



NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

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12/6/2016	1	North Pacific Council		

Dan Hull, Chairman
Chris Oliver, Executive Director

SUBJECT:
EFH Fishing Effects Proposed Methods for Analysis - Discussion paper

STAFF CONTACT: Steve MacLean

ACTION REQUIRED:
Review proposed methods to evaluate effects of fishing on BSAI and GOA Groundfish and BSAI Crab EFH in Alaska.
BACKGROUND:

The Magnuson-Stevens Fishery Conservation and Management Act requires regional Fishery Management Councils to describe and identify Essential Fish Habitat for all fisheries and to minimize to the extent practicable the adverse effects of fishing on EFH. At the October 2016 meeting, the NPFMC passed a motion to update EFH descriptions for the BSAI Groundfish, GOA Groundfish, BSAI Crab, Arctic, and Salmon (marine waters only) FMPs. However, because new, model-based definitions of EFH exist only for the BSAI and GOA Groundfish and BSAI Crab FMPs, these new proposed methods to evaluate the effects of fishing only apply to those FMPs.

In 2005, the EFH EIS concluded that fisheries have long term effects on habitat, but these impacts were determined to be minimal and not detrimental to fish populations or their habitats. In 2010, fishing effects were again analyzed employing the Long-term Effects Index (LEI), which estimated the eventual proportion of reduced habitat features from a theoretical unaffected habitat state, if current fishing patterns occurred indefinitely.

For the current review cycle, the Council requested several updates to the LEI. In response, the Fishing Effects (FE) model was developed. The FE model updates the LEI Model in several ways: (1) the FE model is cast in a discrete time framework allowing impact and recovery rates to be used to estimate proportion of reduced habitat, (2) the FE model implements sub-annual tracking to allow estimates of habitat disturbance for any month from January 2003, (3) the FE model utilizes the Catch-In-Areas database to provide the best available spatial data of fishing locations, and (4) the FE model incorporates a global literature review to

estimate impact and recovery rates.

The SSC reviewed the updated EFH and FE models in April 2016 and concluded that they could allow a more systematic method to assess the effects of fishing on EFH. The SSC recommended, and the Council approved, a SSC subcommittee to develop new methods to evaluate the effects of fishing on EFH to take advantage of the new, model-based approaches to describe EFH. The SSC subcommittee prepared draft evaluation methods that were reviewed by the BSAI and GOA Groundfish plan teams, the BSAI crab plan team, the NPFMC Ecosystem Committee, and the SSC. Recommendations and suggestions from those reviews were considered by the SSC subcommittee, and the draft methods were revised.

The Fishing Effects subcommittee recommends a three-tiered method to evaluate whether there are adverse effects of fishing on EFH. As shown below, the first consideration of effects is at the population level: is the population above or below MSST? If the population is below MSST, stock assessment authors will recommend to the Plan Teams, SSC and Council that mitigation measures be developed. If the population is not below MSST, stock assessment authors will evaluate the proportion of “Core EFH Area” (CEA) that is affected by fishing. If less than 10% of the CEA is impacted by fishing, the evaluation stops. If more than 10% of the CEA is impacted by fishing, the stock assessment authors will examine indices of growth-to-maturity, spawning success, breeding success, and feeding success to determine whether there are correlations between those parameters and trends in the proportion of the CEA impacted by fishing. If a correlation exists and the p-value is less than 0.1, the authors will determine whether there is a plausible connection to reduction in EFH as the cause, or if the result is spurious. *It is important to note that p-values are not used in this context to test hypotheses about the impacts of fishing, rather the p-value is used as a criterion to determine whether the fishing effects analysis continues or is complete.* If the p-value for the correlation between any of the life history parameters described above and the proportion of CEA impacted by fishing is less than 0.1, the stock assessment author will either: (1) recommend that the Plan Teams, SSC, and Council review the correlation to determine whether the impact is more than minimal or not temporary, or (2) provide rationale to explain why further consideration is not necessary (in other words, why the correlation is spurious). Stock assessment authors can also recommend that the Plan Teams, SSC, and Council review potential impacts if the p-value is greater than 0.1, but will be asked to provide rationale (e.g., other data or information) for elevation. Stock assessment authors will not decide whether an impact to EFH is more than minimal or not temporary. Rather, the Plan Teams, and SSC will review the information and make recommendations to the Council. The Council, after receiving input from the Plan Teams and SSC will enact any mitigation measures that are necessary.

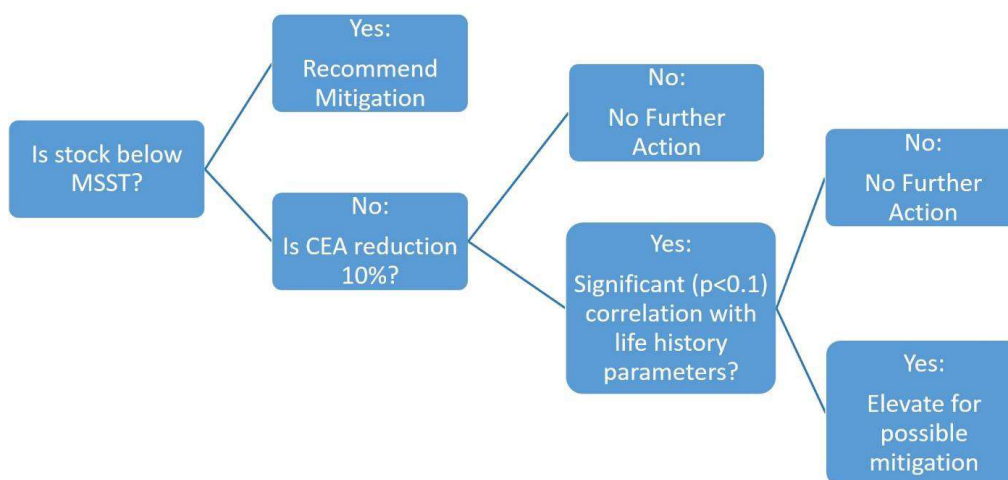


Figure 1. Proposed method to evaluate the effects of fishing on Essential Fish Habitat in Alaska.

The discussion paper presents two examples of this method applied to Walleye pollock and Pacific ocean perch EFH in the Gulf of Alaska. Although neither of these examples would normally go through the entire

exercise (less than 10% of the CEA was impacted in both cases), the subcommittee requested that the stock assessment authors go through the whole exercise.

At this meeting the Council will determine whether these proposed methods to evaluate the effects of fishing on EFH provide an improved method over the Long-term Effects Index (LEI) that was used in the previous EFH review. If approved by the Council, these methods will be employed by the stock assessment authors for the BSAI and GOA Groundfish, and BSAI Crab FMPs to evaluate the effects of fishing on EFH. These methods are not proposed to be used for the Arctic, Scallop, or Salmon FMPs. If the Council determines that these methods are not appropriate to use for this EFH review, the effects of fishing on EFH would be evaluated using the LEI or another method.