



NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

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Action Memo

File Number:GF 15-057

Agenda Date6/1/2015

Agenda Number:D3

Dan Hull, Chairman
Chris Oliver, Executive Director

SUBJECT:

Pacific Cod Modeling Report (*SSC only*)

ACTION REQUIRED:

Review Pacific cod assessment models.

BACKGROUND:

The joint subcommittee of the BSAI and GOA Groundfish Plan Teams met via WebEx on May 11, 2015. The purpose of the meeting was to review and recommend stock assessment models for Eastern Bering Sea (EBS), Aleutian Islands (AI), and Gulf of Alaska (GOA) Pacific cod for 2015. The minutes of the Joint Team Subcommittee on Pacific Cod Models are attached. The SSC needs to review the subcommittee's recommendations and then provide its own recommendations. The Pacific cod stock assessment authors will consider the SSC's recommendations in their preparation of the EBS, AI, and GOA Pacific cod stock assessments this fall.

Summary: For this year, the subcommittee advanced a total of 25 models however 9 were recommended for this year's preliminary assessments. Table 1 in the attached minutes summarizes the subcommittee's recommendations. The 2011 model for each region continues to be re-evaluated. Several non-model analyses (analyses outside of a given model configuration) were also reviewed.

Recommended Models and Non-Model Analyses:

EBS

- Model 0: Final model from 2014 (same as the final models from 2011, 2012, and 2013)
- Model 2: Model 2 from the 2014 final assessment
- Model 3: Model 2 from the 2014 final assessment, but with:
 - composition data weighted either: 1) iteratively, 2) by the method of Francis (2011), or 3) by tuning the harmonic mean of the effective sample sizes to the mean input sample size
 - time-varying catchability turned off
- Model 4: Model 2 from the 2014 final assessment, but with:
 - internal estimation of σ_R replaced by something that attempts to account for the downward bias in the MLE
 - estimation of a larger number of age groups in the initial vector

- Analysis 1: R_0 profile using the observed data and using simulated data without error
- Analysis 2: Plot the time series of the ratio of catch to survey biomass (or exploitable biomass, time permitting) to determine whether current values are within historic range
- Analysis 3: Initialize the composition weighting process by setting sample sizes equal to number of sampled hauls

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AI

- Model 0: Final model from 2014
- Model 2: Model 2 from the final 2014 assessment, but with:
 - continued work on the problems with the model so as to make progress toward an age-structured AI assessment
- Model 3: Model 2 from the final 2014 assessment, but with:
 - inclusion of the pre-1991 fishery data

- Analysis 1: Examine NMFS trawl survey data, IPHC longline survey data, AFSC longline survey data, and commercial data to investigate the distribution of AI Pacific cod relative to the NMFS trawl survey stations

GOA

- Model 0: Final model from 2014
- Model 2: Final model from 2011

- Analysis 1: Examine the longline survey RPN and length frequency data for use within the model