions. Within each subregion, sales, income and employment impacts are apportioned across fishery subsectors and other sectors. It is important to note that impacts on nonfishing sectors are also captured through model linkages between fishery sectors and other sectors with which they do business.

The model is much more detailed in its representations of fishing sectors and their economic linkages than the I-O model used in the Pacific Fishery Management Council region in which I work.

The model is also used to compare impacts across regions and sectors of area closure alternatives to protect EFH.

#### 4.8.2. Summary of Findings

Economic impacts in terms of sales, income, and employment are assessed for the region as a whole and for 12 disaggregated fishing regions (as opposed to individual fishing communities) classified on the basis of vessel activity, landings and home ports. The use of fishing regions is an appropriate adaptation to the county-level data aggregation in IMPLAN. Economic impacts are identified in detail for harvesters, processors, dealers, marine suppliers, etc.

The model is extremely useful in the identification of not only total economic impacts of regulatory alternatives, but also the distribution of those impacts across fishing regions, gear sectors, and marine-related businesses.

#### 4.8.3. Overall Assessment of Impacts of Fish Harvesting Sectors

The model estimates economic impacts - sales, income and employment - on fish harvesting sectors in detail. These are represented in Tables 222-245, which allow detailed comparison of impacts across fishing regions, sectors and management alternatives.

#### 4.8.4. Impact Assessment on Buyers, Processors, and Other Business Directly and Indirectly Involved with the Groundfish Fishery

Just as it does for fish harvesting sectors, the model estimates economic impacts - sales, income and employment - on buyers, processors, and other business directly and indirectly involved with the groundfish fishery in detail. As noted above, within each subregion, sales, income and employment impacts are apportioned across fishery subsectors and other sectors. These are represented in Tables 222-245, which allow detailed comparison of impacts across fishing regions, sectors and management alternatives. Impacts on nonfishing sectors are also captured through model linkages between fishery sectors and other sectors with which they do business.

#### 4.8.5. Impact Assessment at the Community Level

Data configuration of the IMPLAN makes assessment of economic impacts at the community level inappropriate, except in the case where a community is large enough to dominate an economic area. However, the classification of data into fishing regions makes creative and effective use of the county-level data in IMPLAN combined with weighout, trip and permit data.

## 4.9. Reviewer's Conclusions Regarding Economic Impacts of Major Rebuilding Options

### Question to Reviewers

Give your concise conclusion about the economic impact of the alternatives analyzed in the DSEIS, in terms of gross and net revenues and employment in the short term, long term, and overall:

- relative to each other;
- relative to conditions in the year 2002 (the most recent year for which complete economic data are available);
- relative to economic conditions since 1986 (the first year considered in the analysis); and
- on specific ports, gear sectors, shoreside industries and communities.

Four management alternatives to achieve the rebuilding strategies are analyzed: reduction in used DAS, reduction in allocated DAS, area management, and hard TACs. There is no single win-win alternative for all sectors. The relative distribution of revenue loss is similar across all alternatives. However, there are some distributional differences among the alternatives in terms of sector sensitivities to closed areas vs. DAS reductions. These differences are represented in numerous tables.

Relative to conditions in 2002, Figure 163 indicates that for a 2009 rebuilding date, the status quo (2002 fishing conditions) would not result in positive net benefits in any year of the projection period out to 2026.

Relative to conditions in 1986, looking at the projected landings streams in Figure 176, any of the rebuilding strategies will by 2008-2010 lead to landings that exceed 1986 levels. Revenues are likely to follow a similar pattern, depending on the price response to quantities landed

The evaluation of distributional impacts of alternate management measures is short-term. Since the rebuilding trajectories involve revenue losses in the short run, the vessels and port regions that bear the greatest short-term revenue impact of the alternatives are those most dependent on groundfish (relying on groundfish for >75% of their revenue). These are the ports of Boston, Chatham/Harwichport, New Bedford, Portland and Upper Mid-Coast Maine. The trawl sector will be more affected than other gear sectors. Employment impacts are projected to be greatest for Alternatives 2A and 4 in the short term, with the greatest losses among large and medium trawlers and seafood dealers (Table 245). The analysis is not able to look at distributional effects over the longer-term, since it does not account for adjustments in business patterns.

#### **4.10. Absolute Versus Relative Impacts**

##### Question to Reviewers

Does the DSEIS provide information on the likely economic impacts on communities in absolute terms (as opposed to providing comparative analyses) and on allocation consequences of the alternatives? If so, provide a concise summary of your interpretation of this information. If not, would you expect such information based on your knowledge of other DSEIS for fishery management actions?

Overall, the DSEIS provides information on the likely community economic impacts in relative, rather than absolute, terms. Given the dynamic nature of New England fishing fleets and the shoreside fishery sector, and in recognition that a model of fleet behavioral response to regulatory change does not exist, I would not expect it to be possible to estimate absolute economic impacts on particular communities. The input-output analysis, which may appear to produce absolute impacts, is driven by relative changes in revenue, and is appropriate for assessing short-term impacts only. However, the estimates of the relative magnitude of short-term impacts of alternatives across port regions are extremely informative for the policy choices represented in Amendment 13.

In comparison to two recent groundfish FEIS prepared by the Pacific Fishery Management Council (PFMC 2003a;2003b) encompassing large-scale changes in the groundfish fishery, the analysis of community impacts contained in the DSEIS for Amendment 13 is much more complete. In the two final EIS socioeconomic impacts are addressed in 18 and 14 pages respectively. .

#### **5. Guidance to Social Analysts**

Guidance for the conduct of social impact assessments (SIAs) is contained in NMFS' operational guidelines for the fishery management process (NMFS 1997a;b). Informal guidance for analysis of social factors is contained in the "Communities" workshop report (NMFS 2002) as well as in a report of the NEFMCs Social Science Advisory Committee (NEFMC 1999).

According to NMFS guidance an SIA provides systematic information pertaining to the relative social benefits and costs of all reasonable management alternatives to the status quo in a fishery. It represents an estimation of how fishery management actions will affect the quality of people's lives (NMFS 1997b). Conducting an analysis of all known social factors relative to the proposed management action produces an SIA, integrating information from a variety of sources in a systematic manner.

Community or fishery profiles serve as baseline data for social factors analysis. Five types of information are key:

- demographics of fishery-related work force
- amount of fishery –related services, employment and income
- fishery-related taxes accruing to local jurisdictions
- social and cultural aspects such as life-styles, health and safety
- historical fishermen and community dependence on and participation in the fishery

The logic of an SIA is to determine social conditions or human populations likely to be affected by a management action, and to project social effects of continuing the status quo as compared to the social affects of implementing an alternative to the status quo. This involves determining who will be affected, how they will be affected, social changes associated with each proposed management alternative, and how these changes are likely to affect the social fabric and stability of fisheries and fishing communities (NMFS 1997b).

The process of conducting an SIA is to identify social problems with the status quo (baseline) and to estimate social change for each alternative relative to the baseline.

## **6. Social Impact Assessment**

### **6.1. Appropriateness of Approach**

The information basis of the DSEIS SIA, while not as robust as that derived from on ongoing, systematic program of data collection and analysis, nevertheless appears to provide a reasonable identification of social issues facing a diverse mix of fishing regions. The geographic scope of the social impact informational meetings appears comprehensive. A consistent process and format was used in each to promote maximum comparability of findings. The information base is enriched by an extensive and detailed (325pp) “Affected Human Environment” section (9.4) of the DSEIS, which contains good descriptions of the communities of interest.

### **6.2. Appropriateness of Data and Models**

The focus group method is a reasonable effort to combine existing data (such as census data) with knowledge generated by previous research and focus group identification of pressing issues. Geographic coverage of the social information meetings seems adequate to capture the differences among the fishing subregions.

The partitioning of port groups into primary and secondary community groups on the basis of dependence on groundfish is reasonable. Good detail on fishing activity is provided on each of the communities of interest. This detail makes clear the diversity of scale and activity of groundfish fishing across the NE region.

Dependence rankings derived in Hall-Arber et al. (2001) are effectively used to illustrate differences among community groups.

All council regions are in the process of developing the body of social science research and data to support the social impact assessments of regulations dictated by NEPA as well as by National Standard 8. Limitations in the quantity of NMFS' social science FTE, data and research are acknowledged by the agency and are the subject of ongoing investment, an effort that is supported by the findings and recommendations of the NOAA Social Science Review Panel (Anderson et al. 2003),

### 6.3. Appropriateness of Findings

The SIA does an excellent job of synthesizing the key social impacts identified through a series of community meetings (NEFMC 200) and community panels (Hall-Arber et al. 2003)

The SIA systematically presents a range of potential social impacts identified in the social impact informational meetings and through the community panels. Each impact is described in detail and discussed in terms of its relevance to different communities.

The SIA describes the appropriate tools and methods to analyze each of the impacts and identify research questions relevant to the assessment of the impacts, but stops short of actually analyzing the impacts. In this regard, the SIA section is not a complete social impact assessment but rather a thorough and evaluative identification of potential social impacts.

Despite the lack of actual impact assessment, a reasonable question to ask is whether the output of the exercise, by the nature of the process under which it was conducted, results in an adequate representation of the likely social impacts of Amendment 13. The fact that many of the same issues were identified in multiple locations of the social information meetings (NEFMC 2000), in the separate exercise of the community panels formed under the auspices of the Saltonstall-Kennedy research (Hall-Arber et al. 2003), and in public comment submitted to the NEFMC (Public comment documents 2003) suggest that the focus groups adequately identified the full range of likely social impacts. Qualitative descriptions of social impacts associated with implementation of Amendments 5 and 7 add further credence to the likely impacts identified.

The level of social impact information presented in the DSEIS far exceeds that in similar documents from the council region in which I work. For example, the social information included in two final EIS produced by the Pacific Fishery Management Council is:

- FEIS for the implementation of extensive rockfish conservation areas (PFMC 2003)
  - Socio-economic” section of “Affected Environment”: 25 pages
  - Socio-economic impacts analysis of alternatives: 14 pages.
  - Cumulative effects on communities: 1 paragraph.
- FEIS for rebuilding plans for four overfished groundfish stocks (PFMC 2003)
  - Socio-economic section of “Affected Environment “: 33 pages; Socio-economic impacts of rebuilding plans: 12 pages;
  - Descriptive “social cost-benefit analysis” 4 pages,
  - Cumulative socio-economic impacts section of 2 pages.

Looking forward, the key issues are how to build a program of systematic ongoing social science data collection, supplemented with rapid assessment techniques for upcoming and specific issues. Preliminary suggestions for appropriate social science data and research are contained in the 1999 SSAC report (NEFMC 1999). Also useful would be a retrospective assessment of the predictions of social impacts in Amendments 5 and 7 to determine the extent to which predicted social impacts occurred. It will be particularly important, given the concerns expressed about threshold effects and likely infrastructure loss resulting from Amendment 13, to conduct research that identifies and assesses the cumulative social impacts of regulation.

#### 6.4. Effectiveness of the Written Analysis in Conveying Analytical Methods, Findings, and Caveats

The text of the SIA is clearly written. Limitations of the data, data collection methods, and analysis are explicitly presented.

### 7. Other Comments

#### 7.1. Communication Level of the DSEIS

Because of the large number of objectives, alternatives and options being considered for Amendment 13, the DSEIS is an extremely long and complicated document. Despite the exhaustive nature and high quality of the economic analysis, there are difficulties with its presentation in the document. Analysis of the same general issue may appear in different places in the document, and the economic analysis is not always positioned and labeled to clearly associate it with a decision alternative or option. This poses difficulties for the reader in clearly comprehending the economic issues and impacts associated with each alternative and option.

The long period of Amendment 13 development may have led to analyses being conducted and incorporated at different points in time, rather than over a short time period, which may explain the disjointed nature of parts of the document.

The DSEIS would communicate more effectively if the presentation were more systematic and internally consistent.

To be fair to document authors, the very large number (and I am guessing that they were frequently changing) of alternatives and options to be analyzed makes a simple coherent presentation of results a challenging task. It is extremely difficult to craft a clear and cogent presentation of such a complex set of combinations. As a decision document and as a communication tool, the DSEIS would be much more effective had the number of alternatives and options been narrowed down to a smaller set for analysis and discussion. A smaller set would also have made better use of limited analytical resources.

## 7.2. Communication Level of the Economic Analysis

The analyses are careful to be clear and explicit about the limitations of the data, models and analytical outcomes. Being explicit about data limitations and model assumptions is considered good practice within the economics profession. However, there is often a cultural disconnect between those within the economics profession and those in the industries that economists study. What may appear to be straightforward statements about data limitations or simplifying assumptions may be communicated to industry members as a cavalier disregard of important economic components. It would be useful for the economic analysis presentations to be more cognizant of these sensitivities and to clarify that they are aware of the difference between modeling assumptions and “real world” operations.

A wide array of economic analyses is used to assess alternatives and options. It would be helpful to have the complete set of models, data and assumptions summarized and indexed in an “Economic Analysis” appendix. While recognizing that the DSEIS is already a lengthy document, the inclusion of complete descriptions of the economic methods would be useful in providing an integrating source of information. The appendix would be a single reference point for the economic evaluation of the large number of combinations represented in the document.

## 7.3. Distinction Between Short-run and Long-run Analyses

The long-run analyses of alternative rebuilding strategies are separate and distinct from the short-run analyses of impacts of management alternatives to achieve those rebuilding strategies. This point is made in the document but could be given greater emphasis. As well, the economic impacts of EFH areas closures are analyzed independently of economic impacts of regulations to achieve rebuilding. This point is made in the document, but could also be given greater emphasis.

#### 7.4. Use of Advisory Bodies

The various descriptions of the process of developing Amendment 13 provided to the review panel created the impression that full and effective use was not made of the review and advice potential embodied in the Council's advisory bodies such as the Social Sciences Advisory Committee (SSAC) and the groundfish Advisory Panel (AP). The SSAC and AP represent expertise that would be useful in the refinement of options and the review of analysis. Potential assessment and advisory benefits could accrue from greater interaction between the SSAC and AP and the Oversight Committee (OC), the Plan Development Team (PDT), the Scientific and Statistical Committee (SSC), and the Council. Having such interaction on a systematic, rather than ad hoc basis would develop a process by which information and expertise is exchanged more freely.

## **Appendix A. Documents Consulted**

## 1. DSEIS and Supporting Analysis

- Anon. 2003. Investigating the potential impacts of DAS reductions on the Maine groundfish fishery: opportunity cost of steaming time to Georges Bank fishing grounds and the potential for vessel relocation.
- Anon. 1999a. Summary: Small Trawler Cost Survey Report. Kingston, RI: University of Rhode Island.
- Anon. 1999b. Summary: Large Trawler Cost Survey Report. Kingston, RI: University of Rhode Island.
- Anon. 1997. Summary: Hook Fishery Cost Survey. University of Massachusetts, Dartmouth, MA.
- Brodziak, J., P. Rago, and R. Conser. 1998. A General Approach for Making Short-Term Stochastic Projections from an Age-Structured Fisheries Assessment Model. In *Fishery Stock Assessment Models*, Alaska Sea Grant College Program, AK-SG-98-01.
- Hall-Arber, M., C. Dyer, J. Poggie, J. McNally and R. Gagne. 2001. New England's Fishing Communities. MITSG 01-15, MIT Sea Grant College Program, 292 Maine Street, E38-300, Cambridge, MA 02139.
- NEFMC. 2003a. Draft Amendment 13 to the Northeast Multispecies Fishery Management Plan, Including a Draft Supplemental Environmental Impact Statement and a Preliminary Regulatory Economic Evaluation. Volume I: Management Alternatives and Impacts. Prepared by the New England Fishery Management Council and National Marine Fisheries Service, 21 August 2003.
- NEFMC. 2003b. Draft Amendment 13 to the Northeast Multispecies Fishery Management Plan, Including a Draft Supplemental Environmental Impact Statement and a Preliminary Regulatory Economic Evaluation. Volume II: Description of the Resource and Affected Environment. Prepared by the New England Fishery Management Council and National Marine Fisheries Service, 21 August 2003.
- NEFMC. 2003c. Draft Amendment 13 to the Northeast Multispecies Fishery Management Plan, Including a Draft Supplemental Environmental Impact Statement and a Preliminary Regulatory Economic Evaluation. Volume III: Appendices. Prepared by the New England Fishery Management Council and National Marine Fisheries Service, 21 August 2003.
- NEFMC. 2003d. Report from the Social Impact Informational Meetings. Appendix 1 to Draft Amendment 13 to the Northeast Multispecies Fishery Management Plan, Including a Draft Supplemental Environmental Impact Statement and a Preliminary Regulatory Economic Evaluation. Volume I: Management Alternatives and Impacts. Prepared by the New England Fishery Management Council and National Marine Fisheries Service, 21 August 2003.

- NEFMC. 2003e. Public Hearing Document for Draft Amendment 13 to the Northeast Multispecies Fishery Management Plan. Prepared by the New England Fishery Management Council, 50 Water Street, Mill 2, Newburyport, MA.
- NEFMC. 2003f. Amendment 13 Public Hearing Presentation, including slides describing recreational impacts that were shown during the recreational hearings held in Hyannis, MA and Portsmouth, NH. [<http://www.nefmc.org/nemulti/index.html>]
- National Marine Fisheries Service. 2003. Report to Congress on Northeast Multispecies Harvest Capacity and Impact of Northeast Fishing Capacity Reduction. December.
- National Marine Fisheries Service. 2004. Presentations to External Panel of Reviewers of Economic and Socio-Economic Analysis Contained in the Amendment 13 DSEIS. Aquarium Conference Room, NOAA Fisheries, Northeast Fisheries Science Center, Woods Hole, Massachusetts, January 8, 2004.
- Roheim, C.A., E. Gudmundsson, F. Asche and J-S. Lee. 2003. Market Information and Fisheries Management. Report to the NMFS Northeast Fisheries Science Center of NOAA/CMER Award #NA07FE0188.
- Walden, J.B. 2003. Modeling the impact of days at sea leasing in the Northeast Multispecies fishery. In Proceedings of the Second North American Association of Fisheries Economists (NAAFE) Forum, Williamsburg, Virginia, 4-7 May, 2003.

## **2. Guidance Documents**

- Council on Environmental Quality (CEQ). 1999. Environmental Review Procedures for Implementing the National Environmental Policy Act. 40 CFR 1502
- National Marine Fisheries Service. 2002. NOAA Fisheries "Communities" Workshop: A Workshop on Social and Economic Measures of Fishing Community Participation in Fisheries, Hosted by the Office of Science and Technology, National Marine Fisheries Service, Silver Spring, MD, April 22-25, 2002.
- National Marine Fisheries Service. 2000. Guidelines for Economic Analysis of Fishery Management Actions. Office of Sustainable Fisheries, Silver Spring, MD. 20910.
- National Marine Fisheries Service. 1997. Operational Guidelines: Fishery Management Plan Process. Silver Spring, MD 20910.
- National Marine Fisheries Service. 1997. Guidance for Social Impact Assessment. Appendix 2.g. of Operational Guidelines: Fishery Management Plan Process. Silver Spring, MD 20910.
- National Marine Fisheries Service (NMFS) 1996. Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801 et seq.) as amended through October 11, 1996. NOAA Technical Memorandum NMFS-F/SPO-23, December.

NOAA Administrative Order 216-6. Environmental Review Procedures for Implementing the National Environmental Policy Act. Issue date 3 June 1999.

Office of Management and Budget (OMB), The Executive Office of the President. Economic Analysis of Federal Regulations Under Executive Order 12866. 11 January 1996.

### **3. Background Information on DSEIS**

Testimony of William T. Hogarth, Ph.D., Assistant Administrator for Fisheries on Magnuson-Stevens Act National Standards and Amendment 13 to the Northeast Multispecies Fishery Management Plan, before the Subcommittee on Oceans, Fisheries, and Coast Guard, Commerce, Science and transportation Committee, U.S. Senate, Washington, D.C., October 22, 2003.

NOAA Fisheries Responses to Senator Kerry's Questions Following up on October 22, 2003 Senate testimony on the Amendment 13 and the Northeast Multispecies FMP.

Snowe, O. n.d. Questions submitted to NMFS from Senator Olympia Snowe.

Snowe, O. 2003. Amendment 13 Cannot Stand. *Maine Voices, Portland Press Herald*, 19 December 2003.

[<http://pressherald.com/viewpoints/mvoice/031218snowmos.shtml> ]

### **4. Background Information on New England Fishery Management Council**

Anon. 2003. Magnuson-Stevens Fishery Conservation and Management Act Provisions: Fisheries of the Northeastern United States; Northeast (NE) Multispecies Fishery; Amendment 13. 50 CFR Part 648. Federal Register V.68 No.248, 29 December 2003: 74939-40.

New England Fishery Management Council (NEFMC). n.d. Frequently Asked Questions About the Groundfish Fishery. [<http://www.nefmc.org/nemulti/index.html>]

New England Fishery Management Council (NEFMC). n.d. About the NEFMC. [[www.nefmc.org/about/about.html](http://www.nefmc.org/about/about.html)]

New England Fishery Management Council (NEFMC). n.d. Northeast Multispecies (Groundfish) Summary Table of FMP Amendments and Framework Adjustments. [[www.nefmc.org/nemulti/planamen/planamen.html](http://www.nefmc.org/nemulti/planamen/planamen.html)]

New England Fishery Management Council (NEFMC). 2001. Draft Framework Adjustment 36 to the Northeast Multispecies Fishery Management Plan, Including a Draft Supplemental Environmental Impact Statement and Preliminary Economic Analysis. Prepared by the New England Fishery Management Council in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council. 12 December.

New England Fishery Management Council (NEFMC). 2002. Heading Toward Recovery. Rebuilding New England's Fisheries. NEFMC report, Fall.

New England Fishery Management Council (NEFMC). 2001a. Operating Policies: Advisory Panels.

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New England Fishery Management Council (NEFMC). 2000. Social Sciences Advisory Committee Presentation to the New England Fishery Management Council on DSEIS for Scallop Framework 14, Social and Economic Impact Assessments. .

New England Fishery Management Council (NEFMC). 1999. Social Sciences Advisory Committee Report to the New England Fishery Management Council. January 26.

New England Fishery Management Council (NEFMC). 1998a. Operating Policies: Social Sciences Advisory Committee.

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United States District Court for the District of Columbia. Conservation Law Foundation v. Donald L. Evans et al. Case No. 1:00CVO1134 GK. Stipulated Order [Exhibit D]. 16 April 2002.

## **5. Public Comment and Trade Publications**

Anon. 2004. Groundfish: the rest of Amendment 13. *Commercial Fisheries News* V. 31 No.5 (January):1A, 7A.

Anon. 2003. Special Report. Amendment 13. Council debates, decides: Now What? *Commercial Fisheries News* V. 31 No.4 (December):1A, 13-16A, 18-19A.

Anon. 2003. Congress, industry call for balance, flexibility. *Commercial Fisheries News* V. 31 No.3 (November):11A, 24A.

Didrickson, H. 2004. Letter to the External Review Panel dated 12 January.

Fraser, J. 2002. Cover Story. Editor's Log, *National Fisherman* Vol.83 No.3 (July): p.4.

Hall-Arber, M., B. McCay, and D. Bergeron. 2003. Comments on Amendment 13 by the Community Panels Project. Funded by the Northeast Consortium and the Saltonstall-Kennedy Program.

Kaplan, I.M. 2003. Memo to Senator Olympia Snowe, 19 October 2003. Re: Amendment 13/Social and Socio-economic impacts.

Plante, J.M. 2004a. New biomass targets form Amd. 13 backbone. *Commercial Fisheries News* V. 31 No.5 (January): 8-9A.

- Plante, J.M. 2004b. SAPs: Way to target healthy groundfish stocks. *Commercial Fisheries News* V. 31 No.5 (January): 14-15A.
- Plante, J.M. 2003a. Amendment 13 brings profound change to Northeast groundfish industry. *Commercial Fisheries News* V. 31 No.4 (December 2003):1A, 12A.
- Plante, J.M. 2003b. NE council OKs analysis of NSC option. *Commercial Fisheries News* V. 31 No.3 (November 2003):1A, 10-11A.
- Plante, J.M. 2003c. Hogarth hears from NE fishermen. *Commercial Fisheries News* V. 31 No.2 (October 2003):1A,12-13A.
- Public comment on Amendment 13 received by the New England Fishery Management Council, October 2003.

## **6. EIS Documents from the Pacific Region**

Pacific Fishery Management Council (PFMC). 2003a. Final Environmental Impact Statement for Amendment 16-2 to the Pacific Groundfish Fishery Management Plan: Rebuilding Plans for Canary Rockfish, Pacific Ocean Perch, Lingcod, and Darkblotched Rockfish. (Includes The Regulatory Impact Review And Initial Regulatory Flexibility Analysis) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, OR 97220-1384.

Pacific Fishery Management Council (PFMC). 2003b. Final Environmental Impact Statement for The Proposed Groundfish Acceptable Biological Catch And Optimum Yield Specifications And Management Measures: 2003 Pacific Coast Groundfish Fishery. (Includes The Regulatory Impact Review And Initial Regulatory Flexibility Analysis) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, Oregon 97220-1384. [[www.pcouncil.org](http://www.pcouncil.org)]

## **7. Other**

Anderson, L.G., R. Bishop, M. Davidson, S. Hanna, M. Holliday, J. Kildow, D. Liverman, B. J. McCay, E. L. Miles, R. Pielke, Jr., R. Pulwarty. 2003. Social Science Research Within NOAA: Review and Recommendations. Final Report of the Social Science Review Panel to the NOAA Science Advisory Board. Washington, DC: 18 March 2003.

**Appendix B. Agenda January 9, 2004 Presentations to the Review Panel**

**Presentations to External Panel of Reviewers**  
*Aquarium Conference Room*  
*NOAA Fisheries Northeast Fisheries Science Center*  
*Woods Hole, Massachusetts*  
**January 9, 2004**  
**Agenda**

I. Introductions

A. Welcome: Dr. John Boreman, Science and Research Director, NEFSC 9:00-9:10

B. Review Panel Introductions: Phil Logan 9:10-9:15

C. Housekeeping: Phil Logan 9:15-9:20

II. Ground rules: Phi Logan, Susan Hanna: 9:20-9:25

Organization: Eric Thunberg 9:25-9:30

III. Overview \_ Tom Nies 9:30-10:30

A. Council Operating Procedures

B. Timeline - From SFA to Amendment 13

Break 10:30-10:45

IV. Available Data

A. On-going Commercial Data Collections \_ Barb Roundtree 10:45 -11:15

B. Collection of Cost Data- Drew Kitts 11:15 -11:30

C. Recreational Data - Scott Steinbeck 11:30 -11:45

Public Comment 11:45-12:15

Lunch 12:15-1:15

V. Economic Analysis

A. Overview - Eric Thunberg 1:15-1:25

B. Long-Term Impacts

1. Biological Modeling - Jon Brodziak 1:25-2:00

2. Price Analysis - Steve Edwards 2:00-2:15

3. Net Benefits - Eric Thunberg 2:15-2:45

Break 2:45-3:00

C. Short Term Impacts

1. Area Closure Model - John Walden 3:00-3:30

2. Analysis of Revenue loss - Eric Thunberg 3:30-3:45

3. Regional Impacts - Scott Steinbeck 3:45-4:15

4. Hard TAC Analysis - Chad Demerast 4:15-4:30

5. Break-Even - Drew Kitts 4:30-4:45

6. Analysis of Recreational Impacts - Scott Steinbeck 4:45-5:00

D. On-Going Research: Phil Logan 5:00-5:15

Public Comment 5:15-5:45

VI. Social Impact Assessments 5:45-6:45

A. Overview of Social Impact Analysis Guidance- Lisa Colburn

B. SIA Information Sources - Lori Steele

C. Identification of Communities of Interest

D. On-Going Research

Public Comment 6:45-7:15

Adjourn