REVISED TABLES C4 AND C5

Background

In response to questions raised by the Columbia River Fisheries Management Workgroup during its deliberations in Fall 2012, staff put together two tables; the purpose of which were to give the Workgroup a sense of how commercial salmon harvest and the ex-vessel value of that harvest would be affected by changes in how ESA-impacts and harvestable surpluses were allocated between recreational and commercial fisheries and by increases in the numbers of hatchery fish available for commercial harvest in off-channel areas. The Workgroup also asked that the analysis consider implementation of mark-selective purse and beach seine fisheries for fall Chinook and coho beginning in 2013, based on catch data from ongoing test fisheries.

Analyses were conducted using the same models that managers use to plan spring, summer and fall salmon fisheries. Estimates of harvest and ex-vessel value were made under the assumptions that run sizes, stock composition and mark rates were similar to "recent averages". Harvest and ex-vessel value were estimated under an allocation scheme and at off-channel production levels that existed prior to 2013 (current), and under an allocation scheme and at off-channel hatchery production levels the Workgroup was considering in the near-term (2013-2016) and long term (2017 and beyond). For fall fisheries a proportion of the ESA-impact available for commercial harvest was allocated to mark-selective beach and purse seine fisheries.

Because the values in Tables C4 and C5 were calculated using model runs based on "recent average" run sizes, stock composition and mark rates, they did not represent what actually occurred prior to 2013 (current), nor did they represent what would actually occur in 2013-2021. The analysis was intended to show how commercial harvest and ex-vessel value would change, under the theoretical circumstances modeled, if one were to reduce the share of ESA-impacts and harvestable surplus allocated to commercial fisheries, increase harvestable numbers of salmon in off-channel areas, and implement mark-selective fall seine fisheries. As such, the focus of the analysis was on the differences in the estimates of commercial harvest and ex-vessel value as the shares of ESA-impacts and harvestable surpluses allocated to commercial fisheries were reduced over time and the expected numbers of hatchery fish available for commercial harvest in off-channel areas were increased.

Request from the Columbia River Commercial Fishery Advisory Group

The Washington Department of Fish and Wildlife (WDFW) recently completed a study that estimated the mortality of salmon captured by and subsequently released from beach and purse seines (commonly referred to as release mortality). In the original analysis summarized in Table C4, the harvest estimates for fall Chinook and coho in mainstem seine fisheries were based on the assumption that the release mortality was 5%. Using data from the WDFW study, managers determined that release mortalities may be 4 to 7 times greater than that originally assumed, depending on gear and salmon species. When managers presented these results to the Columbia River Commercial Fishery Advisory Group, it requested that the agencies re-calculate harvest and ex-vessel values in Tables C4 and C5 using the new release mortality estimates. The intent was to see, if all other assumptions of the original analysis remained unchanged, how the higher release mortality rates affected estimates of fall Chinook and coho harvest in mainstem fisheries and how changes in the harvest estimates consequently affected the differences in ex-vessel value displayed in the bottom two rows of Table C5.

Revisions to Tables C4 and C5

The revised Tables C4 and C5 that follow show how higher release mortality rates of salmon captured by and subsequently released from beach and purse seines affected estimates of fall Chinook and coho harvest in mainstem fisheries and how changes in the harvest estimates consequently affected the differences in ex-vessel value displayed in the bottom two rows of Table C5. The changes are highlighted in track-changes. Also, while updating the analysis, a few typographical and computational errors in the original analysis (none of which were significant) were discovered and corrected. These are also highlighted in track-changes to the tables and described in the footnotes.

As shown in revised Table C4, the higher release mortality rates for salmon in the mark-selective mainstem seine fisheries resulted in proportionally lower harvest estimates for Lower River Hatchery Chinook and coho. Because the assumed release mortality rates in the new analysis were 4 to 7 times greater than that originally assumed, depending on gear and salmon species, the revised harvest estimates of Chinook and coho in the seine fisheries were about 16% of the original estimates. Also, because of the higher release mortality rates, a slightly higher proportion of the available ESA-impacts for coho were used in the seine fishery. During the Transition Period, this resulted in a slight decrease in the proportion of coho ESA-impacts available for the mainstem gillnet fishery and a corresponding slight decrease (less than 1%) in coho harvest estimates; 35 fish in 2013-2016 and 207 fish in 2016.

The reductions in Chinook and coho harvest estimates in mark-selective mainstem fisheries shown in Table C4 resulted in reductions in the overall ex-vessel values for 2013-2021 shown in Table C5. Consequently, the relative differences in overall ex-vessel values under an allocation scheme and at off-channel production levels modeled for the period prior to 2013 (current), and under an allocation scheme and at off-channel hatchery production levels modeled for 2013-2021 were also reduced and turned negative in the long-term (2017-2021).

Conclusions

The "% difference from current" in over-all ex-vessel values shown in Table C5 differs notably from that in the original analysis considered by the Columbia River Fisheries Management Workgroup, and subsequently by the Oregon and Washington fish and wildlife commissions (Commissions). However, except for 2017, the "% differences" fall within the "no more than a 5% reduction from current" criteria used to inform the policy decisions ultimately made by the Commissions. Also, this modeling exercise was only one of many factors considered by the Commissions as they formulated the policies that currently guide fisheries management. Ongoing work, including implementation of pilot seine fisheries in 2014 and continued evaluation of gears that may be selectively fished for commercial harvest in the mainstem Columbia River, will inform policy decisions in the long-term.

Table C.4. Summary of modeled current mainstem commercial fishery harvest (numbers of fish) compared to expected harvest for potential alternative fisheries by year and fishery, 2013-2021

Fishery	Stock	Status	Numbers of Fish (Modeled Values)									
			Current	Transition				Long-Term				
				2013	2014	2015	2016	2017	2018	2019	2020	2021
Mainstem Gillnet	Spring Chinook	Existing	5,051	~~3,749~~ 3,739	2,714	2,714	2,714	-	-	-	-	-
Mainstem Gillnet	Summer Chinook	Existing	2,831	2,548	2,264	1,698	1,698	-	-	-	-	-
Mainstem Gillnet (Zone 4-5)	Fall Chinook	Existing	37,990	28,630	28,630	28,630	23,080	-	-	-	-	-
Mainstem Gillnet (2S)	Fall Chinook	New	8,550	11,874	11,874	11,874	13,570	-	-	-	-	-
Mainstem Gillnet	Coho	Existing	25,881	~~22,099~~ 22,064	~~22,099~~ 22,064	~~22,099~~ 22,064	~~21,375~~ 21,168	-	-	-	-	-
Select Area Gillnet	Spring Chinook	Expanded	5,000	6,234	6,250	8,805	9,951	10,000	10,000	10,852	11,234	11,250
Select Area Gillnet	Fall Chinook	Expanded	18,528	18,528	18,528	19,173	19,953	20,028	20,028	20,351	20,741	20,778
Select Area Gillnet	Coho	Expanded	56,700	58,380	69,580	69,580	69,580	69,580	83,580	83,580	83,580	83,580
Mainstem (Gear to be Determined; Zone 4-5)	Fall Chinook	New?	-	-	-	-	-	23,080	23,080	23,080	23,080	23,080
Mainstem (Gear to be Determined; 2S)	Fall Chinook	New	-	-	-	-	-	13,570	13,570	13,570	13,570	13,570
Mainstem Seine	Lower River Hatchery Chinook	New	-	~~11,194~~ 1,804	~~11,194~~ 1,804	~~11,194~~ 1,804	~~27,441~~ 4,577	~~27,441~~ 4,577	~~27,441~~ 4,577	~~27,441~~ 4,577	~~27,441~~ 4,577	~~27,441~~ 4,577
Mainstem Seine	Coho	New	-	~~6,010~~ 940	~~6,010~~ 940	~~6,010~~ 940	~~14,374~~ 2,430	~~14,374~~ 2,430	~~14,374~~ 2,430	~~14,374~~ 2,430	~~14,374~~ 2,430	~~14,374~~ 2,430
Mainstem Tangle-net	Coho	New	-	20,160	20,160	20,160	20,160	20,160	20,160	20,160	20,160	20,160

1. The spring Chinook harvest estimate for 2013 has been revised to correct a typographical error. The correct number (3,739) was originally used in the corresponding ex-vessel value calculation, so no correction to Table C5 was necessary.
2. Harvest estimates in mainstem seine fisheries were recalculated using updated release mortality estimates for fall Chinook and coho based on studies conducted by the Washington Department of Fish and Wildlife. The updated release mortality estimates were higher than those assumed in the original analyses. The proportion of Lower River Hatchery and Upriver Bright fall Chinook ESA-impacts assigned to the mainstem seine fisheries remained unchanged from the original analyses. However, since coho harvest in the seine fisheries was incidental to the harvest of Chinook, the increase in coho release mortality estimates resulted in a slight increase in the proportion of coho ESA-impacts used in the seine fisheries.
3. Because of a slight increase in the proportion of coho ESA-impacts used in the mainstem seine fisheries (see footnote 2), the proportion of coho ESA-impacts available to mainstem gillnet fisheries during the Transition Period was correspondingly less. This resulted in a slight decrease in the harvest of coho in mainstem gillnet fisheries.

Table C.5. Summary of modeled current mainstem commercial fishery values compared to expected values for potential alternative fisheries by year and fishery, 2013-2021

Fishery	Stock	Status	Ex-Vessel Value (Modeled)								
			Current	Transition				Long-Term				
				2013	2014	2015	2016	2017	2018	2019	2020	2021
Mainstem Gillnet	Spring Chinook	Existing	$395,911	$287,059	$205,272	$205,272	$205,272	-	-	-	-	-
Mainstem Gillnet	Summer Chinook	Existing	$151,719	$136,552	$121,332	$90,999	$90,999	-	-	-	-	-
Mainstem Gillnet (Zone 4-5)	Fall Chinook	Existing	$1,272,247	$958,790	$958,790	$958,790	$772,926	-	-	-	-	-
Mainstem Gillnet (2S)	Fall Chinook	New	$222,745	$309,341	$309,341	$309,341	$353,526	-	-	-	-	-
Mainstem Gillnet	Coho	Existing	$316,682	~~$270,442~~ $270,013	~~$270,442~~ $270,013	~~$270,442~~ $270,013	~~$261,582~~ $259,048	-	-	-	-	-
Select Area Gillnet	Spring Chinook	Expanded	$316,415	$394,493	$395,519	~~$503,300~~ $557,191	~~$605,566~~ $629,754	~~$631,805~~ $632,830	$632,830	$686,721	$710,908	$711,934
Select Area Gillnet	Fall Chinook	Expanded	$436,943	$436,943	$436,943	$457,237	$481,779	$484,139	$484,139	$494,286	$506,557	$507,737
Select Area Gillnet	Coho	Expanded	$743,337	$765,362	$912,194	$912,194	$912,194	$912,194	$1,095,734	$1,095,734	$1,095,734	$1,095,734
Mainstem (Gear to be Determined; Zone 4-5)	Fall Chinook	New?	-	-	-	-	-	$772,926	$772,926	$772,926	$772,926	$772,926
Mainstem (Gear to be Determined; 2S)	Fall Chinook	New	-	-	-	-	-	$353,526	$353,526	$353,526	$353,526	$353,526
Mainstem Seine	Lower River Hatchery Chinook	New	-	~~$190,851~~ $30,750	~~$190,851~~ $30,750	~~$190,851~~ $30,750	~~$467,868~~ $78,032	~~$467,868~~ $78,032	~~$467,868~~ $78,032	~~$467,868~~ $78,032	~~$467,868~~ $78,032	~~$467,868~~ $78,032
Mainstem Seine	Coho	New	-	~~$73,562~~ $11,499	~~$73,562~~ $11,499	~~$73,562~~ $11,499	~~$175,901~~ $29,738	~~$175,901~~ $29,738	~~$175,901~~ $29,738	~~$175,901~~ $29,738	~~$175,901~~ $29,738	~~$175,901~~ $29,738
Mainstem Tangle-net	Coho	New	-	$246,713	$246,713	$246,713	$246,713	$246,713	$246,713	$246,713	$246,713	$246,713
Totals			$3,855,999	~~$4,070,108~~ $3,847,515	~~$4,120,959~~ $3,898,366	~~$4,218,701~~ ~~$4,272,592~~ $4,049,999	~~$4,574,326~~ ~~$4,598,513~~ $4,059,981	~~$4,045,072~~ ~~$4,046,095~~ $3,510,096	~~$4,229,637~~ $3,693,636	~~$4,293,675~~ $3,757,674	~~$4,330,133~~ $3,794,133	~~$4,332,339~~ $3,796,338
Difference from Current			$0	~~$214,109~~ ($8,484)	~~$264,960~~ $42,368	~~$362,702~~ ~~$416,593~~ $194,001	~~$718,327~~ ~~$742,514~~ $203,982	~~$189,073~~ ~~$190,097~~ ($345,902)	~~$373,638~~ ($162,362)	~~$437,676~~ ($98,325)	~~$474,134~~ ($61,866)	~~$476,340~~ ($59,660)
% Difference from Current			0%	~~6%~~ 0%	~~7%~~ 1%	~~9%~~ ~~11%~~ 5%	~~19%~~ 5%	~~5%~~ -9%	~~10%~~ -4%	~~11%~~ -3%	~~12%~~ -2%	~~12%~~ -2%

1. Estimates of ex-vessel value for coho in mainstem gillnet fisheries have been slightly reduced as a result of slight reductions in harvest. The slight reductions in coho harvest resulted from the reallocation of some coho ESA-impacts from mainstem gillnet fisheries to mainstem seine fisheries. The reallocation was necessary because updated seine release mortalities for coho were higher than assumed in original analyses.
2. Estimates of ex-vessel values for spring Chinook harvested in Select Area gillnet fisheries for the years 2015 through 2017 have been revised to reflect an error in a cell reference in the supporting worksheet that omitted from the original analyses some age-classes from the assumed 2011 brood releases in Cathlamet Channel.
3. Estimates of ex-vessel values of fall Chinook and coho in mainstem seine fisheries were recalculated using updated harvest estimates. Harvest estimates were less than those in original analyses because updated release mortality estimates for fall Chinook and coho were higher than originally assumed. The updated release mortality estimates are based on studies conducted by the Washington Department of Fish and Wildlife.