

Comprehensive Review of the Columbia River Basin Salmon
Management Policy C-3620
2013-2017
ECONOMICS

QUESTIONS: 2, 8, 15, 20, 21, 37, 38, and 39

Question 2

Question paraphrase: What economic enhancements were expected to occur for the recreational and commercial fisheries and did they occur?

Policy citation: The objectives of this Policy are to ..., and...**enhance the economic well-being and stability of the fishing industry in the state** (pg. 8)

Specific question: Were there specific economic enhancement goals or targets that were anticipated to be achieved for sport and commercial fisheries over the course of the Policy, and if so, have they been achieved?

Analysis:

Background – Expectations

Measuring the economic impacts for both recreational and commercial fishing sectors can be reviewed in the TCW 2008 report, “Economic Analysis of the Non-treaty Commercial and Recreational Fisheries in Washington State.” Recreational economic value formula is angling trips multiplied by the net economic value (\$58 per angler day adjusted for inflation). Due to applying a constant dollar value, although adjusted for inflation each year, recreational trips were primarily compared by angling trips within the economic analysis. Commercial fisheries were measured by pounds of fish sold multiplied by price/pound. Multipliers were not applied to any analysis within this report.

There were several expectations in the “Decision Support Document for Columbia River Basin Salmon Management Policy, Draft January 12, 2013” (Decision Document) regarding this question. Basically, the Policy was expected to increase recreational angler trips and increase economic impacts to the commercial fishery through increased production in off-channel areas and implementation of alternative gears.

Shown below are several excerpts from the Decision document:

“Recreational angler trips in the transition period (2013-2016) are projected to increase by about 13% and in the long term by about 22% across the spring Chinook, summer Chinook, and fall Chinook fisheries.”

“Key assumptions include:

- 1) Alternative selective commercial fishing gear is implemented and catches are consistent with CWG (Workgroup) expectations. For example, the CWG analysis expects a catch of 27,441 fall Chinook by alternative selective commercial fishing gear in 2017.
- 2) Off-channel artificial production programs are implemented as recommended by the CWG.”

“Ex-vessel Value of Commercial Fishery (revised from CWG report16). The ex-vessel value of the commercial fishery in the transition period is projected to increase by ~\$18,805 (0.5%) in 2013 to ~ \$761,009 (~20%) in 2016. For the period 2017 through 2021, the annual ex-vessel value of commercial fisheries is projected to increase by ~\$231,755 (6%) in 2017 to ~\$519,022 (14%) in 2021.

2) Recreational Angling Trips (from CWG report). The total number of angler trips in the transition period (2013-2016) is projected to increase by about 13% and in the long term by about 22%.”

“Synopsis. The draft Policy supports the development and implementation of fisheries using alternative selective-fishing gear and techniques to provide commercial fishing opportunities to catch hatchery salmon in the mainstem of the Columbia River while limiting impacts to wild stocks of conservation concern. Implementation of alternative selective gears is essential to achieve the economic expectations for commercial fishers and is expected to provide conservation benefits.”

“It is important to recognize that the analyses are not intended to be absolute predictions of the catch and ex-vessel value, but rather the potential magnitude of changes in harvest and ex-vessel values relative to the modeled baseline.” “As with the commercial fishery analysis, the analyses are not intended to be absolute predictions of the recreational angler trips, but rather the potential magnitude of changes in angler trips relative to the modeled baseline” (Decision document).

Actual Results and Compared to Expectations – Recreational Fisheries

This question is similar to Question 37 and much of the information can be applied to both questions. The answers to this question are focused on recreational angler trips and commercial ex-vessel values. **Table 2A** show recreational angler trips and catch during 2010-2017, and **Figure 2.1** shows angler trips during the same time. Angler trips are averaged for 2010-2012 to show results prior to the Policy and 2013-2017 during the Policy. Average angler trips were higher prior to the Policy for spring and summer Chinook and were higher during the Policy for fall Chinook.

Table 2A: Mainstem Recreational angler trips in the Columbia River below Bonneville Dam and total economic value

Year	Spring	Summer	Fall-Mainstem	Fall-Buoy 10	Total trips	Economic Impact
2010	186,132	70,661	114,285	52,300	423,378	\$ 24,869,224
2011	154,895	75,818	147,343	49,409	427,465	\$ 25,904,379
2012	127,919	80,733	128,831	65,070	402,553	\$ 24,897,903

2013	109,655	52,037	141,481	65,767	368,940	\$ 23,154,674
2014	145,642	53,661	143,946	107,522	450,771	\$ 28,745,667
2015	151,173	50,555	131,374	108,213	441,315	\$ 28,177,963
2016	126,826	58,067	133,300	94,950	413,143	\$ 26,709,695
2017	63,303	41,595	114,721	93,547	313,166	\$ 20,678,351
Average 2010-2012	156,315	75,737	130,153	55,593	417,799	\$ 25,223,835
Average 2013-2017	119,320	51,183	132,964	94,000	397,467	\$ 25,493,270

NOTE: Angler trips are not adjusted for differences in run sizes each year. Dollar values (2008 \$58 per angling day value) adjusted annually for inflation.

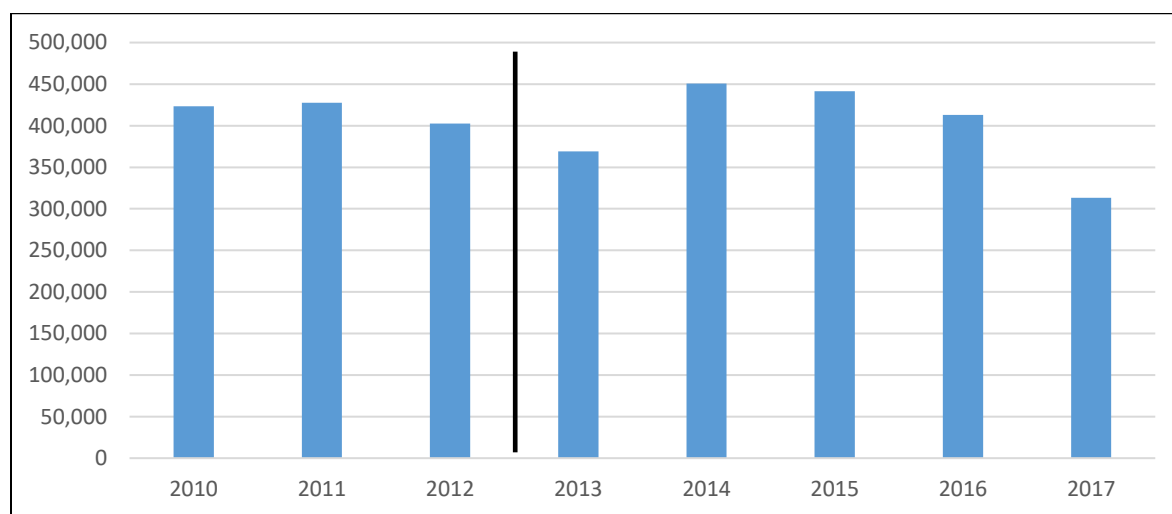


Figure 2.1. Total Recreational Angler Trips below Bonneville Dam.

Table 2B shows the modeled angler trips provided by the Workgroup compared to the actual results during 2013-2017. The expectations and actual values can be found in Appendix, Table 2B. Based on the modeling assumptions, spring Chinook angler trips were expected to increase by 9.1% in the transition and about 13.7% in the long term. The actual results show an average loss in angler trips during 2013-2016 of 24% and a loss in 2017 of 62%.

Table 2B: Actual vs. Modeled Recreational Angler Trips below Bonneville from Workgroup Report Tables C1-C3 (Preliminary – Actual Results May differ in final version).

	Angler Trips	Actual versus Modeled				
		2013	2014	2015	2016	2017
"Current"	(<Bonn)					
165,362	Spring	(65,721)	(29,734)	(24,203)	(48,550)	(112,073)
25,000	Summer	18,291	19,915	5,508	13,020	(28,405)

160,000	Fall	32,248	76,468	64,587	53,238	33,268
350,362	Total	(15,182)	66,649	45,892	17,708	(107,210)
% Difference Expected		10%	10%	13%	13%	21%
% Difference Actual		-4%	19%	13%	5%	-31%

Note: Values are not adjusted for differences in run sizes each year.

Summer Chinook angler trips were expected to increase by 35% during 2013-2014, 80% during 2015-2016 and 180% during 2017. The gain in angler trips during 2013-2014 averaged 57%, during 2015-2016 averaged 21% and in 2017 was a loss of 41%.

Fall Chinook angler trips were expected to increase by 9.4% during the transition and long term. The gain in angler trips during 2013-2017 averaged 30%.

The modeling that was performed during the Workgroup process was meant to outline expected changes to fisheries based on the assumptions in the model and the changes to the Policy. Most of the assumptions that were used to calculate angler trips and harvest were not similar in value to the expected values during 2013-2017, such as run sizes. If everything else is equal, smaller run sizes would produce fewer angler trips and vice versa. As such, the actual angler trips and harvest would not be expected to match the Workgroup expectations. The expectations are best viewed as percent changes.

Table 2C shows results from an ODFW model that estimated how the fishery would have performed pre-Policy compared to actual results. This model incorporates actual information that was used to manage fisheries during 2013-2017, such as actual run size, mark rates, in-season management decisions and ESA impact rates. The variables used in this analysis were the same for both pre-Policy and actual fisheries, so the differences are assumed to reflect the effects of the Policy implementation. The expectations and actual values can be found in the Appendix, **Table 2C**.

Based on the modeling assumptions, spring Chinook angler trips were expected to increase by 9.1% in the transition (2013-2016) and about 13.7% in the long term (2017). Based on this analysis, the gain in angler trips for spring Chinook due to the Policy, averaged 5% during 2013-2016, and **xx in 2017**.

Summer Chinook angler trips were expected to increase by 35% during 2013-2014, 80% during 2015-2016 and 180% during 2017. Based on this analysis there was no gain in summer Chinook angler trips during 2013-2016 and **in 2017 was a loss of x%**. Fall Chinook angler trips were expected to increase by 9.4% during the transition and long term. The gain in angler trips during 2013-2016 averaged 2%, and **xx%** during 2017.

This analysis shows there were gains in angler trips for spring and fall Chinook from the Policy, but they were not the magnitude expected under the Workgroup assumptions.

Table 2C: Actual vs. Expected (Pre-Policy) Recreational Angler Trips from ODFW analysis

Angler Trips	Actual versus Expected Pre-Policy					
(<Bonn)	2013	2014	2015	2016	2017	Average 2013-2017
Spring	0	10,788	10,321	6,497		18,182
Summer	0	0	0	0		8,319
Fall	7,030	3,280	11,309	0		45,977
Angler Trips	% Gain in Angler Trips					
(<Bonn)	2013	2014	2015	2016	2017	Average 2013-2017
Spring	0%	8%	7%	5%		
Summer	0%	0%	0%	0%		
Fall	4%	1%	5%	0%		

Note: Values are not adjusted for differences in run sizes each year.

Figure 2.2 shows the results from Table 2C graphically from 2013-2016. There were slight gains in angler trips for spring Chinook and fall Chinook but not for summer Chinook.

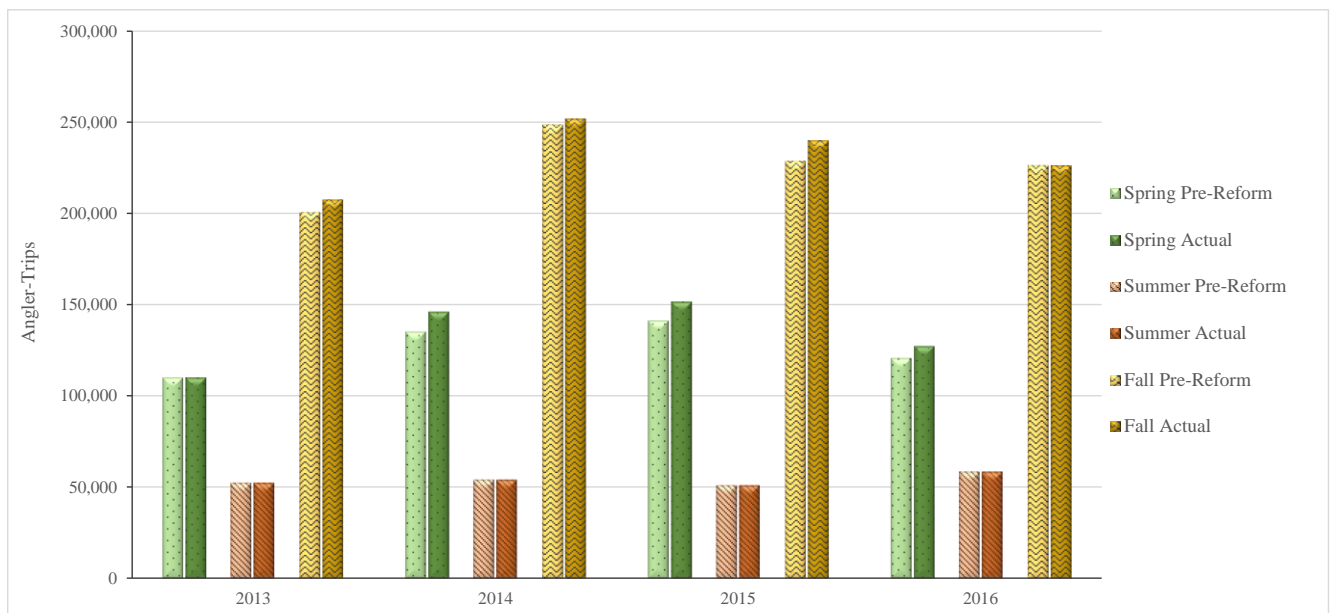


Figure 2.2: Changes in seasonal angler effort due to Harvest Reform-related allocation increases for the 2013-16 lower Columbia recreational fisheries

This was Figure 6 from Oregon Department of Fish and Wildlife’s Exhibit Agenda Item Summary Updated 1-12-17.

Figure 2.3 shows the relationship between upriver spring Chinook run size and angler trips. There is a strong correlation that shows as the upriver spring Chinook run size increases, angler trips also increase (see Appendix Figure 2.4).

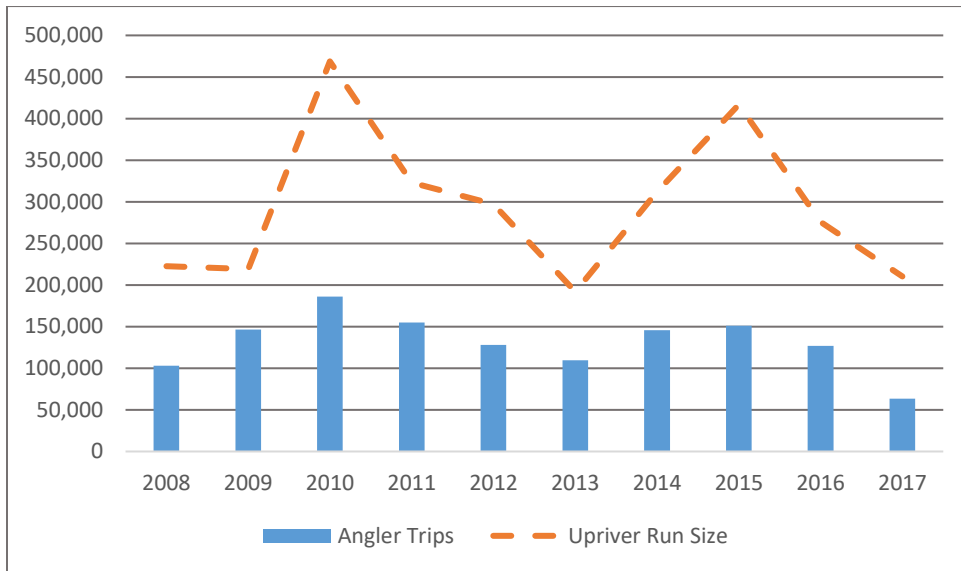


Figure 2.3: Mainstem Spring Chinook Angler Trips versus Upriver Run Size

Table 2D shows the relationship to recreational catch and effort compared to the run size. This table is meant to normalize the effect of run size on how catch and effort responded to the Policy and the changes in allocation. This table shows that angler trips/run decreased during the Policy for all stocks on average, instead of increasing as expected. Catch rate did not change for spring or summer Chinook fisheries, but did increase slightly for fall Chinook fisheries. Catch and/or effort did not increase/decrease proportionate to the run size.

Table 2D. Relationship of Recreational Catch Rate (catch/angler trips), Catch (harvest) and Effort (Angler Trips) to run size (per 1,000) below Bonneville Dam.

Year	Spring Chinook			Summer Chinook			Fall Chinook		
	Catch Rate	Catch/Run Size	Effort/Run Size	Catch Rate	Catch/Run Size	Effort/Run Size	Catch Rate	Catch/Run Size	Effort/Run Size
2010	0.16	62	397	0.04	35	977	0.14	37	254
2011	0.08	36	479	0.07	64	941	0.20	63	317
2012	0.10	45	431	0.04	50	1,385	0.21	78	369
2013	0.06	36	571	0.04	27	770	0.26	43	163
2014	0.11	50	467	0.04	25	686	0.21	46	217
2015	0.13	47	363	0.12	47	398	0.33	60	184
2016	0.10	46	460	0.05	34	638	0.19	67	355
2017	0.14	43	301	0.08	52	610	0.26	114	437
2010-2012 Average	0.11	48	436	0.05	50	1,101	0.19	59	313
2013-2017 Average	0.10	45	432	0.06	37	620	0.24	66	271

In addition to increases in angler trips, there were also expectations from the Workgroup report for increase in fishing days.

Table 2E shows the number of fishing days and angler trips gained during 2013-2017 as a result of the Policy, based on the ODFW analysis. The number of days gained range from one to 17 for all seasons combined.

Table 2E: Summary of gains in fishing days and angler-trips due to allocation changes for lower Columbia River recreational Chinook fisheries, by year and season, 2013-16

		2013	2014	2015	2016	2017
Spring	Fishing Days Gained	0	5	2	1	
	Angler-Trips Gained	0	10,788	10,321	6,497	
Summer	Fishing Days Gained	0	0	0	0	
	Angler-Trips Gained	0	0	0	0	
Fall	Buoy 10	Non-MSF Days Gained	5	6	2	0
		Angler-Trips Gained	4,560	1,015	907	0
	Below Lewis River	Non-MSF Days Gained	3	6	5	0
		Angler-Trips Gained	2,470	2,265	10,402	0
	Fall Total	Non-MSF Days Gained	8	12	7	0
		Angler-Trips Gained	7,030	3,280	11,309	0
All Seasons Total	Fishing Days Gained	8	17	9	1	
	Angler-Trips Gained	7,030	14,068	21,630	6,497	

The above table was Table 22 from Oregon Department of Fish and Wildlife’s Exhibit Agenda Item Summary Updated 1-12-17.

Table 2F shows the expected number of days open compared to expectations. In most cases, the expectations for increased days were realized but the number of days was supposed to be consecutive, which did not necessarily happen.

Table 2F: Expected vs. Actual Recreational Season

Chinook Season	Expected ¹						Average
	2013	2014	2015	2016	2017	Average	
Spring (Pre-Update) ²	44	44	44	44	45	44	
Spring (Post-Update) ³	37	37	37	37	37	37	
Summer ⁴	18	18	26	26	46	27	
Buoy 10 ⁵	34	34	34	34	34	34	
Fall Mainstem (<Lewis) ⁶	45	45	45	45	45	45	
Fall Mainstem (>Lewis) ⁷	92	92	92	92	92	92	

Chinook Season	Actual ¹						Average	% of Expected Average
	2013	2014	2015	2016	2017	Average		
Spring (Pre-Update) ²	40	45	43	39	50	43	98%	
Spring (Post-Update) ³	22	32	31	23	0	22	58%	
Summer ⁴	15	40	46	46	40	37	140%	
Buoy 10 ⁵	51	32	28	61	35	41	122%	
Fall Mainstem (<Lewis) ⁶	45	45	45	45	45	45	100%	
Fall Mainstem (>Lewis) ⁷	92	92	92	82	92	90	98%	

¹Open fishing days were expected to be consecutive; however, actual open days were not always consecutive due to the need for in-season management.

²March 1-May 9; assumes run update occurs on May 10.

³May 10-June 15

⁴June 16-July 31

⁵Expected open days based on August 1-September 3 (average date for Labor Day). Actual open days include any days open for Chinook retention August 1-September 30. In 2014, the fishery still met the Labor Day objective as Labor Day fell on September 1 that year. For Buoy 10, the Policy does not distinguish between open days that are Chinook MSF or non-MSF.

⁶August 1-September 14, including one week of Chinook MSF September 8-14.

⁷August 1-October 31

Actual Results and Compared to Expectations – Commercial Fisheries

Table 2G and **Figure 2.5** shows ex-vessel values for 2010-2017 for all mainstem and Select Area commercial fisheries. During 2010-2012, total ex-vessel values averaged \$4.4 million and during 2013-2017 averaged \$5.0 million.

Table 2G. Ex-vessel Values from All Mainstem and Select Area Fisheries.

Year	Ex-Vessel Values
2010	\$5,056,140
2011	\$4,791,465
2012	\$3,308,064
2013	\$5,381,820
2014	\$6,004,715
2015	\$5,088,127
2016	\$5,179,976
2017	\$3,234,861
Average 2010-2012	\$4,385,223
Average 2013-2017	\$4,977,900

Note: Values are not adjusted for differences in run sizes each year.

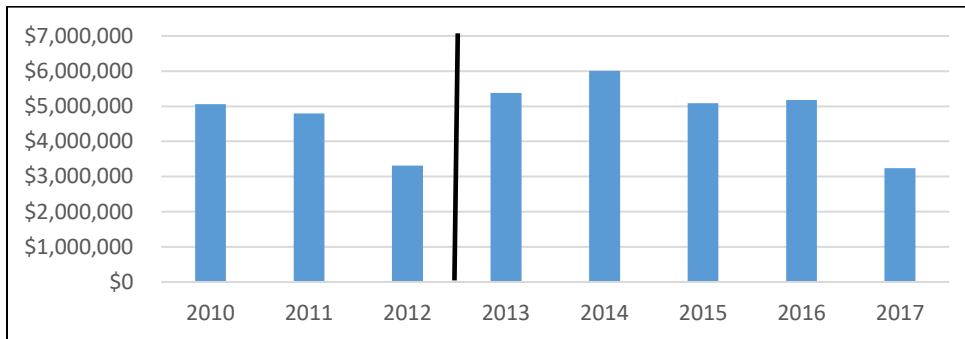


Figure 2.5. Ex-Vessel Value of Columbia River Mainstem and Select Area Fisheries.

Table 2H shows the actual versus modeled commercial fishery ex-vessel values from Workgroup Table C5. The dollar values shown in red are where the actual ex-vessel values are less than the expectations from the Workgroup. As pointed out earlier, these expectations are not intended to be absolute predictions of the catch and ex-vessel value but should be viewed as the differences in potential magnitude over time relative to values pre-Policy. This table does illustrate where fisheries were expected to contribute more significantly and did not, for example the seine fisheries, the coho tangle net fisheries and the “new” fisheries. The expectations and actual values can be found in the Appendix, **Table 2H**.

Table 2H: Actual versus Modeled Fishery Ex-Vessel Values from Workgroup Table C5 (Preliminary – Actual Results May differ in final version).

Fishery	Stock	Status	Ex-Vessel Value (Actual vs Modeled)					
			Current	Transition				Long-Term
				2013	2014	2015	2016	2017
Mainstem Gillnet	Spring Chinook	Existing	\$395,911	(\$2,867)	\$117,403	\$375,388	\$210,369	\$0
Mainstem Gillnet	Summer Chinook	Existing	\$151,719	\$23,630	\$50,934	\$115,308	\$184,109	\$0
Mainstem Gillnet (Zone 4-5)	Fall Chinook	Existing	\$1,272,247	\$2,039,810	\$1,802,203	\$1,742,214	\$2,026,669	\$908,770
Mainstem Gillnet (2S)	Fall Chinook	New	\$0	(\$353,526)	(\$353,526)	(\$353,526)	(\$353,526)	\$0
Mainstem Gillnet	Coho	Existing	\$316,682	(\$230,956)	\$190,024	(\$191,830)	(\$261,582)	\$0
Select Area Gillnet	Spring Chinook	Expanded	\$316,415	\$352,788	(\$41,624)	\$421,804	\$320,911	\$816,314
Select Area Gillnet	Fall Chinook	Expanded	\$436,943	\$342,142	\$60,419	(\$78,395)	(\$180,498)	(\$160,886)
Select Area Gillnet	Coho	Expanded	\$743,337	(\$195,582)	\$710,728	(\$615,004)	(\$483,606)	(\$357,475)
Mainstem (Gear to be Determined; Zone 4-5)	Fall Chinook	New?	\$0	\$0	\$0	\$0	\$0	(\$772,926)
Mainstem (Gear to be Determined; 2S)	Fall Chinook	New	\$0	\$0	\$0	\$0	\$0	(\$353,526)
Mainstem Seine	Lower River Hatchery Chinook	New	\$0	(\$190,851)	(\$190,851)	(\$139,417)	(\$440,974)	(\$467,868)
Mainstem Seine	Coho	New	\$0	(\$73,562)	(\$73,562)	(\$68,347)	(\$169,509)	(\$175,901)
Mainstem Tangle-net	Coho	New	\$0	(\$160,628)	(\$246,713)	(\$197,089)	(\$246,713)	(\$246,713)
Totals			\$3,813,317	\$1,550,398	\$2,025,435	\$1,011,104	\$605,650	(\$810,211)
% Difference from Current	Expected			0.5%	4.0%	7.0%	20.0%	6.0%
% Difference from Current	Actual			41%	131%	50%	60%	-134%

Note: Values are not adjusted for differences in run sizes each year.

Table 2I is a comparison of expected (pre-Policy) ex-vessel values compared to actual 2013-2017 ex-vessel values based on the ODFW analysis. This analysis estimated how the fishery would have performed pre-Policy compared to actual results. This model uses information that was used to manage fisheries during 2013-2017, such as actual run size, mark rates, in-season management

decisions, price per pound and ESA impact rates. The model also includes the effect of increased production in the SAFE areas. The expectations and actual values can be found in the Appendix, **Table 2I**.

This analysis shows losses in all mainstem gillnet fisheries during the Policy and gains in Select Area and mainstem seine fisheries. Losses in mainstem fisheries was expected because allocation was transferred to the recreational fishery. Gains in Select Areas can be attributed to increased returns because of increases in releases. The gains in seine fisheries is due to the fact that seines were not in use prior to the Policy. The totals by year show losses in all years except 2016.

Table 2I: Comparison of expected (pre-Policy) and actual (post-Policy) ex-vessel value for the non-treaty commercial fishery during the Policy based on ODFW analysis (Preliminary – Actual Results May differ in final version).

Fishery	Stock	Status	Transition				Long-Term
			2013	2014	2015	2016	2017
Mainstem Gillnet	Spring Chinook	Existing	(\$60,268)	(\$228,145)	(\$196,375)	(\$152,146)	(\$302,776)
Mainstem Gillnet	Summer Chinook	Existing	(\$47,261)	(\$31,903)	(\$82,727)	(\$109,997)	(\$238,012)
Mainstem Gillnet (Zone 4-5)	Fall Chinook	Existing	(\$663,180)	(\$293,020)	(\$1,032,775)	(\$0)	(\$13,535)
Mainstem Gillnet	Coho	Existing	\$10,744	(\$73,926)	(\$24,197)	\$0	\$0
Select Area Gillnet	Spring Chinook	Expanded	\$16,767	\$17,404	\$187,377	\$173,804	\$225,515
Select Area Gillnet	Fall Chinook	Expanded	\$0	(\$0)	\$19,746	\$60,867	\$40,061
Select Area Gillnet	Coho	Expanded	(\$0)	\$166,058	\$45,003	\$57,225	\$122,094
Mainstem Seine	Lower River Hatchery Chinook	New	\$0	\$0	\$51,434	\$26,894	\$0
Mainstem Seine	Coho	New	\$0	\$0	\$5,215	\$6,392	\$0
Mainstem Tangle-net	Coho	New	\$86,085	\$0	\$49,624	\$0	\$0
Totals			(\$657,113)	(\$443,533)	(\$977,676)	\$32,506	(\$166,653)

Note: Values are not adjusted for differences in run sizes each year.

Figure 2.6 shows the percent difference in actual ex-vessel values during the transition period based on the ODFW analysis results from Table 2I.

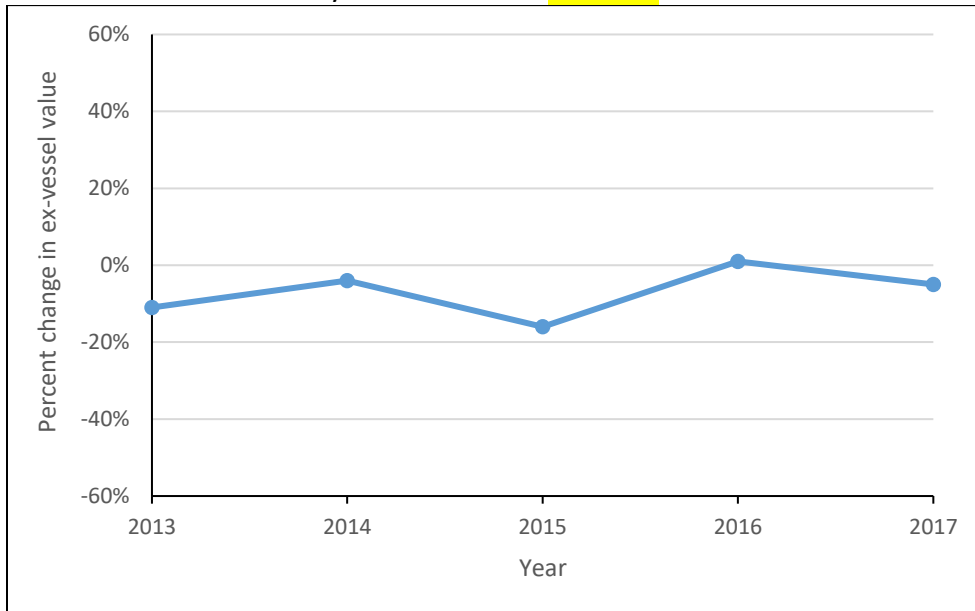


Figure 2.6: Comparison of percent difference in actual ex-vessel values during the transition period (2013-16)

DELETED FIGURE 2.7

Table 2J shows the modeled and actual price per pound for commercial fisheries during 2013-2017. The actual values were higher than modeled for all years except 2014.

Table 2J: Modeled and Actual Price per Pound for Commercial Fisheries.

Fishery	Stock	Price Per Pound					
		Modeled	Actual				
			2013	2014	2015	2016	2017
Mainstem Gillnet	Spring Chinook	\$5.42	\$7.30	\$6.99	\$6.52	\$8.72	--
Mainstem Gillnet	Summer Chinook	\$3.08	\$4.57	\$3.52	\$3.41	\$5.35	--
Mainstem Gillnet (Zone 4-5) ¹	Fall Chinook	\$1.81	\$2.06	\$1.54	\$2.01	\$2.83	\$2.76
Mainstem Gillnet	Coho	\$1.32	\$1.79	\$1.25	\$1.70	--	--
Select Area Gillnet	Spring Chinook	\$5.23	\$6.62	\$5.39	\$6.04	\$7.17	\$7.48
Select Area Gillnet ²	Fall Chinook	\$2.28	\$2.93	\$2.15	\$2.53	\$3.25	\$3.10
Select Area Gillnet	Coho	\$1.38	\$1.84	\$1.13	\$1.53	\$1.85	\$2.04
Mainstem Tangle-net	Coho	\$1.32	\$1.87	\$1.20	\$1.65	--	--

¹ Combined for tules and brights

² Brights only (SAB)

Recreational Advisory Group/Public Comments:

Concern was expressed with low run sizes and preferred to compare angling trips and catch that is adjusted to the run size. It was also suggested to show angler trips per fish, instead of just per run size. In regards to the commercial tables, it was recommended that it would be useful to know what expected and actual values were when not already included. It seems apparent that both recreational and commercial indicate a declining number compared to what was projected. There are a number of factors that can effect catch and effort each season (i.e., weather, catch rates, tackle, run timing, temperature, flow, boat ramp capacity).

Commercial Advisory Group/Public Comments:

Analysis for the recreational fisheries focus in on the salmon season, so when salmon retention is closed, there are additional recreational angling day opportunities and economic benefits to the region when steelhead seasons are open.

Question 8

Question paraphrase: What progress has been made on achieving overall economic well-being and stability of both commercial and recreational fisheries?

Policy citation: ...seek to enhance the overall economic well-being and stability of Columbia River fisheries. (pg. 10)

Specific question: See question/footnote 2 as a cross-referenced question.

Analysis: See Question #2 and Question #37

Question 15

Question paraphrase: Have the off-channel areas been economically enhanced compared to before the Policy was implemented?

Policy citation: Enhance the economic benefits of off-channel commercial fisheries. (pg. 10)

Specific question: Have the economic benefits of off-channel commercial fisheries been enhanced over the course of the Policy in comparison to the period prior to the Policy?

Analysis: No in Washington and yes in Oregon, but not to the extent that was expected. The Policy called for development of new SAFE areas in Washington, but there were also expectations for an increase of 250,000 spring Chinook and 200,000 coho in Washington. In Oregon, there was an expectation for expanded SAFE areas, new SAFE areas and increased production.

Table 15A shows the release goals and actual releases for all SAFE areas combined. During 2013-2017, spring Chinook releases averaged 87% of the goal, coho averaged 95% of the goal and Select Area Brights (SAB) fall Chinook averaged 77% of the goal. Long-term goals (2018 and beyond) will be affected by the Mitchell Act Biological Opinion (BIOP) and includes reductions to the goals for SAB fall Chinook and coho in Select Areas. It should be noted that although WDFW released a portion of the spring Chinook that were expected from the Policy, there was virtually no adult returns from these releases. The release goals may have been achieved for the most part, but the expectation for increased adult returns from those releases has to be considered as well.

Table 15A: Summary of Select Area production goals and actual releases

Species/Stock	Period	Release Year	Total Release Goals	Total Actual Releases	% of Goal	First Adult Return Year
Spring Chinook	Pre-Transition	2010 ^a	1,550,000	1,535,200	99%	2012
		2011 ^a	1,550,000	1,290,700	83%	2013
		2012 ^a	1,550,000	1,529,300	99%	2014
	Transition	2013	2,050,000	1,829,200	89%	2015
		2014 ^b	1,950,000	1,646,600	84%	2016
		2015 ^b	1,950,000	1,606,300	82%	2017
		2016 ^b	1,950,000	1,850,800	95%	2018
Long Term	2017 ^b	2,200,000	1,805,700	82%	2019	
Coho	Pre-Transition	2010 ^a	4,290,000	4,009,700	93%	2011
		2011 ^a	4,290,000	3,811,000	89%	2012
		2012 ^a	4,290,000	3,995,800	93%	2013
	Transition	2013	5,090,000	4,536,700	89%	2014
		2014	5,090,000	4,814,400	95%	2015
		2015 ^c	5,090,000	4,709,300	93%	2016
		2016	5,090,000	5,589,500	110%	2017
Long Term	2017	5,255,100	4,787,500	91%	2018	
SAB Fall Chinook	Pre-Transition	2010	1,450,000	914,200	63%	2012
		2011	1,450,000	1,356,900	94%	2013
		2012	1,450,000	1,358,000	94%	2014
	Transition	2013	1,950,000	1,850,300	95%	2015
		2014	1,950,000	2,227,400	114%	2016
		2015	1,950,000	1,670,700	86%	2017
		2016	1,950,000	621,900	32%	2018
Long Term	2017	1,000,000	599,500	60%	2019	

^a Includes additional 250,000 spring Chinook and 120,000 Coho production specified as part of 2008 OFWC Allocation Policies.

^b 350,000 spring Chinook production from WDFW (Deep River) was discontinued in 2014.

^c 200,000 Coho production from WDFW scheduled for release beginning in 2015 was discontinued due to budget cuts.

WDFW began the Cathlamet Channel Net Pen (CCNP) program with the intent of providing an additional off-channel area for spring Chinook fisheries. From 2014-2017, an average of 142,200 spring Chinook were released from the net pens, compared to a goal of 250,000 fish (Table 15B). All of the fish released had a coded-wire tag implanted, but the recoveries of these fish over all of the years was only 12 fish in the Columbia River, and 4 in ocean fisheries. No recoveries have occurred in Cathlamet Channel. This is why the answer to the question is no for Washington; the intent was there to produce fish and develop a new SAFE area, but the fish did not survive to contribute to a fishery in Cathlamet Channel.

Table 15B: Releases of Spring Chinook in Cathlamet Channel Net Pens

Number of Spring Chinook Planted					
2014	2015	2016	2017	2018	Goal
200,000	140,864	107,856	119,944	260,000	250,000

Currently, the only Select Area (off-channel) fishery in Washington waters is in Deep River. Spring Chinook were released until 2013 and then discontinued. Tule fall Chinook releases averaged 1.1 million smolts from 2010-2017, but the program was discontinued due to implementation of the BIOP. WDFW is in the process of moving the Cathlamet Channel spring Chinook program back to Deep River with the 2018 releases. A number of program changes will be implemented with the goal of improving survival of these fish.

Coho releases in Deep River averaged 750,000 smolts from 2010-2017 (Figure 15.1). Coho releases in Deep River were expected to increase to 950,000 beginning in 2015. Actual releases were 654,000 in 2015, 920,000 in 2016 and 855,000 in 2017. Beginning in 2018, coho releases in Deep River are limited to 700,000 smolts as a condition of the BIOP.

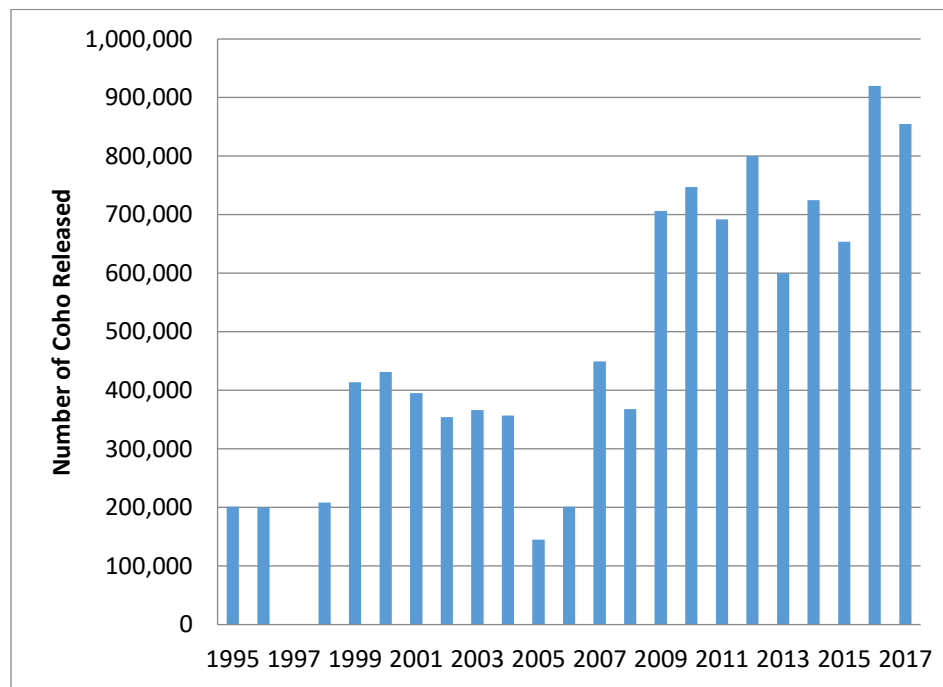


Figure 15.1: Coho Releases in Deep River

Table 15C shows Select Area harvest by species for all areas combined. Appendix tables 15D-15F show Select Area harvest during the winter, spring, summer management timeframe, and fall Chinook and coho harvest by area. During 2013-2017, the average spring Chinook and fall Chinook harvest decreased from the 2010-2012 average and coho harvest increased during the same timeframe. Some of the increases in harvest are related to the increased production called for in the Policy. Summer Chinook is shown in the table, but there are no summer Chinook produced in Select Areas, these fish are stray Upper Columbia summer Chinook.

Comprehensive Review of Management Policy C-3620

Economics, questions 2, 8, 15, 20, 21, 37, 38, and 39

Table 15C: Harvest by Species for all Select Areas

	Spring Chinook	Summer Chinook	Fall Chinook	Coho	Total
2010	24,447	20	21,091	58,759	104,317
2011	10,004	35	23,991	49,513	83,543
2012	9,610	1	24,166	15,354	49,131
2013	6,658	11	25,537	42,303	74,509
2014	3,226	47	25,487	168,497	197,257
2015	13,458	147	18,149	27,401	59,155
2016	10,136	94	12,697	34,723	57,650
2017	17,525	47	12,058	37,979	67,609
2010-2012 Average	14,687	19	23,083	41,209	78,997
2013-2017 Average	10,201	69	18,786	62,181	91,236

Note: Values are not adjusted for differences in run sizes each year.

Table 15G shows the modeled ex-vessel values for Select Areas provided by the Workgroup compared to the actual results. Based on the modeling assumptions, total ex-vessel value in all Select Area fisheries was expected to increase from the current levels by 7% in 2013 increasing to 36% in 2017. The actual results show variability across the years. The modeling that was performed during the Workgroup process was meant to outline expected changes to fisheries based on the assumptions in the model and the changes to the Policy. The expectations are best viewed as percent changes. The expectations and actual values by year can be found in the Appendix, **Table 15G**.

Table 15G: Actual versus Modeled (from Workgroup Table C5) Fishery Ex-Vessel Values (Preliminary – Actual Results May differ in final version).

Fishery	Stock	Status	Ex-Vessel Value (Actual vs Modeled)					
			Current	Transition				Long-Term 2017
				2013	2014	2015	2016	
Select Area Gillnet	Spring Chinook	Expanded	\$316,415	\$352,788	(\$41,624)	\$421,804	\$320,911	\$816,314
Select Area Gillnet	Fall Chinook	Expanded	\$436,943	\$342,142	\$60,419	(\$78,395)	(\$180,498)	(\$160,886)
Select Area Gillnet	Coho	Expanded	\$743,337	(\$195,582)	\$710,008	(\$615,724)	(\$484,326)	(\$358,195)
Totals			\$1,496,695	\$499,348	\$728,803	(\$272,315)	(\$343,913)	\$297,233
% Difference from Current	Expected		0	7%	17%	25%	34%	36%
% Difference from Current	Actual			33%	49%	-18%	-23%	20%

Note: Values are not adjusted for differences in run sizes each year.

Table 15H is a comparison of expected (pre-Policy) ex-vessel values in Select Areas compared to actual 2013-2017 ex-vessel values based on the ODFW analysis. This analysis estimated how the fishery would have performed pre-Policy compared to actual results. This model uses information that was used to manage fisheries during 2013-2017, such as actual run size, mark rates, in-season management decisions, price per pound and ESA impact rates. The model also includes the effect of increased production in the Select Areas, but everything else remains equal, including survival rates. The expectations and actual values can be found in the Appendix, **Tables 15H**. This analysis shows that the ex-vessel values during 2013-2017 increased from 1% to 22%, compared to the expectation of the increase of 7% to 36%.

Table 15H: Comparison of expected (pre-Policy) and actual (post-Policy) ex-vessel value for the non-treaty commercial Select Area fisheries during the Policy based on ODFW analysis **(Preliminary – Actual Results May differ in final version).**

Fishery	Stock	Status	Transition				Long-Term
			2013	2014	2015	2016	2017
			Select Area Gillnet	Spring Chinook	Expanded	\$16,767	\$17,404
	Fall Chinook	Expanded	\$0	\$0	\$19,746	\$60,867	\$40,061
	Coho	Expanded	\$0	\$166,058	\$45,003	\$57,225	\$122,094
Totals			\$16,767	\$183,461	\$252,126	\$291,648	\$387,670
Expected Increase			7%	17%	25%	34%	36%
Actual Increase			1%	8%	19%	21%	22%

Note: Values are not adjusted for differences in run sizes each year.

Table 15I shows the number of participants in the Oregon Select Areas and the percentage that are Washington license holders. This table illustrates how much effort occurs in Oregon’s Select Areas and the extent that Washington license holders participate. Overall, Washington license holders make up 17% of the total effort in Oregon Select Areas during 2010-2012 and 16% during 2013-2017. The average number of participants in the Oregon Select Areas during 2013-2017 was 138, which included 115 from Oregon and 23 from Washington.

Table 15I: Approximate Total Number of Participants and Percent WA License Holders

Oregon SAFE		
	Total effort	% WA effort
2010	181	17%
2011	162	17%
2012	143	15%
2013	141	16%
2014	141	18%
2015	138	18%

2016	134	17%
2017	135	12%
2010- 2012 Average	162	17%
2013- 2017 Average	138	16%

Recreational Advisory Group/Public Comments:

Advisory groups also would like to see a table, by year, of the commercial and sport catch totals in select areas and main stem (mouth to McNary) in order to provide a simple comparison of catch. Additionally there was a request to consider laying out a table that shows all select areas, numbers of fish released by species, associated harvest and program purpose. It was noted by a member of the public that on SAFE areas Bonneville Power spends \$2.8 million compared to \$2.3 million return and questioned the soundness of the public investment.

Question 20

Question paraphrase: Were additional opportunities for the commercial fishery provided during the transition phase?

Policy citation: **Additional opportunities** for mainstem commercial fisheries in the transition period. (pg. 12)

Specific question: Were additional opportunities provided over the course of the Policy, and if not, why not?

Analysis: No. The expectation for additional opportunity was described in the Workgroup report as occurring when the recreational fisheries were unable to use their share of ESA impacts for fall Chinook or if the objectives for the recreational fisheries were expected to be met. Additional opportunity was to occur upstream of the Sandy River (Area 2S or Zone 5) where the Lower River Hatchery stock (LRH) was not present. Use of gillnets or alternative gear was expected during the transition (through 2016). This additional opportunity did not occur during 2013-2016 because either the recreational fisheries did not have unused ESA impacts or the commercial fishery was able to utilize the harvestable surplus in the Zone 4-5 gillnet fishery. Additional opportunity occurred for spring Chinook during 2015 and 2016 and for summer Chinook in 2016 using the adaptive management provision in the Policy. Staff interpreted this question as related to fall Chinook as outlined in the Workgroup tables.

Question 21

Question paraphrase: Were additional opportunities for the commercial fishery provided during in the long term?

Policy citation: **Additional opportunities** for mainstem commercial fisheries in the long term. (pg. 12)

Specific question: Were additional opportunities provided over the course of the Policy, and if not, why not?

Analysis: No. The answer for the long-term (2017) is the same as Question 20, with the exception that the gear used in the Area 2S/Zone 5 fishery was required to be alternative gear.

Question 37

Question paraphrase: What were the catches and economic expectations of the sport and commercial fisheries and were they achieved when compared to different run sizes?

Policy citation: (Adaptive Management). State-managed fisheries pursuant to this Policy will be adaptive and adjustments may be made to mainstem fisheries if policy objectives, including catch or economic expectations for commercial or recreational fisheries, are not achieved consistent with the principles of this plan. (pg. 20).

Specific question: What were the catch and economic expectations for commercial and recreational fisheries by year, and were they achieved when the results are adjusted or normalized for differences in run sizes?

Analysis: This question is similar to Question 2 and much of the information can be applied to both questions. The answers to this question are focused on recreational and commercial catch data.

Actual Results and Compared to Expectations – Recreational Fisheries

Table 37A displays recreational catch of Chinook and coho during 2010-2017. Catches during the Policy (2013-2017) decreased for spring and summer Chinook compared to 2010-2012 and increased for fall Chinook and coho. Recreational catch by season for all species including steelhead can be found in the Appendix, **Table 37B**. Total mainstem and Select Area commercial harvest and recreational harvest is shown in the Appendix.

Table 37A: Recreational Catch of Chinook and Coho in the Mainstem Columbia River below Bonneville Dam.

Year	Spring Chinook	Summer Chinook	Fall Chinook	Coho
2010	29,247	2,539	24,133	9,564
2011	11,694	5,160	39,088	9,281
2012	13,332	2,897	40,988	8,269
2013	6,950	1,832	54,473	8,571
2014	15,728	1,980	53,124	63,505
2015	19,586	5,928	77,947	37,854
2016	12,666	3,080	42,913	10,498
2017	9,047	3,516	54,536	21,948
Average 2010-2012	18,091	3,532	34,736	9,038
Average 2013-2017	12,795	3,267	56,599	28,475

Note: Values are not adjusted for differences in run sizes each year.

Table 37C shows the modeled recreational catch provided by the Workgroup compared to the actual results during 2013-2017. The expectations and actual values can be found in Appendix, **Table 37C**. The results show spring and summer Chinook catches were less than expected in all years except 2015, and fall Chinook catches were higher in all years.

Table 37C: Modeled Recreational Catch Compared to Actual Results (provided by Workgroup table C1-C3) (Preliminary – Actual Results May differ in final version).

Stock	Numbers of Fish (Actual versus Modeled)					
	Current	Transition				Long-Term
		2013	2014	2015	2016	2017
Spring Chinook	16,250	(10,751)	(1,973)	1,885	(5,035)	(9,396)
Summer Chinook	2,239	(973)	(825)	2,543	(305)	(547)
Fall Chinook	30,200	20,673	19,324	44,147	9,113	20,736

Note: Values are not adjusted for differences in run sizes each year.

Actual Results and Compared to Expectations – Commercial Fisheries

Table 37D shows mainstem commercial harvest by species during 2010-2017. Harvest of spring and summer Chinook decreased during the Policy (2013-2017) and fall Chinook and coho increased during the Policy. Total mainstem and Select Area commercial harvest is shown in the Appendix.

Table 37D: Mainstem Commercial Harvest¹

Year	Spring Chinook	Summer Chinook	Fall Chinook	Coho
2010	9,041	4,684	31,141	18,920
2011	4,539	5,010	51,419	13,482
2012	6,118	1,692	36,871	2,615
2013	2,213	1,868	84,906	9,766
2014	4,074	2,743	101,762	70,531
2015	7,231	3,944	84,238	4,479
2016	3,613	2,990	59,055	1,269
2017	-	-	19,398	931
Average 2010-2012	6,566	3,795	39,810	11,672
Average 2013-2017	3,426	2,309	69,872	17,395

Note: Values are not adjusted for differences in run sizes each year.

Table 37E shows the actual versus modeled commercial fishery harvest numbers from Workgroup Table C4. The numbers shown in red are where the actual harvest numbers are less than the expectations from the Workgroup. As pointed out earlier, these expectations are not intended to be absolute predictions of the catch and ex-vessel value but should be viewed as the differences in potential magnitude over time relative to values pre-Policy. The major economic indicator from the work group assumptions was an expectation of increased angler trips. The effect of runsize on harvest is described in **Table X-X**. The expectations and actual values can be found in the Appendix, **Table 37E**.

Table 37E: Summary of modeled current mainstem commercial fishery harvest (numbers of fish) compared to actual harvest for potential alternative fisheries by year and fishery, 2013-2021 from Workgroup Table C4 (Preliminary – Actual Results May differ in final version).

Fishery	Stock	Status	Numbers of Fish (Actual vs Modeled Values)					
			Current	Transition				Long-Term
				2013	2014	2015	2016	2017
Mainstem Gillnet	Spring Chinook	Existing	5,051	(501)	1,360	4,517	899	0
Mainstem Gillnet	Summer Chinook	Existing	2,831	(396)	479	2,246	1,292	0
Mainstem Gillnet (Zone 4-5)	Fall Chinook	Existing	37,990	59,395	71,882	53,989	34,860	19,398
Mainstem Gillnet (2S)	Fall Chinook	New	-	(13,570)	(13,570)	(13,570)	(13,570)	0
Mainstem Gillnet	Coho	Existing	25,881	(20,147)	21,768	(19,857)	(21,375)	0
Select Area Gillnet	Spring Chinook	Expanded	5,000	(1,192)	(4,086)	2,250	(1,346)	5,210
Select Area Gillnet	Fall Chinook	Expanded	18,528	5,614	5,589	(1,086)	(7,522)	(7,994)
Select Area Gillnet	Coho	Expanded	56,700	(18,036)	91,116	(43,448)	(42,839)	(39,733)
Mainstem (Gear to be Determined; Zone 4-5)	Fall Chinook	New?	0	0	0	0	0	(23,080)
Mainstem (Gear to be Determined; 2S)	Fall Chinook	New	0	0	0	0	0	(13,570)
Mainstem Seine	Lower River Hatchery Chinook	New	0	(11,194)	(8,755)	(8,431)	(26,713)	(27,441)
Mainstem Seine	Coho	New	0	(6,010)	(4,979)	(5,446)	(13,892)	(14,374)
Mainstem Tangle-net	Coho	New	0	(15,329)	(1,926)	(19,167)	(20,160)	(20,160)
Totals	All Species			(21,366)	158,878	(48,003)	(110,366)	(121,744)

Note: Values are not adjusted for differences in run sizes each year.

Table 37F is a comparison of expected (pre-Policy) harvest numbers compared to actual 2013-2017 harvest numbers based on the ODFW analysis. This analysis estimated how the fishery would have performed pre-Policy compared to actual results. This model uses information that was used to manage fisheries during 2013-2017, such as actual run size, mark rates, in-season management decisions, price per pound and ESA impact rates. The model also includes the effect of increased production in the SAFE areas. Based on this analysis, the commercial catch in all years was less than expected, except in 2016. The expectations and actual values can be found in the Appendix, Table 37F.

Table 37F: Actual versus Modeled Number of Fish Landed Based on ODFW Analysis (Preliminary – Actual Results May differ in final version).

Fishery	Stock	Status	Actual vs. Modeled Values (ODFW Model)				
			Transition				Long-Term
			2013	2014	2015	2016	2017
Mainstem Gillnet	Spring Chinook	Existing	(659)	(2,880)	(2,445)	(1,323)	(1,962)
Mainstem Gillnet	Summer Chinook	Existing	(609)	(508)	(1,582)	(1,195)	(2,373)
Mainstem Gillnet (Zone 4-5)	Fall Chinook	Existing	(19,446)	(10,806)	(31,646)	0	0
Mainstem Gillnet	Coho	Existing	531	(7,043)	(690)	0	0
Select Area Gillnet	Spring Chinook	Expanded	113	106	2,239	1,614	1,418
Select Area Gillnet	Fall Chinook	Expanded	0	0	943	2,511	1,541
Select Area Gillnet	Coho	Expanded	0	16,442	3,957	4,422	8,484
Mainstem Seine	Lower River Hatchery Chinook	New	0	0	2,763	728	0
Mainstem Seine	Coho	New	0	0	564	482	0
Mainstem Tangle-net	Coho	New	4,831	18,234	993	0	0
Totals			(19,886)	(15,974)	(28,838)	752	(2,469)

Run Size as a Factor Effecting Harvest

Table 37G shows total catch of Chinook and coho in mainstem recreational fisheries and mainstem and Select Area commercial fisheries during 2010-2017. Average catches of Chinook and coho increased during 2013-2017 compared to 2010-2012 for both fisheries.

Table 37G: Catch of Chinook and Coho in Recreational¹ and Commercial² Fisheries

	Rec Total Chinook	Comm Total Chinook	Rec Total Coho	Comm Total Coho
2010	55,919	111,090	9,564	77,679
2011	55,942	117,927	9,281	62,995
2012	57,217	102,178	8,269	17,969
2013	63,255	145,335	8,571	52,069
2014	70,832	161,456	63,505	239,028
2015	103,461	145,254	37,854	31,880
2016	58,659	101,016	10,498	35,992
2017	67,099	61,062	21,948	38,910
Average 2010-2012	56,359	110,398	9,038	52,881
Average 2013-2017	72,661	122,825	28,475	79,576

Note: Values are not adjusted for differences in run sizes each year.

¹ Recreational catch is mainstem only.

² Commercial catch includes adults and jacks and mainstem and SAFE.

Table 37H shows run sizes of Chinook and coho during 2010-2017. Spring Chinook run sizes during the Policy (2013-2017) were 78% of the 2010-2012 average; summer Chinook run sizes averaged 123% during the Policy compared to pre-Policy (2010-2012); fall Chinook run sizes averaged 162% during the Policy compared to pre-Policy and coho run sizes averaged 113% during the Policy.

Table 37H: Run Size of Salmon Returning to the Columbia River

Year	Spring Chinook	Summer Chinook	Fall Chinook	Coho
2010	465,410	72,346	655,900	466,530
2011	318,744	80,574	620,700	378,050
2012	294,762	58,300	525,100	152,376
2013	187,814	67,603	1,268,600	252,764
2014	308,724	78,254	1,159,200	1,020,520
2015	418,485	126,882	1,305,600	169,580
2016	275,689	91,048	642,500	204,947
2017	210,191	68,204	476,500	235,656
Average 2010-2012	359,639	70,407	600,567	332,319
Average 2013-2017	280,181	86,398	970,480	376,693

Run sizes are one of the major indicators of fishery performance, and helps explain some of the results in the tables shown above. **Table 37I** shows the average percent of the run size and catches during 2013-2017 compared to 2010-2012. For spring Chinook, the run size during 2013-2017 was 78% of the 2010-2012 average. Mainstem commercial catch averaged 52% and mainstem sport catch averaged 71% of the 2010-2012 average. Results for fall Chinook are similar; the run size during 2013-2017 averaged 162% of the 2010-2012 average, mainstem commercial catch was 176% of the 2010-2012 average and mainstem sport catch averaged 163% of the 2010-2012 average.

Table 37I. Average Percent of Run Size and Catch during 2013-2017 compared to 2010-2012.

	Spring Chinook	Summer Chinook	Fall Chinook	Coho
Run Sizes	78%	123%	162%	113%
Mainstem Commercial Catch	52%	61%	176%	149%
Mainstem Sport Catch	71%	93%	163%	315%

Figure 37.1 shows the relationship between recreation and commercial catch of salmon and the total adult salmon returns during 2010-2017. As can be seen from the figure below, catch is highly correlated to the abundance.

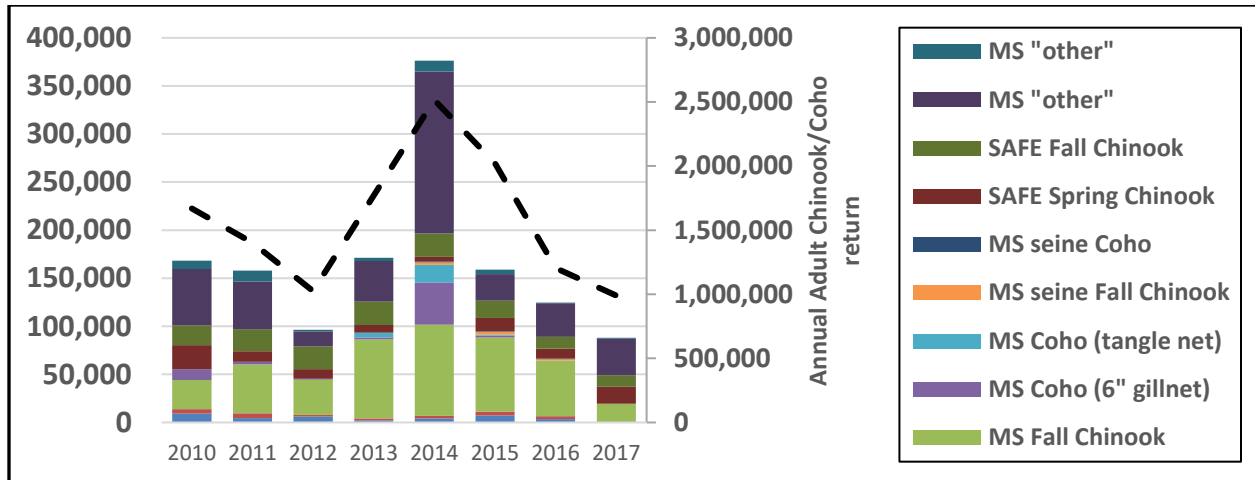


Figure 37.1: Number of salmon landed in non-treaty commercial mainstem (MS) and Select Area (SAFE) fisheries in the lower Columbia River, and annual adult salmon returns, 2010-2017

Recreational Advisory Group/Public Comments:

Preference to include the trend by percentage change and row totals when possible.

Question 38

Question paraphrase: If the catches and economic expectations were not achieved what was done to determine why and were corrections made?

Policy citation: If these (catch and economic) expectations are not achieved, efforts will be made to determine why and to identify actions necessary to correct course. (pg. 20)

Specific question: Were there instances of this happening? If so, describe when and what efforts were made.

Analysis: This question is in the Adaptive Management section of the Policy and is closely related to Question 39. See answer to Question 39.

Question 39

Question paraphrase: Did any of the expectations regarding catch, economics, off-channel limitations, legal/financial issue, conservation objectives or other circumstances occur that would require the Department to reconsider the fishery management strategy of the Policy and if so what changes occurred?

Policy citation: Reconsideration of state-managed mainstem fisheries may take place under the following circumstances: (pg. 20)

Comprehensive Review of Management Policy C-3620
Economics, questions 2, 8, 15, 20, 21, 37, 38, and 39

1. Lower than anticipated catch and economic expectations to the commercial salmon fishing industry, or
2. Insufficient space within off-channel sites to accommodate the commercial fleet, or
3. Biological, fiscal and/or legal circumstances that delay or preclude implementation of alternative selective gear, buyback of commercial fishing permits, and/or additional off-channel hatchery investments, or
4. Management objectives are not achieved for commercial or recreational fisheries, or
5. Conflicts with terms of U.S. v Oregon management agreements with Columbia River Tribes, or
6. Failure to meet conservation objectives.

Specific question: Did any of the circumstances above occur, were fisheries reconsidered in a regulatory forum, and what changes were adopted?

Analysis: Yes. Some of the circumstances noted above occurred over the course of the Policy, and in 2016-2017, the Department requested modifications to the original Policy under the adaptive management provision. During November and December of 2016 and January of 2017, the staff provided updates to the Commission on performance of the Policy. In January 2017, staff requested that the Commission adopt updates to the Policy that included implementation actions for 2017 and beyond. Staff provided three options for consideration by the Commission for modifications to the Policy. Staff noted that the long-term goals (2017 and beyond) for increased bright fall Chinook and coho production increases for Select Areas was unlikely to occur because of the Mitchell Act Biological Opinion (BIOP) that was being developed. The economic analyses presented in 2017 included potential changes to program sizes that were known at the time, as a result of the BIOP.

The Policy was revised in January 2017. Changes included:

1. Provision to aggressively pursue a buyback program instead of initiate the development of a program
2. Added funding and testing of alternative gear instead of just development and implementation
3. Added target date of full implementation of alternative gear in 2019
4. Added language requiring the Department to provide to the Commission an approach for providing incentives to commercial fishers to promote the transition to alternative selective gear
5. Allowed the continued use of gillnets above the Lewis River during 2017 and 2018 because alternative gear was not fully implemented
6. Added the requirement for the Department to monitor the commercial fishery upstream of the Lewis River in 2017 and 2018 to estimate encounters of sturgeon and steelhead
7. Added requirement for the Department to seek funding to improve estimate of MSF recreational fisheries during summer and fall months

8. Added allocation of summer Chinook and requirements for commercial gear type in the mainstem fishery
9. Modified allocations for fall Chinook for 2017-2018
10. Added the requirement for a comprehensive review at the end of 2018

Adaptive management provisions were used in most of the years under review primarily in reference to mainstem commercial fisheries in the spring season. Appendix A in the Policy for spring Chinook shows tangle nets may be used in the mainstem during 2014-2016. However, under the adaptive management provision, gill nets were allowed for the May fisheries when the catch of shad in tangle nets becomes an obstacle to using those nets.

Staff Summary of Economic Section

The primary economic expectations in the Policy were to increase recreational angler trips and commercial ex-vessel values. Angler trips were compared for 2010-2012 (pre-Policy) and 2013-2017 (during Policy). For all species angler trips during 2013-2017 were 95% of 2010-2012 average values. Angler trips declined for spring and summer Chinook and increased for fall Chinook. Ex-vessel values during 2013-2017 were 14% greater than the 2010-2012 average values. These simple summaries show averages before and during the Policy and do not adjust for the differences in run sizes and the numerous other factors that affect fisheries.

Total angler trips based on the Workgroup assumptions, were expected to increase by 13% in the transition and 22% by 2017 across all species. Actual total angler trips increased by an average of 8% during 2013-2016 and declined by 31% in 2017 (Table 2B), compared to expected. Based on the ODFW analysis, total angler trips increased by an average of 3% during 2013-2016 and xx in 2017, compared to expected (Table 2C).

Ex-vessel value was expected to increase by 0.5% in 2013 to 20% in 2016 and to 6% in 2017 from the "current" values, based on the Workgroup assumptions across all species and fisheries. Actual ex-vessel values increased by 43% in 2013, increased by 60% in 2016 and decreased by 34% in 2017 from the "current" values in the Workgroup report (Table 2H). Based on the ODFW analysis, the ex-vessel value decreased by 11% in 2013, increased by 1% in 2016 and decreased by 5% in 2017 from the expected values (Figure 2.6).

Estimating economic impacts for this assessment is challenging for a number of reasons. There was a multitude of assumptions (see below) in the Workgroup process during the development of their report and many of those products were included in this Policy. The expectations from the Workgroup were meant to provide a trend or change over time of fishery angler trips and ex-vessel values. It is difficult to estimate the effects of the Policy because of the moving parts of in-season fishery management and the effect that run sizes have on the fisheries.

Staff concluded that the analysis that ODFW staff provided was the most appropriate measure of how the Policy performed. This analysis was conducted by using actual run sizes, fishery data and in-season management decisions to estimate how the fisheries would have performed

during 2013-2017 if the Policy had not been in place. By comparing the actual results to the results that were modeled, it shows the effects of implementing the Policy, independent of run size and many other factors. For example, the mainstem seine fisheries always show a positive value in this analysis because there was no expectation for these fisheries in 2010-2012, and the negative values for the mainstem gillnet fisheries for spring and summer Chinook was expected because the Policy reduced the allocation in those fisheries (Table 21).

Assumptions from the Workgroup process

- Run sizes, ESA impact rates, mark rates (adipose fin-clip rates), Release mortality rates, angler trips, number of days open, number of consecutive days open, harvest rates
- Average weight of fish landed, number and pounds of fish landed, price per pound for Chinook and coho, ex-vessel value, number of fish released in Select Areas, survival rates of fish released in Select Areas
- Seine – number of permits, number of fishing days steelhead handle, coho tangle net fishery – number of boats, number of fishing days

Recreational Advisory Group/Public Comments

Add narrative on the value of angler trips to the economy. Need to consider the effect that run size has on the analysis. Suggest showing angler trips/fish. Analysis seems to show a decline in numbers/values for both recreational and commercial fisheries. Requested a table with mainstem recreational and commercial catch, as well as Select Area catch in one table. Requested additional information about Select Areas including maps. Should add information about how recreational fisheries are affected by a number of factors such as, weather, water temperatures, run timing and river flow to name a few. Suggested trying to simplify the analysis before providing to the Commission.

Commercial Advisory Group/Public Comments