

**2012 IPHC Staff
Preliminary Catch Limit
Recommendations**

Recommended Catch Limit Considerations

- ❖ Commission's goal to achieve target harvest rates in all areas
- ❖ Commission's request to staff to present uncertainty in the assessed biomass and realized harvest rates
- ❖ Continuing retrospective issues in biomass estimation
- ❖ Declining size at age and effect on Ebio
- ❖ Continued declines in coastwide Ebio

Issues in Setting Catch Limits

- ❖ Commission asked the staff to provide some explicit measures of uncertainty in the assessment and catch limit process. The staff had previously presented a conceptual review of sources of uncertainty (Clark et al. 2004) but we do not yet have a comprehensive framework for presenting all sources of uncertainty that might be considered in setting Catch Limits.
- ❖ Uncertainty exists at all stages of every assessment and harvest projection, including those for halibut, so the Commission is not in a unique situation.
- ❖ The primary sources of uncertainty are structural (i.e., model formulation), retrospective mis-estimation, followed by parameter estimation, and harvest projections.
- ❖ Apportionment introduces a subsequent suite of uncertainties.
- ❖ Our assessment presentation included examples of the effects of both structural uncertainty and a measure of statistical uncertainty in the apportionment process.
- ❖ We also present measures of realized harvest rates that result from making a particular choice of CLR under one harvest rate assumption, vs. those when a corrected estimate of Ebio incorporates retrospective mis-estimation.

Staff Recommendations for Setting Catch Limits

- ❖ Staff recommends use of Alternative 2 (WobbleSQ) assessment model both because it is statistically the best model fit and because the trend in several alternative models indicates Ebio is nearer the 260 Mlb level than the 280 Mlb level estimated with the 2010 Base Model.
- ❖ Staff notes that retrospective issues continue to be evident in biomass estimation. Several approaches to addressing the effect of this issue on harvest projections can be considered. The effect of these approaches is similar and they involve either reducing the estimated Ebio from the current assessment to account for the likely future reduction of this estimate, or reducing the target harvest rate (HR) on currently estimated Ebio.
- ❖ Staff has not yet decided on a favoured approach and will continue examination of the issue during 2012. For this assessment cycle we implemented the adjusted HR approach to developing catch limits incorporating adjustments for retrospective mis-estimation.
- ❖ The current estimates for the HR reduction approach would change rates from 0.215 to 0.131 for Areas 2A-3A and from 0.161 to 0.098 for Areas 3B-4.

Apportionment Procedures

- ❖ As in 2010, staff continues the use of the 0-400 fm depth range as the basis for apportionment because it incorporates the active commercial fishing area, recognizing that both alternatives have potential for bias. Staff has proposed research to address these potential biases, subject to funding.
- ❖ As in 2010, the staff continues the use of the hook competition and survey timing adjustment factors to survey WPUE, and Kalman averaging of the adjusted factors, when conducting apportionment.
- ❖ As in 2010, staff continues the use of the Slow Up – Full Down (SUFULLD) harvest control rule.

Arguments for and against steeper cuts than RCLs

❖ For

- WPUE is at 34% of 1997-1999 average; removals are at 60%
- Areas with biggest cuts (Area 2) have best match in relative reduction in indices
- Retrospective behavior of model may not lessen, thus recent HRs have been (and will continue to be) too high
- Ebio estimates from NMFS trawl surveys also show strong decline
- Situation may worsen if cuts are delayed

❖ Against

- Decline in CW WPUE is 5% this year (note that last year it was -15%, still consistent decline overall), difficult to equate a 50% cut in quotas to recent WPUE decline.
- 2011 Total removals at lowest level since 1984 and commercial catch lowest since 1983, the proposed CLR is yet 10 M lbs lower and the fishery CEY will have been brought down 55% in 10 years. The alternative HRs would set fishery CEY 28% lower than lowest level since 1935.
- Retrospective behavior may not continue at same magnitude
- Major shifts in policy require broader consideration; serve notice this year that policy shift being contemplated.
- May be more reasonable to phase in cuts (in steps) similar to past approaches to big changes.

Catch Limits with Adjusted Harvest Rates (not recommended by Staff for 2012)

Regulatory Area	2012 Total CEY	Other Removals*	2012 Fishery CEY	2011 Catch Limit	2012 Catch Limit
2A	0.805	0.174	0.631	0.910	0.631
2B	4.572	0.871	3.701	7.650	3.701
2C	3.574	2.510	1.064	2.330	1.064
3A	12.052	6.766	5.286	14.360	5.286
3B	4.034	1.568	2.466	7.510	2.466
4A	1.456	0.828	0.628	2.410	0.628
4B	1.397	0.429	0.968	2.180	0.968
4CDE	2.881	2.275	0.606	3.720	0.606
Total	30.771	15.421	15.350	41.070	15.350

* Area 2C GHL = 0.788; Area 3A GHL = 2.008

2012 Recommended Catch Limits (Mlb)

Regulatory Area	2011 Catch Limit	Recommended Catch Limits based on WobbleSQ Model and Current HRs (0.215/0.161)	Catch Limits based on WobbleSQ Model and HRs accounting for retrospective mis-estimation (0.131/0.098)
2A	0.910	0.989	0.631
2B	7.650	6.633	3.701
2C	2.330	2.624	1.064
3A	14.360	11.918	5.286
3B	7.510	5.070	2.466
4A	2.410	1.567	0.628
4B	2.180	1.869	0.968
4CDE	3.720	2.465	0.606
Total	41.070	33.135	15.350
Implied Ebio		260	173
Realized Harvest Rates			
Current HR Correct		0.19	0.12
Adjusted HR Correct		0.28	0.18

Staff Recommended Catch Limits with Current Harvest Rates

Regulatory Area	2012 Total CEY	Other Removals*	2012 Fishery CEY	2011 Catch Limit	Recommended 2012 Catch Limit
2A	1.322	0.174	1.148	0.910	0.989
2B	7.504	0.871	6.633	7.650	6.633
2C	5.865	2.653	3.212	2.330	2.624
3A	19.779	7.861	11.918	14.360	11.918
3B	6.638	1.568	5.070	7.510	5.070
4A	2.395	0.828	1.567	2.410	1.567
4B	2.298	0.429	1.869	2.180	1.869
4CDE	4.740	2.275	2.465	3.720	2.465
Total	50.541	16.659	33.882	41.070	33.135

* GHY in Area 2C = 0.931; GHY in Area 3A = 3.103