



New England Fishery Management Council

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To: Paul J. Howard, Executive Director
From: Dr. Steve Cadrin, Chairman, Scientific and Statistical Committee
Date: March 26, 2009

Subject: Review of EFH Omnibus 2, Phase II, Analytical Tool (FiGSI)

The SSC was asked to review and provide input on the Fishing Gear Seabed Impact Model, for application in the Essential Fish Habitat Omnibus Plan, according to specific terms of reference:

Evaluate the sufficiency of the Fishing Gear Seabed Impact (FiGSI) model as a basis for crafting and analyzing alternatives to minimize to the extent practicable the adverse effects from fishing on essential fish habitat. Specifically, provide the Council with commentary on the adequacy of the following components:

1. *Vulnerability Assessment*
 - a. *Is the literature review comprehensive and well developed?*
 - i. *Does it provide an adequate basis for the Vulnerability Assessment?*
 - ii. *Does it adequately capture sources of uncertainty?*
 - b. *Matrix-based evaluation*
 - i. *Is the assessment's matrix-based structure appropriate to its intended use?*
 - ii. *Are the assessment results consistent with the published literature? In cases where results are extrapolated are these cases treated appropriately?*
 - iii. *Are sources of uncertainty adequately carried forward from the literature review?*
2. *Swept Area Seabed Impact (SASI) Model*
 - a. *Is the model structure appropriate for its intended use?*
 - b. *Are the data inputs (fishing effort) characterized appropriately?*
3. *Spatial Model*
 - a. *Is the Critical Shear Stress Model appropriate for its intended use?*
 - b. *Are the substrate data inputs characterized appropriately?*
4. *Fishing Gear Seabed Impact (FiGSI) Model*
 - a. *Do the model results make sense in the context of fishery management decision making?*
 - b. *Are the uncertainties previously noted adequately addressed?*

On March 18 2009, the SSC reviewed the Council request, presentations by the Habitat Plan Development Team, and five background documents:

1. Draft Summary of 03 March 2009 Habitat Oversight Committee meeting
2. Summary of 13 February 2009 Habitat PDT conference call
3. Summary of 11 February 2009 Habitat PDT meeting
4. Summary of 15 January 2009 Habitat Oversight Committee meeting
5. Summary of 05-06 January 2009 Habitat PDT meeting

The background, general approach and details of each component of the PDT's methodology were reviewed and discussed. The SSC developed consensus recommendations for the Council on the status and applicability of the methodology (below) and technical feedback for the Habitat PDT (attached).

The Council's request was to focus on Phase II of the EFH Plan, the evaluation of adverse effects from fishing on essential fish habitat. Therefore the appropriateness of how EFH or Habitat Areas of Particular Concern (HAPC) are defined in New England was not reviewed. The SSC felt that the PDT's general methodological approach to Phase II was consistent with Phase I in that it potentially includes all habitats within the Northeast U.S. EEZ for the evaluation of fishing effects. However, given the different objectives and methods used for Phase I and Phase II, results of vulnerability and sensitivity analyses may be different than HAPC determinations. The SSC also recognizes that the proposed methodology may not be appropriate for evaluating non-fishing impacts, because recovery expectations will vary according to the nature of the impact.

The SSC recognizes the challenges associated with the evaluation of adverse effects from fishing on essential fish habitat. The Habitat PDT includes members with diverse backgrounds and expertise, and we commend them for the compilation of information and methodological developments. Given the need for expertise in habitat impacts and recovery, Dr. Robert Whitlatch (University of Connecticut) was invited to serve as a temporary SSC member for this review. His input was valuable and complementary to the expertise in fishery ecology provided by other SSC members. The SSC will continue to correspond with the Habitat PDT on methodology for the EFH Omnibus 2 Phase II Analytical Tool. More detailed technical feedback to the Habitat PDT on these recommendations is attached.

SSC Recommendations:

1. Vulnerability Analysis:

- a. While the literature review may not be comprehensive, it is an adequate basis for the development of analytical tools for evaluating adverse effects of fishing and associated uncertainty.**
- b. The general matrix-based structure is appropriate for evaluating vulnerability, includes information on uncertainty and is consistent with the literature review. However, the approach presented to the SSC only included one major aspect of habitat, namely the geophysical component. The biological components of habitat, which have yet to be addressed, are essential elements for the evaluation of vulnerability, and they are necessary for implementation in the Omnibus Amendment.**

2. The analytical approach of swept area of fishing effort is appropriate for evaluating seabed impact, but some modifications to the characterization of fishing effort should be considered to refine the method.

3. The general approach to the spatial analysis is appropriate to overlay habitat and fishing effort, but several methodological refinements are needed to more accurately

characterize habitat, including analysis of heterogeneous data and the inference of energy levels from shear stress.

- 4. The proposed method for evaluation of impact of fishing on habitat has the potential to provide sensitivity-adjusted fishing areas for specific management alternatives. However, a more formal and transparent method is needed for the derivation of the sensitivity criterion used by the model and its uncertainty as a function of susceptibility and recovery. Higher spatial resolution of fishing effort is also needed.**
- 5. In general, the SSC concludes that the PDT's general approach provides the best available approach to assessing the impacts of fishing on habitat. However, critical elements of the analysis need to be revised and the method needs to incorporate biological components before the methodology can be used to evaluate fishery management decisions. A revised methodology should be reviewed by the SSC or an external peer review before being applied as the analytical tool for the EFH Omnibus 2, Phase II.**