

IPHC External Stock Assessment Review and Workshop

IPHC Staff

Reasons for staff plan to hold an external review in 2007

- Last full-dress panel review was in 1997.
- The new and different 2003 assessment was externally reviewed in 2004 as part of the MSC certification process.
- The nearly identical 2004 assessment was written up in detail and externally reviewed.
- Staff knew that a change in assessment approach was needed to accommodate emerging movement data.
- Impending personnel changes.

Controversy over the 2006 assessment

- Before 2006, the assessment model was fitted independently in each regulatory area.
- In 2006, the assessment model was fitted to a coastwide data set and the estimated total apportioned to regulatory areas in proportion to setline survey estimates of relative abundance.
- The resulting exploitable biomass distribution showed lower biomass than closed-area estimates in BC and SE Alaska, higher in the western GOA and AI.

The Task

At the Commission's 2007 Annual Meeting, the IPHC Commissioners directed the staff to hold a public workshop where people could hear about the assessment in detail, ask questions, and make comments and suggestions.

Workshop was held in Seattle in June 2007.



Topics covered

- Biology, fishery, and management background
- Assessment data (survey catch at age/sex & CPUE, commercial catch at age/sex & CPUE, other removals).
- Model structure and fitting (log likelihood).
- Alternative model fits.
- Area apportionment.
- Harvest policy.

Workshop participants and format

- Contracted Center for Independent Experts (CIE) reviewers (Chris Francis and Paul Medley).
- Moderator Steve Martell (UBC).
- About 100 people from industry, the public, and federal, state and tribal agencies, including scientists and managers from NMFS and DFO.
- Some IPHC Commissioners and both Scientific Advisers.
- Staff presentations and open discussion on all issues; CIE reviewers conducted most of their review in this public forum.

Workshop results

- In-depth and open discussions of all topics.
- Staff received a number of valuable suggestions for additional detail or investigations of assessment components.
- Several alternate forms of the basic model were presented. Participants criticized some aspects of the fitting procedures and staff conducted additional analyses during the workshop to address many of these concerns. Other suggestions were addressed subsequent to the workshop.

Workshop results (cont'd.)

- A summary of the workshop was posted on the IPHC website and distributed to participants.
- The staff compiled a list of questions posed at the workshop and provided responses to these questions as an appendix to the workshop report.
<http://www.iphc.washington.edu/halcom/meetings/workshop2007/wrkshp2007.htm>
- Analyses to address some questions were completed and will be included in the IPHC 2007 Report of Assessment and Research Activities.

CIE Review Terms of Reference

The staff posed seven questions for the reviewers to answer, in addition to requesting any other comments the reviewers wished to make.

The reviews and the staff responses are available on the Commission's website:

<http://www.iphc.washington.edu/halcom/meetings/workshop2007/wrkshpreview.htm>

Are the stock assessment data adequate?

- Both reviewers believed the data quantity and quality were adequate and well above average for assessment purposes.
- They supported and complimented the commitment to the fishery-independent survey.
- Recommended additional modeling of survey and commercial CPUE.
- Suggested exploration of an alternate estimation for sampling variance

Is the structure of the assessment model appropriate?

- Both reviewers felt the content and structure were appropriate for both coastwide and closed-area applications.
- Both agreed that a coastwide assessment was appropriate in view of the bias associated with unaccounted for movement of fish in the closed-area assessment.
- Recommended development of a spatially explicit model based on migration rates among areas. Would require highly accurate rates because of impact of rates on estimates.

Effect of assumed rates of net migration on closed-area estimates of exploitable biomass

Area

	2B	2C	3A	3B	4A	4B
-0.10	56	102	417	111	23	78
-0.05	48	68	246	71	15	31
0	37	49	169	54	11	14
+0.05	29	36	127	40	9	15
+0.10	23	26	102	32	7	12

Fish move out
of an area

Fish move into
an area

Is the log-likelihood used to fit the model appropriate?

Yes, with some minor variations to consider.

Is the suite of alternative fits adequate?

Both reviewers were satisfied with the range of alternate fits examined

Is the apportionment procedure correct?

Mixed views of reviewers; one thought it reasonable, the other questioned the assumption of equal survey catchability.

Is the harvest policy appropriate?

- Reviewers satisfied with the level of examination of alternatives via simulation.
- Integrate Slow Up – Fast Down policy into the evaluation.
- Questioned *ad hoc* precautionary changes in harvest rate for some areas; stressed the need for analysis of the impacts of such changes.
- In general, harvest policy was viewed as primarily a policy issue for the Commission, rather than a technical issue.

Does the assessment adequately measure and report uncertainty of the yield recommendations?

- One reviewer thought the assessment adequate in this respect.
- The other commented that there is no reliable means to estimate the uncertainty associated with model choice, which is much larger than the statistical uncertainty of a given model fit.

Review issues and responses (Blue Book p. 64)

Issue	How Addressed?
Station depth distribution effect on survey CPUE	2007 RARA
Hook competition effect on survey CPUE	2007 RARA
Interaction of fishery removals on survey CPUE	2007 RARA
Depth distribution and stratification of CPUE	Workshop report 2007 Assessment
Comparison of setline and trawl catchability	2007 RARA
Finer spatial analysis of PIT tag results	2007 RARA
Examination of PIT recoveries from Area 4	Workshop report
Alternate model fits	During workshop 2007 Assessment
Alternate apportionment approaches	2007 Assessment
Combined survey/commercial CPUE for apportionment	Rejected due to bias and hyperstability of commercial CPUE
Alternate variance estimation and scaling procedures	2007 Assessment
Double-fitting of CPUE data	During workshop
Retrospective pattern	Investigated and found to be data-driven rather than model-driven. 2007 Assessment
Spatially explicit model	Data unavailable or insufficient
Model Slow Up - Fast Down in Harvest Policy analysis	2007 RARA