
Columbia River Recreational Advisor Group Meeting

January 13, 2021

4:00p-6:30p

Virtual

Prepared by: Columbia River Joint Staff

Columbia River Recreational Advisor Group Meeting

Virtual

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Phone Conference ID: 341 867 844#

4:00p – 6:30p January 13, 2021

Agenda	
<ul style="list-style-type: none">• Welcome and Introductions<ul style="list-style-type: none">○ Advisor Group members and Agency staff○ Staff roles○ Agenda, ground rules	(20 minutes)
<ul style="list-style-type: none">• Update on white sturgeon<ul style="list-style-type: none">○ 2020 population status and trends○ 2021 fishery discussion	(30 minutes)
<ul style="list-style-type: none">• Update on Eulachon smelt<ul style="list-style-type: none">○ Population trend○ 2021 outlook	(10 minutes)
<ul style="list-style-type: none">• Summary of 2020 Salmon Fisheries<ul style="list-style-type: none">○ 2020 Fall Season Review	(20 minutes)
<ul style="list-style-type: none">• Break	(10 minutes)
<ul style="list-style-type: none">• Ocean Conditions & Forecasts<ul style="list-style-type: none">○ Ocean conditions○ 2021 forecast sheet (spring/summer Chinook and sockeye)○ Preliminary 2021 spring/summer discussions	(20 minutes)
<ul style="list-style-type: none">• Additional Topics<ul style="list-style-type: none">○ Other handouts<ul style="list-style-type: none">• 2020 Returns – 2021 Expectations revised (separate handout)○ Other/General discussion	(25 minutes)
<ul style="list-style-type: none">• Future Meetings<ul style="list-style-type: none">○ CRRAG February 10, virtual, 4pm<ul style="list-style-type: none">• Primary topic: spring fishery planning○ Joint State Hearing, February 23, 10am○ North of Falcon #1, March 17, 10 am○ North of Falcon #2, April 1, 10 am	(15 minutes)





Lower Columbia River White Sturgeon Stock Assessment and Fishery Management 2020 Update

Summary Prepared by

**Joint Columbia River Management Staff
*Washington Department of Fish and Wildlife
Oregon Department of Fish and Wildlife***

January 13, 2020

Table 1. Dashboard of key status indicators for lower Columbia River white sturgeon, 2020. Colored circles indicate status relative to Conservation Plan metrics and/or recent trend.

Metric	N	Interpretation	Brief Summary
Abundance Trends 38" – 54" FL	199,500		Increased abundance from 2019; however, COVID-19 related sampling issues resulted in increased variability in estimates.
Adult (>66" FL)	2020: 14,500 3-yr avg.: 10,844		2020 3-yr adult abundance average is above minimum desired status level (threshold = 9,250 adults). Variability issues exist in these estimates as well.
Population Structure	~53% juvenile		Low relative abundance of juvenile and sub-legal sized fish indicates population productivity issues; Below conservation status level (threshold = 60%)
Recruitment Index (CPN)	NA		Reductions in Sport Fish Restoration funding have reduced our capacity to conduct this work.
Fisheries	Total: 17,190 angler trips		Participation still down from pre-closure levels, but interest in retention fishing opportunity remains. No Estuary fishery in 2020.

Abundance and CPUE Trends

Table 2. Estimated and projected abundance of 38–54 inch FL (96–137 cm) white sturgeon in the LCR from 2008–2020 based on mark-recapture surveys. Historic method is the number of fish present at the start of July (2008–2009) or May (2010–2012), while the setline method is the number of fish present at the start of the year. Preliminary estimates are italicized.

Year	Historic method estimate	Setline method		Harvest guideline
		Estimate (95% C.I.)	Projection	
2008	101,200	--	--	40,000
2009	95,000	--	--	40,000
2010	65,300	100,300	--	24,000
2011	72,800	80,600	77,000	17,000
2012	83,400	72,700	65,000	10,400
2013	--	113,900	74,300	10,105
2014	--	131,000	(75,500 – 186,480)	--
2015	--	143,900	(85,700 – 202,100)	--
2016	--	224,000	(118,300 – 329,600)	--
2017	--	199,800	(69,900 – 329,700)	6,235
2018	--	162,200	(93,400 – 230,950)	6,160
2019	--	168,200	(100,100-236,300)	6,160
2020	--	199,500	(40,100-358,100)	5,720
2021			206,100	TBD

¹ Projected abundance is based on the previous year's setline estimate. Projections do not include harvest.

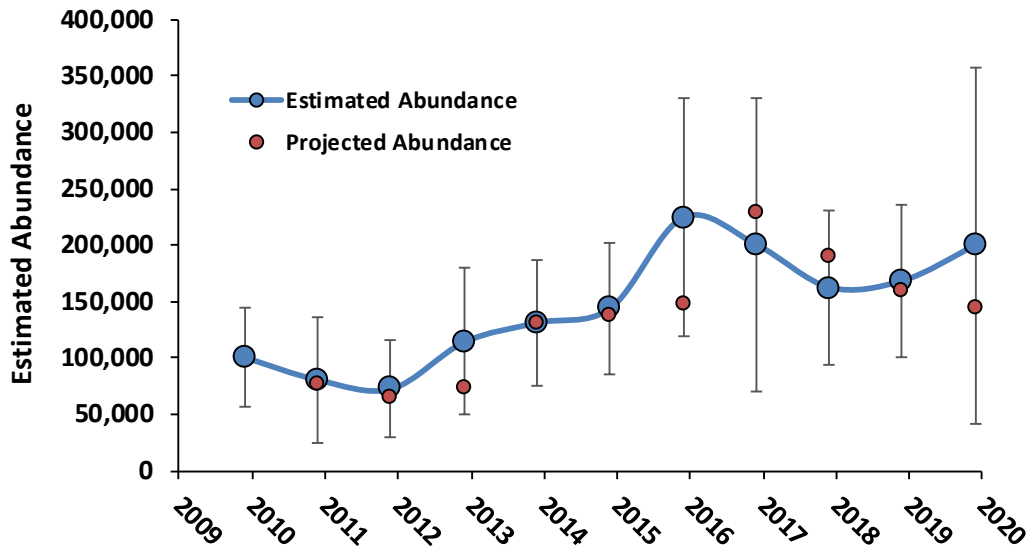


Figure 1. Estimated and projected abundance for 96–137 cm FL white sturgeon from the LCR, 2010–2020. Error bars represent 95% CIs for the estimated abundance.

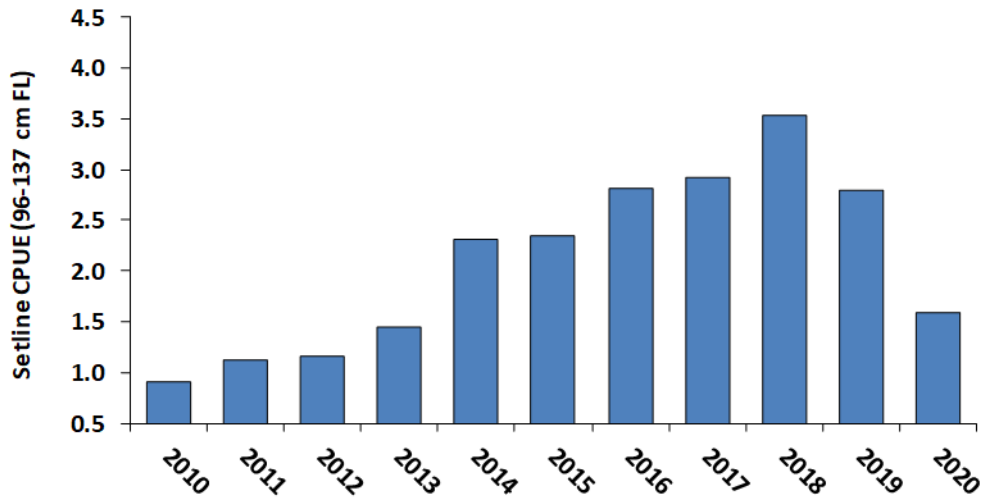


Figure 2. CPUE of 96–137 cm FL white sturgeon caught with setlines in the LCR, 2010–2020.

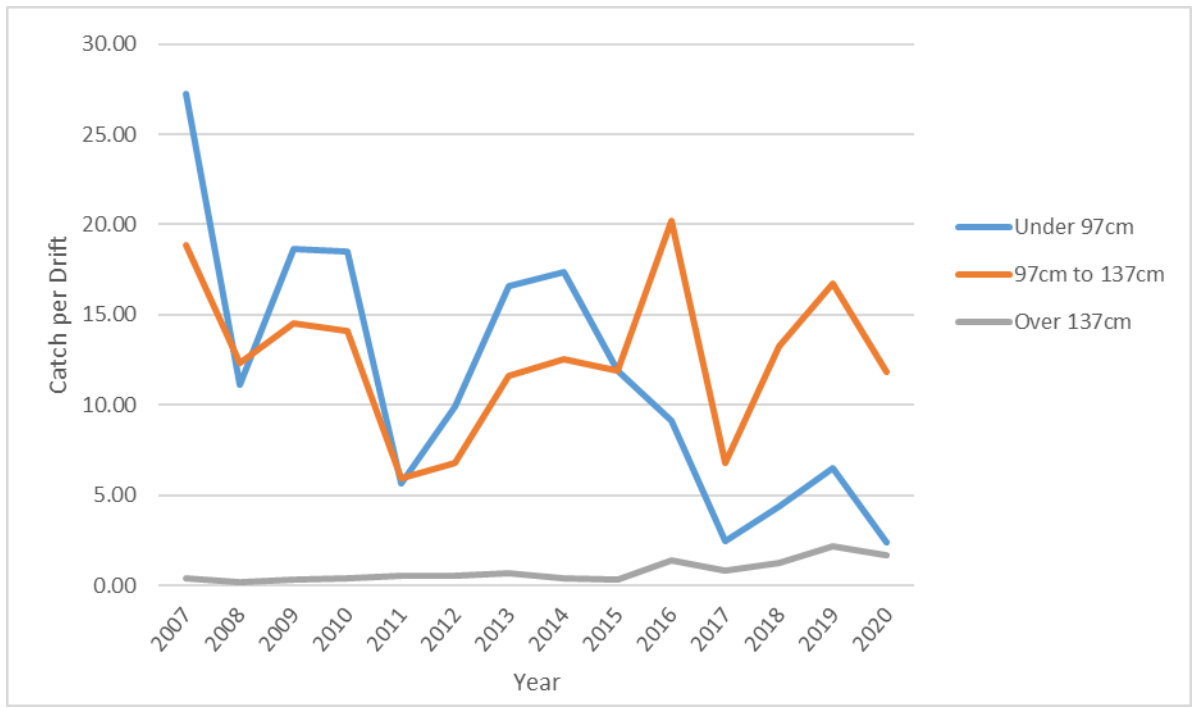


Figure 3. CPUE (catch per contract tagging gillnet drift) by size class for white sturgeon sampled in the Columbia River estuary, 2007-2020.

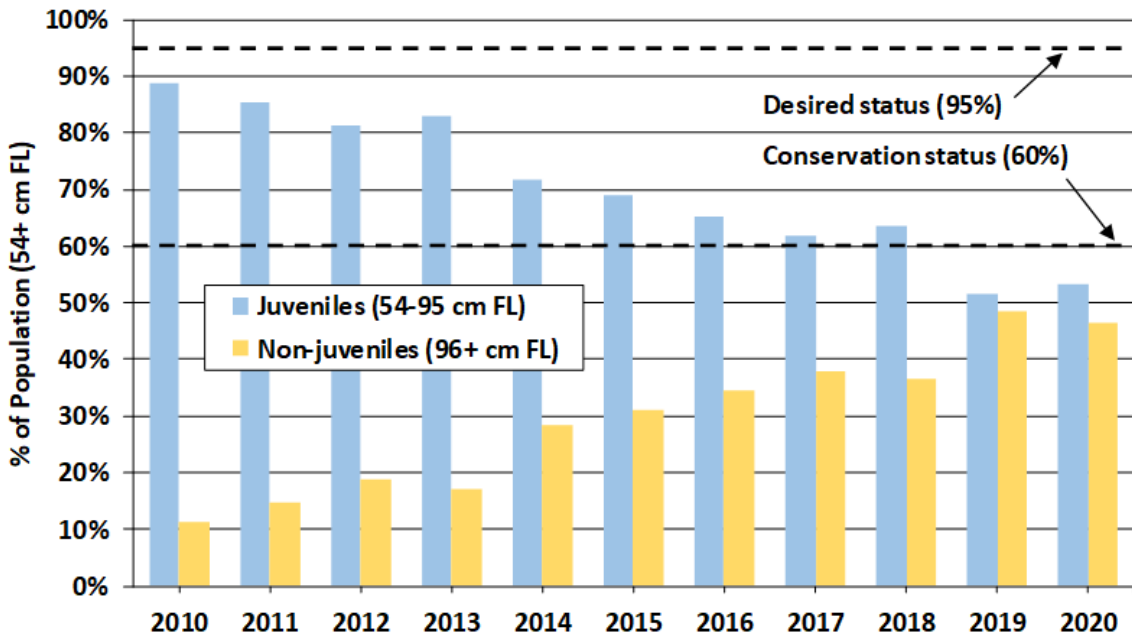


Figure 4. Annual proportion of juvenile and non-juvenile (sub-adults + adults) white sturgeon in the lower Columbia River, 2010–2020. Dashed horizontal line represents conservation status and desired status for juvenile white sturgeon.

Adult Abundance and CPUE Trends

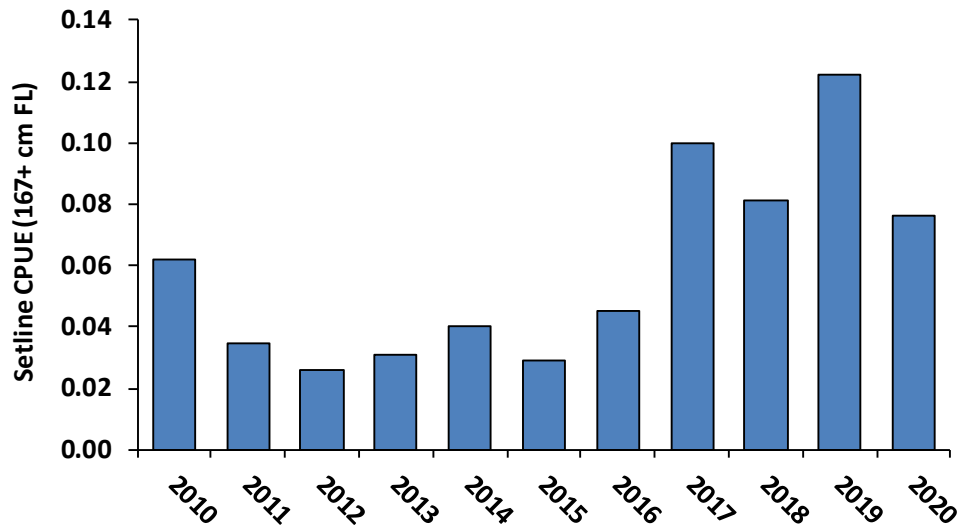


Figure 5. Setline CPUE of adult (≥ 167 cm FL or ~ 6 feet TL) white sturgeon in the LCR, 2010-2020.

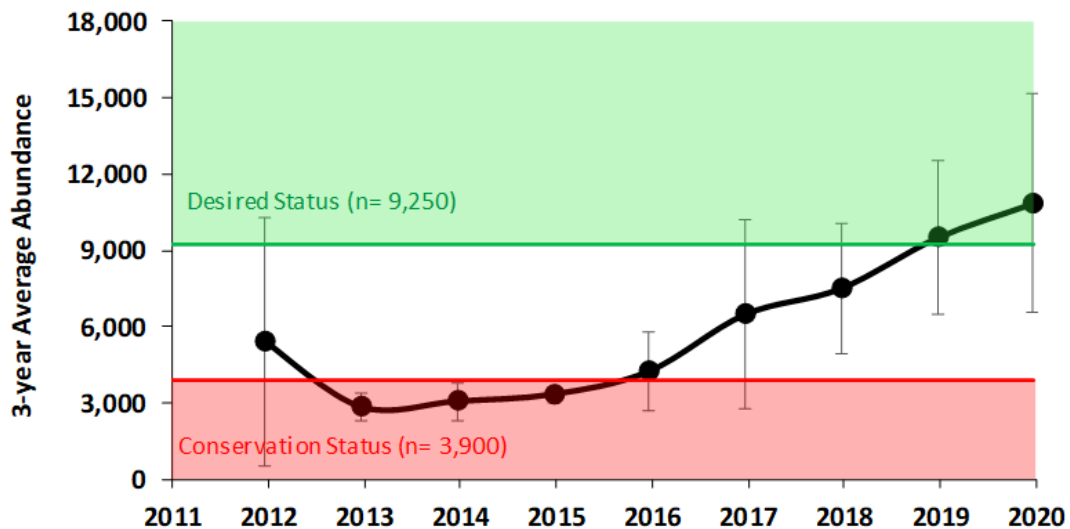


Figure 6. Three-year average estimated abundance for adult (≥ 167 cm FL) white sturgeon from the LCR, 2012–2020. Less than 3 years of data were available for 2010 and 2011 so no averages were calculated. Error bars are ± 1 standard deviation from the mean abundance estimate.

Length Frequency Trend

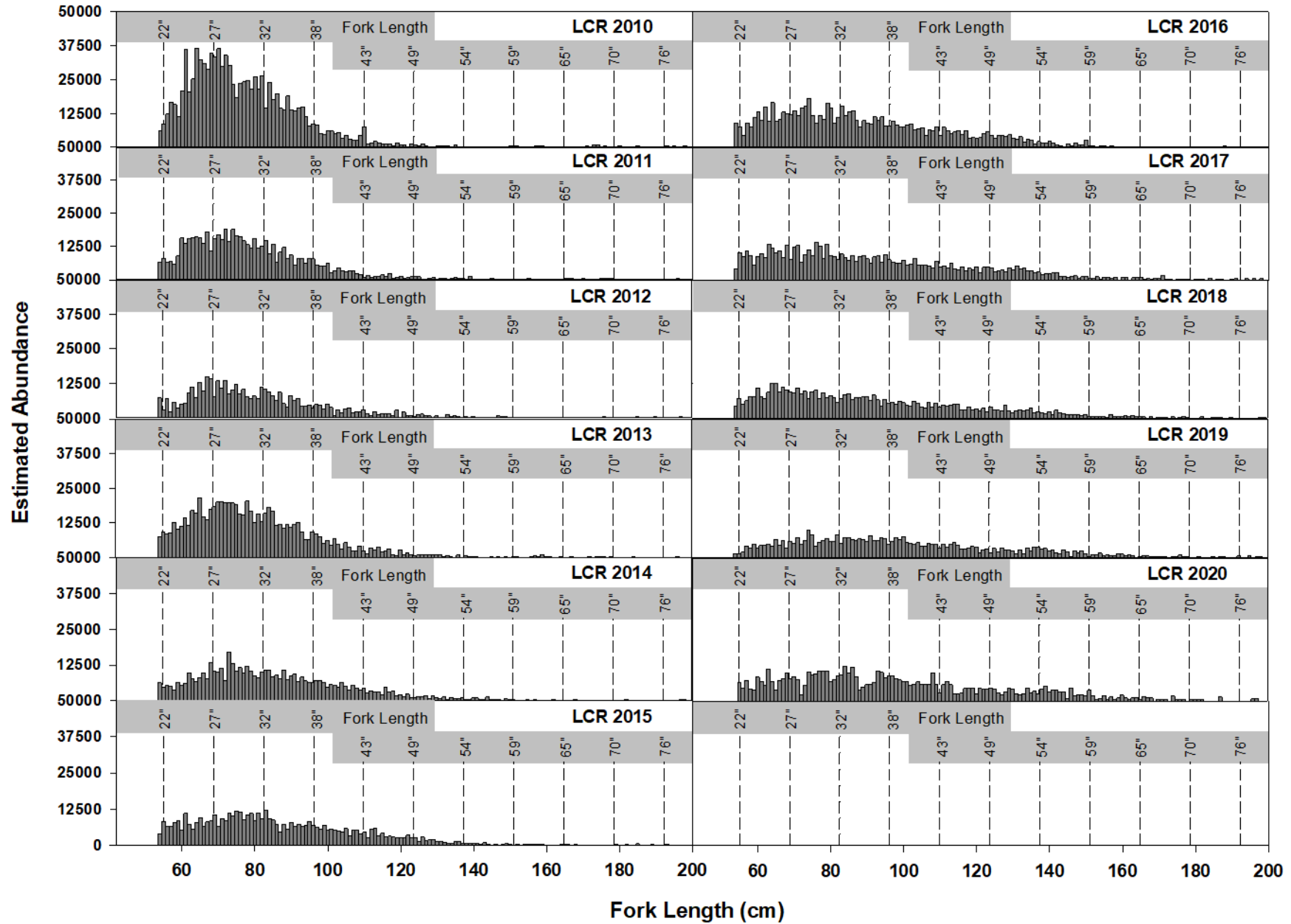
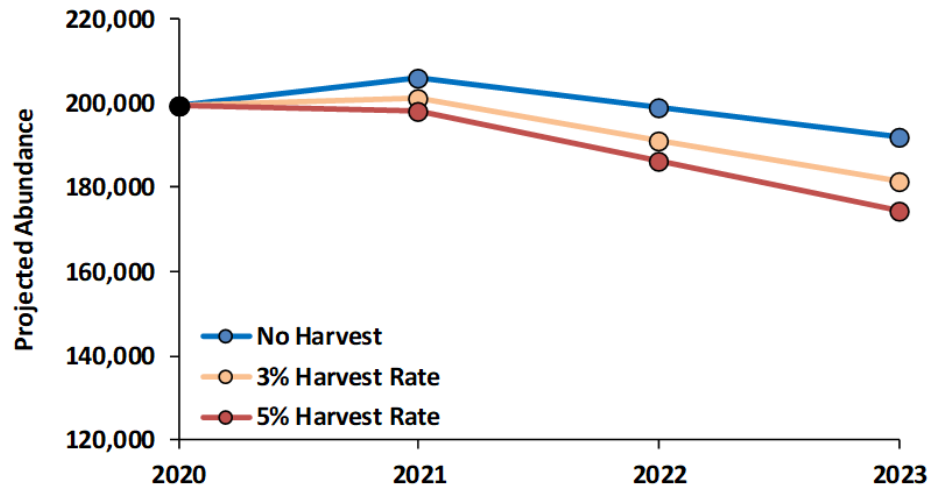


Figure 7. Estimated abundance of white sturgeon ≥ 54 cm FL in the LCR, 2010-2020.

Legal-size Abundance Forecasts

Figure 8 and Table 3. Projected abundance of 96–137cm FL white sturgeon in the LCR under various harvest rate scenarios.



Year	No Harvest	3% Harvest Rate	5% Harvest Rate
2020	199,487	199,487	199,487
2021	206,096	201,434	198,390
2022	198,933	191,292	186,417
2023	192,180	181,288	174,485

Sub-yearling (Age-0) Production

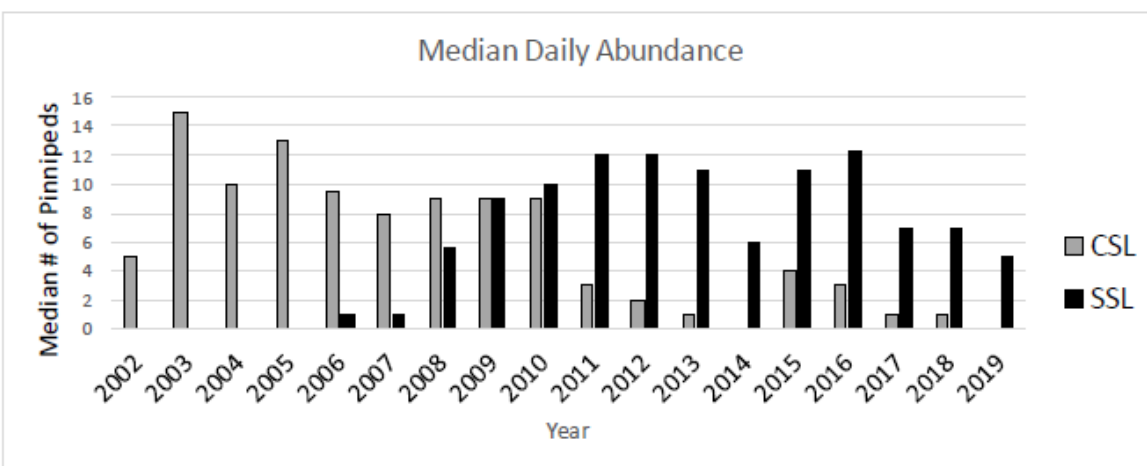
Table 4. CPN and proportion of positive sets (Ep) for YOY white sturgeon in the lower Columbia and Willamette rivers, 2004 - 2020.

Year	Lower Columbia River		Willamette River	
	CPUE	Ep	CPUE	Ep
2004	1.29	0.44	--	--
2005	1.74	0.49	--	--
2006	1.88	0.52	--	--
2007 ¹	--	--	--	--
2008	1.23	0.45	--	--
2009	5.66	0.78	--	--
2010	0.19	0.18	0.43	0.24
2011	0.58	0.34	0.06	0.06
2012	0.77	0.35	0.25	0.22
2013 ²	0.21	0.12	--	--
2014	0.56	0.31	1.38	0.38
2015	0.06	0.05	0.58	0.26
2016	0.20	0.14	0.75	0.50
2017	1.64	0.58	1.75	0.50
2018	0.43	0.27	3.96	0.83
2019	0.30	0.19	1.13	0.58
2020 ¹	--	--	--	--

¹ No sampling conducted.

² Incomplete sampling in Willamette River.

Appendix Predation and Harvest Data



Appendix Figure 1. Abundance of California sea lions (CSL) and Steller sea lions (SSL) present at Bonneville Dam between January and the end of May 2002–2019. Figure from U.S. Army Corps of Engineers (USACE) 2019 report.

Appendix Table 1. Consumption of white sturgeon by CSL and SSL observed during USACE spring monitoring of the Bonneville Dam tailrace, 2005-2019. Adjusted estimates include a proportion of the total unidentified catch.

Year	Total hours observed	Observed sturgeon catch	Sturgeon catch per hour observed	Adjusted sturgeon catch estimate
2005	1,109	1	0.001	--
2006	3,650	265	0.073	413
2007	4,433	360	0.081	664
2008	5,131	606	0.118	1,139
2009	3,455	758	0.219	1,710
2010	3,609	1,100	0.305	2,172
2011	3,315	1,353	0.408	3,003
2012	3,404	1,342	0.394	2,498
2013	3,247	314	0.097	635
2014	2,947	79	0.027	146
2015	2,995	24	0.008	44
2016	1,974	30	0.015	90
2017	1,142	6	0.005	24
2018	1,410	46	0.033	148
2019	836	22	0.026	187

Appendix Table 2. Annual recreational white sturgeon catch and harvest guidelines in the lower Columbia River, 1994–2020¹.

Year	Below Wauna ¹		Above Wauna		Combined	
	Catch	Guideline ²	Catch	Guideline ³	Catch	Guideline
1994	15,578	N/A	17,893	N/A	33,471	
1995	29,714	N/A	15,423	N/A	45,137	
1996	27,694	N/A	15,068	N/A	42,762	
1997	24,511	N/A	13,646	N/A	38,157	53,840
1998	30,303	N/A	11,293	N/A	41,596	53,840
1999	29,238	N/A	10,561	N/A	39,799	40,000
2000	24,267	N/A	16,238	N/A	40,505	40,000
2001	21,619	N/A	19,597	N/A	41,216	39,500
2002	26,234	N/A	12,045	N/A	38,279	38,300
2003	18,367	19,200	13,565	12,800	31,932	32,000
2004	15,050	16,000	10,519	12,800	25,569	28,800
2005	17,911	17,783	11,891	11,560	29,802	29,343
2006	15,726	16,000	8,545	12,800	24,271	28,800
2007	19,131	16,274	10,675	13,852	29,806	30,126
2008	13,614	13,143	7,959	12,387	21,573	25,530
2009	13,109	15,529	4,599	11,430	17,708	26,959
2010	6,491	9,600	4,831	4,835	11,322	14,435
2011	6,117	6,800	2,908	3,410	9,025	10,210
2012	4,466	4,160	1,859	2,080	6,325	6,240
2013	4,559	4,042	1,942	2,021	6,501	6,063
2014 ⁴	0	0	0	0	0	0
2015 ⁴	0	0	0	0	0	0
2016 ⁴	0	0	0	0	0	0
2017	3,235	3,000	430	1,245	3,665	4,245
2018	2,412	2,960	1,049	1,230	3,461	4,190
2019	2,838	2,960	685	1,230	3,523	4,190
2020 ⁵	0	2,750	843	1,140	843	3,890

¹ Recreational catch estimates for 1993-2002 are above and below the western tip of Puget Island (RM 38).

² The switch to a 45-inch min. (TL) size limit in 2004 required a 17% reduction in the base guideline.

³ Actual in-season guidelines were different than represented here. Beginning in 2010, the guideline for the area above Wauna does not include the Willamette guideline.

⁴ No sturgeon retention allowed during 2014-2016.

⁵ Preliminary.

Appendix Table 3. Annual recreational white sturgeon catch and harvest guidelines in the lower Willamette River, 2003–2020.

Year	Estimated annual kept catch ¹	Baseline ²	Catch in excess of baseline ³	Guideline ³	Percent of Guideline
2003	1,142	1,225	0	N/A	
2004	4,099	1,225	2,874	N/A	
2005	2,327	1,225	1,102	N/A	
2006	3,348	1,225	2,123	N/A	
2007	6,555	1,225	5,330	N/A	
2008	9,148	1,225	7,923	N/A	
2009	7,346	1,225	6,121	N/A	
2010	3,529	735	2,794	2,865	98%
2011	2,690	520	2,170	2,030	107%
2012	1,535	520	1,015	1,248	81%
2013	1,410	520	890	1,213	73%
2014-16 ⁴	0	0	0	0	N/A
2017 ⁵	0	0	0	745	0%
2018 ⁵	0	0	0	740	0%
2019 ⁵	0	0	0	740	0%
2020	167	0	0	690	24%

¹ Harvest estimates revised November 2011 based on updated punch card and existing creel information.

² Baseline harvest levels for the lower Willamette River were based on average harvest during 1986-1996 (1,225 fish). The lower Willamette River baseline decreased to 735 fish in 2010 and 520 fish in 2011 consistent with declining illegal abundance estimates. The baseline was eliminated in 2017.

³ During 2003-2009, harvest in excess of the baseline was applied to the above Wauna recreational harvest guideline. Beginning in 2010, a separate harvest guideline was established for the lower Willamette River.

⁴ No sturgeon retention allowed during 2014-2016.

⁵ The 2017-2019 allocations were 745, 740, and 740 fish respectively, but no retention fisheries occurred.

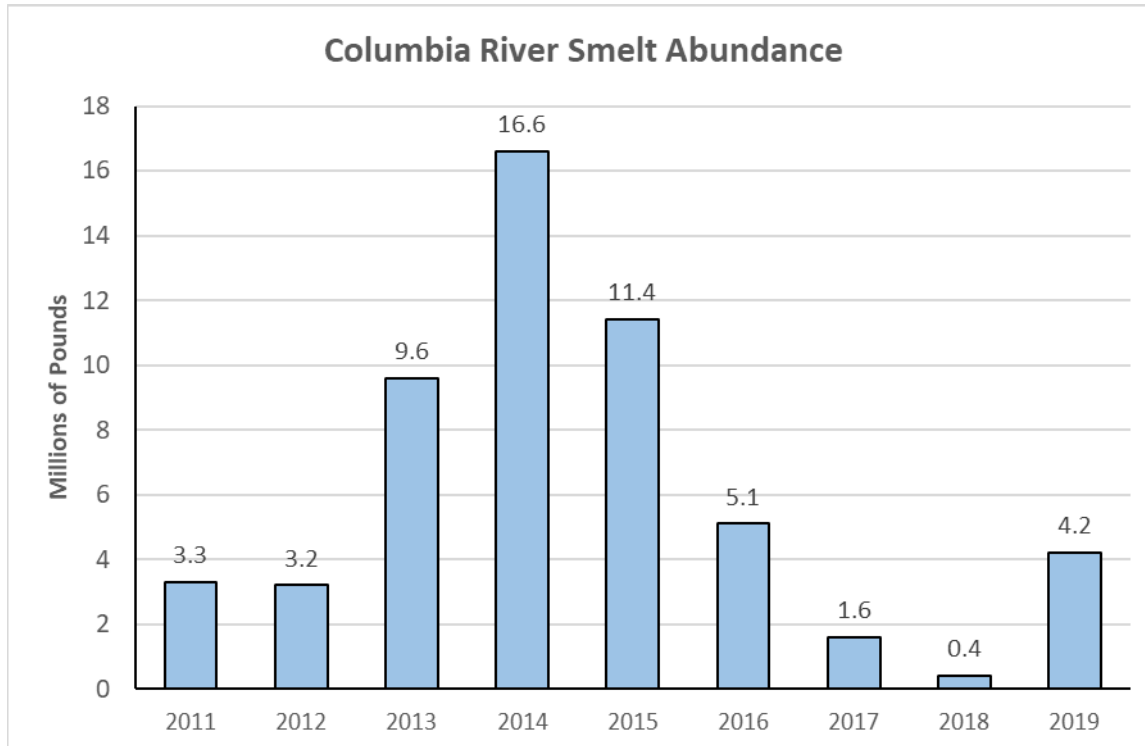
Appendix Table 4. Commercial catch of white sturgeon and harvest guidelines in the LCR, 2000-2020.

Year	Mainstem							Select Area			Grand Total	Guide-line	%
	Winter Sturgeon ¹	Winter Salmon	Summer	Early August	Late August	Late Fall	Total	Spring/Summer	Fall	Total			
2000	2,260			2,490	300	5,130	10,180	540	160	690	10,870	10,000	109%
2001	3,060			4,720	1,020	0	8,800	490	20	510	9,310	9,100	102%
2002	2,720			1,340	380	4,200	8,640	650	330	980	9,620	9,800	98%
2003	1,490	27		2,170	410	3,430	7,527	250	170	420	7,947	8,000	99%
2004	1,696	174	9	1,550	917	3,219	7,565	184	117	301	7,866	8,000	98%
2005	473	70	1,369	1,129	965	3,793	7,799	279	74	353	8,152	8,200	99%
2006	288	1,651	544	1,548	363	3,492	7,886	317	109	426	8,312	8,000	104%
2007	1,424	47	414	2,646	91	2,734	7,356	257	148	405	7,761	7,850	99%
2008	869	17	523	2,706	103	3,170	7,388	337	134	471	7,859	7,927	99%
2009	1,697	21	624	2,213	756	2,001	7,312	311	114	425	7,737	8,000	97%
2010	518	28	289	1,578	297	1,348	4,058	211	116	327	4,385	4,800	91%
2011	50	125	504	967	353	1,187	3,186	201	0	201	3,387	3,400	100%
2012	40	14	281	592	410	344	1,681	225	0	225	1,906	2,080	92%
2013	15	274	326	0	719	324	1,658	254	100	354	2,102	2,021	100%
2014-16	0	0	0	0	0	0	0	0	0	0	0	0	N/A
2017	0	0	0	0	485	239	724	266	237	503	1,227	1,245	99%
2018	0	0	0	0	413	0	413	296	117	413	826	1,230	67%
2019	0	0	0	0	509	0	509	479	212	691	1,200	1,230	98%
2020	0	0	0	0	406	161	567	547	0	547	1,114	1,140	98%

¹ Prior to 2003, values reflect all winter fisheries.

Columbia River Eulachon Smelt

- Abundance of spawning adult eulachon (spawning stock biomass (SSB)), back-calculated from annual eulachon larvae production sampling, was estimated for the Columbia River and tributaries during 2011-2019. Sampling restrictions due to COVID-19 prevented a complete SSB estimate in 2020.
- Total run-size is estimated from combined harvest and SSB estimates.
- Eulachon abundance increased steadily from 2011 to 2014, reaching a peak of 16.6 million pounds, followed by a decline through 2018, and an uptick in 2019:



- Based on available information, the 2020 run size was likely similar to or slightly higher than the 2019 return.
- Ocean environmental conditions were favorable for marine survival during 2012-2013, poorer in 2014-2016, and fluctuated but generally improved during 2017-2020.
- Commercial and recreational fisheries were both closed to harvest in 2011-2013 and 2019.
- Very conservative reduced Level-1 fisheries were reinstated in 2014 to collect biological and catch per effort data.
- The 2014–2018 and 2020 commercial fisheries consisted of eight fishing periods annually over four weeks in the mainstem Columbia River.
- Limited recreational fisheries occurred in the Cowlitz River during 2014-2017 and again in 2020. The Sandy River was open in 2014 and 2015 only.
- The 2021 return is expected to be moderate in size.
- Preliminary plans for 2021 fisheries have not yet been discussed with NOAA Fisheries.

Table 20. Eulachon run size and estimated harvest in Columbia River commercial, sport, and tribal fisheries, 2011-2020.

Year	Weeks sampled for SSB	Run size (SSB plus harvest in pounds) ¹	Harvest (pounds)				
			Commercial		Sport	Tribal	Combined
Mainstem	Tributary						
2011	19	3,300,000	0 ²	0 ²	0 ²	N/A	0
2012	25	3,200,000	0 ²	0 ²	0 ²	N/A	0
2013	29	9,600,000	0 ²	0 ²	0 ²	7,470	7,470
2014	22	16,600,000	18,560	0 ²	203,880	6,970	229,410
2015	33	11,400,000	16,550	0 ²	290,770	10,400	317,720
2016	25	5,100,000	4,820	0 ²	141,050	8,560	154,430
2017	18	1,600,000	5,019	0 ²	541	1,900	7,531
2018	13	400,000	110	0 ²	0 ²	0	110
2019	16	4,205,000	0 ²	0 ²	0 ²	23,660	23,660
2020	10	N/A ³	10,255	0 ²	35,040	23,900	69,195

¹ Rounded to the nearest 100,000 pounds.

² Closed to fishing.

³ The 2020 SSB estimate is incomplete due to truncated sampling during March

2020 Recreational Fisheries Summary (Preliminary)

2020 Lower Columbia River Recreational Fisheries Summary.																	
Time Period	Area	Species Allowed	Days for Chinook	Salmonid Anglers	Adult Chin. Kept	Adult Chin. Rel'd	Jack Chin. Kept	Jack Chin. Rel.	Sthd Kept 3/	Sthd Rel'd.	Sockeye Kept 4/	Sockeye Rel'd	Adult Coho Kept	Adult Coho Rel'd	Jack Coho Kept	Jack Coho Rel.	
Feb	Buoy 10 to I-5	ChS, StW		4,112	4	0	0	0	67	192	Closed	0	Closed	0	Closed	0	
March 1-26	WR-BO	ChS, StW	26	4,386	85	36	0	0	22	15	Closed	0	Closed	0	Closed	0	
April	LCR	None	0	0	0	0	0	0	0	0	Closed	0	Closed	0	Closed	0	
May	WR-BO	ChS, StS, Sok	8	20,930	1,373	707	238	24	369	57	29	0	Closed	0	Closed	0	
June 1-15	TP to I-5	StS, Sok, ChS jacks	0	6,822	0	475	22	26	671	135	1,090	105	Closed	0	Closed	0	
ChS Totals 1/	(February 1-June 15)		34	36,250	1,462	1,218	260	50	1,129	399	1,119	105	0	0	0	0	
June 16-21	Astoria Br-BO	StS	0	7,173	0	509	0	98	465	183	2,069	19	Closed	0	Closed	0	
July 1-31	TP-BO	StS, ChR	28	29,926	1,191	995	206	203	1,531	2,401	Closed	354	Closed	0	Closed	0	
ChR Totals 2/	(June 16-July 31)		28	37,099	1,191	1,504	206	301	1,996	2,584	2,069	373	0	0	0	0	
Spring/Summer Totals				73,349	2,653	2,722	466	351	3,125	2,983	3,188	478	0	0	0	0	
Aug	TP-BO	ChF, Co	31	37,355	5,512	212	352	201	Closed	320	Closed	0	39	33	10	13	
Sep	TP-BO	ChF, Co	18	39,276	11,775	487	1,421	296	Closed	41	Closed	0	946	569	135	88	
Oct	TP-BO	ChF, Co	31	13,782	2,390	53	359	81	Closed	24	Closed	0	552	173	87	34	
ChF Totals 5/	(August 1-October 31)		80	90,413	19,677	752	2,132	578	0	385	0	0	1,537	775	232	135	
LCR Spring Summer and Fall			142	163,762	22,330	3,474	2,598	929	3,125	3,368	3,188	478	1,537	775	232	135	
OR Buoy 10	B10-TP	ChF, Co	31	42,934	10,082	3,910	0	0	Closed	48	0	0	4,080	4,543	0	0	
WN Buoy 10	B10-TP	ChF, Co	31	29,509	4,551	1,450	0	0	Closed	0	0	0	2,984	2,709	0	0	
Buoy 10 Total	(August 1- October 31) 6/			72,443	14,633	5,360	0	0	Closed	48	0	0	7,064	7,252	0	0	
B10 and Mainstem Fall Totals				162,856	34,310	6,112	2,132	578	Closed	433	0	0	8,601	8,027	232	135	
LCR and B10 Grand Totals				236,205	36,963	8,834	2,598	929	3,125	3,416	3,188	478	8,601	8,027	232	135	

Estimated effort and catch in Zone 6 (Bonneville Dam - McNary Dam) spring, summer, and fall salmon fisheries, 2020.												
Area/Pool	Creel Period	Species Allowed	Salmonid Anglers	Adult Chin. Kept	Adult Chin. Rel'd	Jack Chin. Kept	Adult Coho Kept	Adult Coho Rel.	Jack Coho Kept	Sockeye Kept	Sockeye Rel'd	
Bonneville	May 5 - Jun 15	Chinook, steelhead	313	21	14	0	0	0	0	0	0	
The Dalles			2,516	350	101	82	0	0	0	0		
John Day			2,823	148	44	9	0	0	0	0		
Spring Management Period Total	(Jan 1 - June 15)		5,652	519	159	91	0	0	0	0	0	
Bonneville	Jun 16 - Jul 31	Chinook, steelhead, sockeye	1,731	0	0	0	0	0	0	49	237	
The Dalles			592	0	0	0	0	0	0	0	0	
John Day			305	5	6	0	0	0	0	0	0	
Summer Management Period Total	(June 16-July 31)		2,628	5	6	0	0	0	0	49	237	
Bonneville	Aug 1 - Nov 25	Chinook, steelhead, coho	12,792	4,074	293	508	771	182	114	0	0	
The Dalles			7,938	1,656	50	157	228	33	10	0	0	
John Day			1,563	29	0	18	5	0	0	0	0	
Fall Management Period Total	(August 1-December 31)		22,293	5,759	343	683	1,004	215	124	0	0	
Grand Total			30,573	6,283	508	774	1,004	215	124	49	237	

2020 Recreational Fisheries Upstream of McNary Dam - all data preliminary				
Fishery	Kept Adults	Released Adults	Chinook Season	General Area
Spring Chinook: Snake R.	326	59	2 sections; 2 d/week; May 5-22	LGO/Clarkston
Spring Chinook: McNary – OR/WA border	10	3	May 5,7,9,13,15-17, and 20	
Summer Chinook: HWY 395 - PRD	135	240	July 4-31	> PRD
Summer Chinook: Above PRD+tribs	4,742	1,772	July 16 – October 15	PRD - CJD
Fall Chinook: Hanford Reach	14,651	257	August 16 – October 31	Hanford Reach Area

2020 Fall Recreational Review

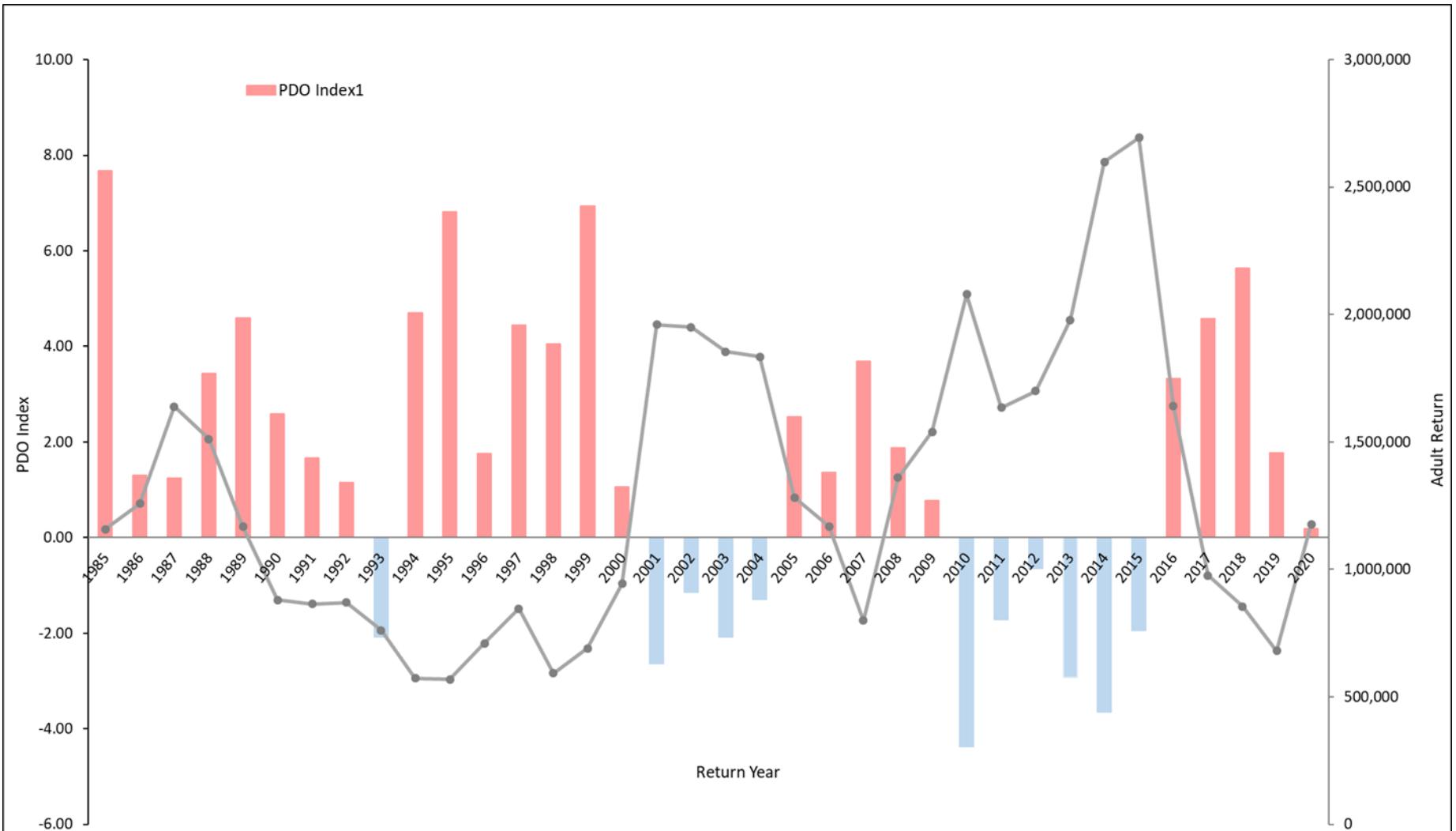
Fall Season Buoy 10	Chinook open 8/14-27, 9/5-6, 9/11-13, 9/19+ 1 fish bag 8/31-9/4; 2 fish/1 CHF 9/5-19; 2 fish/2 CHF 10/1+ Coho open 8/14-12/31 STH retention closed Aug-Oct; 1 STH bag when open 72,443 trips (similar to 2018-2019) 14,633 Chinook kept (5,360 rel) 7,064 Coho kept (7,252 rel) SRW HR w/in and LRH higher than preseason expectations	Season TBD at NOF
Fall Season LCR Sport TP/RP - BON	Chinook and Coho open: Tongue Pnt. - W. Puget Isl. (WPI): 8/14-27, 9/11-13, 9/19+ WPI-Warrior R.: 8/1-31, TP-Warrior: 9/11-13, 9/19+ Warrior R.-BON: 3 d/wk 8/7-9/6, then 9/11-13, 9/19+ 1 fish bag 8/1-9/13; 2 fish/1 CHF 9/19-30, 2 fish/2 CHF 10/1+ STH retention closed Aug-Oct; 1 STH bag when open 90,413 trips (Aug-Oct; highest since 2017) 19,677 adult Chinook kept (752 rel) 1,537 Coho kept (775 rel); 0 STH kept (385 wild rel) SRW HR w/in and LRH higher than preseason expectation	Season TBD at NOF
Fall Season BON - McNary	Chinook and Coho open 8/1 – 9/8, 9/11-13, 9/19+; same bag limit as below BON STH closed Aug-Oct BON/TD Pools; Sep-Oct JD/McN Pools 22,293 trips Aug-Nov 25; 5,759 adult Chinook kept (343 rel) 1,004 Coho kept (215 rel); 55 STH kept (275 rel H+W) SRW HR exceeded preseason expectations	Season TBD at NOF
Fall Season McNary-Hwy 395	Same season as JD-McN 390 trips; 16 Chinook kept	Season TBD at NOF
Fall Season Hanford Reach	Fall Chinook open 8/16-10/31; 6 fish/2 adults 39,028 trips; 14,651 adults and 1,398 jack Chinook kept; 133 Coho kept; 185 SOK, 128 STH released	TBD

Lower Columbia River commercial landings, 2020

Season	Fishing Period	Week Hours	Zones	Mesh Size	WSTGLimit ¹	Del.	Chinook	Coho	Sockeye	Pink	Chum	White Sturgeon	
Spring	No season.	--	--	--	--	--	--	--	--	--	Prohibited	--	
	<i>Spring Season Totals (and average number of deliveries):</i>						0	0	0	0	0	0	0
Summer	No season.	--	--	--	--	--	--	--	--	--	Prohibited	--	
	<i>Summer Season Totals (and average number of deliveries):</i>						0	0	0	0	0	0	0
August	Aug 10, 9 PM - Aug 11, 6 AM	33	9	4-5	9"-9 3/4"	5	25	227	2	--	0	Prohibited	31
	Aug 12, 9 PM - Aug 13, 6 AM	33	9	4-5	9"-9 3/4"	5	29	428	1	--	0	Prohibited	43
	Aug 17, 9 PM - Aug 18, 6 AM	34	9	4-5	9"-9 3/4"	5	63	3,782	20	--	0	Prohibited	84
	Aug 19, 9 PM - Aug 20, 6 AM	34	9	4-5	9"-9 3/4"	5	71	2,312	25	--	0	Prohibited	70
	Aug 24, 9 PM - Aug 25, 6 AM	35	9	4-5	9"-9 3/4"	5	82	5,596	188	--	0	Prohibited	100
	Aug 26, 9 PM - Aug 27, 6 AM	35	9	4-5	9"-9 3/4"	5	81	4,267	112	--	0	Prohibited	78
	<i>August Season Totals (and average number of deliveries):</i>						59	16,612	348	0	0	0	406
Late-Fall	Sep 15, 8 PM - Sep 16, 6 AM	38	10	4-5	8"-9 3/4"	4	71	6,906	1,307	--	0	Prohibited	92
	Sep 21, 8 PM - Sep 22, 6 AM	39	10	4-5	8"-9 3/4"	4	66	5,064	486	--	0	Prohibited	69
	Sep 24, 8 PM - Sep 25, 6 AM	39	10	4-5	8"-9 3/4"	Prohibited	42	1,895	319	--	0	Prohibited	Prohibited
	Sep 30, 5 AM - 6 PM	40	13	1-3	3-3/4" max tangle-net	Prohibited	24	213	1,301	--	0	Prohibited	Prohibited
	Sep 30, 8 PM - Oct 1, 6 AM	40	10	4-5	8"-9 3/4"	Prohibited	28	706	169	--	0	Prohibited	Prohibited
	Oct 2, 5 AM - 6 PM	40	13	1-3	3-3/4" max tangle-net	Prohibited	25	191	803	--	0	Prohibited	Prohibited
	Oct 5, 5 AM - 6 PM	41	13	1-3	3-3/4" max tangle-net	Prohibited	25	188	840	--	0	Prohibited	Prohibited
	Oct 7, 5 AM - 6 PM	41	13	1-3	3-3/4" max tangle-net	Prohibited	18	70	311	--	0	Prohibited	Prohibited
	Oct 7, 7 PM - Oct 8, 7 AM	41	12	4-5	8"-9 3/4"	Prohibited	13	516	79	--	0	Prohibited	Prohibited
	Oct 9, 5 AM - 6 PM	41	13	1-3	3-3/4" max tangle-net	Prohibited	18	60	244	--	0	Prohibited	Prohibited
	Oct 12, 5 AM - 6 PM	42	13	1-3	3-3/4" max tangle-net	Prohibited	17	70	735	--	0	Prohibited	Prohibited
	Oct 12, 7 PM - Oct 13, 7 AM	42	12	4-5	8"-9 3/4"	Prohibited	10	460	67	--	0	Prohibited	Prohibited
	Oct 14, 5 AM - 6 PM	42	13	1-3	3-3/4" max tangle-net	Prohibited	16	32	288	--	0	Prohibited	Prohibited
	Oct 14, 7 PM - Oct 15, 7 AM	42	12	4-5	8"-9 3/4"	Prohibited	7	321	33	--	0	Prohibited	Prohibited
	Oct 16, 5 AM - 6 PM	42	13	1-3	3-3/4" max tangle-net	Prohibited	14	23	125	--	0	Prohibited	Prohibited
	Oct 19, 5 AM - 6 PM	43	13	1-3	3-3/4" max tangle-net	Prohibited	15	32	187	--	0	Prohibited	Prohibited
Oct 19, 7 PM - Oct 20, 7 AM	43	12	4-5	8"-9 3/4"	Prohibited	3	184	1	--	0	Prohibited	Prohibited	
Oct 21, 5 AM - 6 PM	43	13	1-3	3-3/4" max tangle-net	Prohibited	8	17	72	--	0	Prohibited	Prohibited	
Oct 21, 7 PM - Oct 22, 7 AM	43	12	4-5	8"-9 3/4"	Prohibited	3	50	4	--	0	Prohibited	Prohibited	
Oct 23, 5 AM - 6 PM	43	13	1-3	3-3/4" max tangle-net	Prohibited	4	9	28	--	0	Prohibited	Prohibited	
Oct 26, 5 AM - 6 PM	44	13	1-3	3-3/4" max tangle-net	Prohibited	5	6	38	--	0	Prohibited	Prohibited	
Oct 28, 5 AM - 6 PM	44	13	1-3	3-3/4" max tangle-net	Prohibited	1	0	2	--	0	Prohibited	Prohibited	
Oct 30, 5 AM - 6 PM	44	13	1-3	3-3/4" max tangle-net	Prohibited	0	0	0	--	0	Prohibited	Prohibited	
<i>Late-Fall Season Totals (and average number of deliveries):</i>						19	17,013	7,439	0	0	0	161	
						<i>Ave.Del.</i>	<i>Chinook</i>	<i>Coho</i>	<i>Sockeye</i>	<i>Pink</i>	<i>Chum</i>	<i>White Sturgeon</i>	
FALL TOTALS:						27	33,625	7,787	0	0	0	567	

Ocean Conditions and Forecasts

Ecosystem Indicators	Year																						
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PDO (Sum Dec-March)	20	6	3	14	7	22	13	18	15	10	5	1	17	4	2	8	11	23	21	19	12	16	9
PDO (Sum May-Sept)	11	4	6	5	12	18	17	19	13	15	2	10	7	3	1	8	21	23	22	16	14	20	9
ONI (Average Jan-June)	22	1	1	7	14	16	15	18	8	12	3	11	19	4	6	8	10	20	23	13	5	21	17
SSTNDBC buoys (°C; May-Sept)	18	6	8	4	5	12	23	13	2	15	1	11	3	7	9	17	21	20	19	14	16	22	10
Upper 20 m T (°C; Nov-Mar)	22	12	9	11	7	16	17	14	13	6	1	10	19	5	4	8	3	23	21	20	15	18	2
Upper 20 m T (°C; May-Sept)	15	10	12	4	1	3	23	19	8	9	2	5	16	7	6	17	21	18	13	11	14	22	20
Deep temperature (°C; May-Sept)	22	6	8	4	1	10	12	16	11	5	2	7	14	9	3	15	21	20	13	18	19	17	23
Deep salinity (May-Sept)	22	3	11	4	5	18	19	12	7	1	2	16	20	14	15	13	23	17	9	8	6	10	21
Copepod richness anom. (no. species; May-Sept)	21	2	1	8	7	16	15	20	17	11	9	10	19	4	6	3	12	22	23	18	14	13	5
N. copepod biomass anom. (mg C m ⁻³ ; May-Sept)	21	16	12	13	5	18	15	22	17	14	8	11	10	2	4	6	7	19	23	20	9	3	1
S. copepod biomass anom. (mg C m ⁻³ ; May-Sept)	23	2	5	4	3	15	17	22	14	11	1	7	18	10	8	6	12	20	21	19	13	16	9
Biological transition (day of year)	20	11	10	4	9	16	15	21	14	5	1	2	18	6	12	7	7	22	22	19	17	13	3
Nearshore Ichthyoplankton Log(mg C 1,000 m ⁻³ ; Jan-Mar)	18	3	12	6	1	22	23	16	9	18	3	14	2	8	5	11	20	15	16	13	10	21	7
Nearshore & offshore Ichthyoplankton community index (PCO axis 1 scores; Jan-Mar)	11	6	5	8	10	13	17	21	1	14	3	12	15	4	2	7	9	19	22	23	18	20	16
Chinook salmon juvenile catches (no. km ⁻¹ ; June)	20	4	5	17	8	12	18	21	13	11	1	6	7	16	2	3	10	14	19	22	15	9	NA
Coho salmon juvenile catches (no. km ⁻¹ ; June)	20	8	14	6	7	3	17	21	18	4	5	10	11	16	19	1	13	9	15	22	2	12	NA
Mean of ranks	19.1	6.3	7.6	7.4	6.4	14.4	17.3	18.3	11.3	10.1	3.1	8.9	13.4	7.4	6.5	8.6	13.8	19.0	18.9	17.2	12.4	15.8	10.9
Rank of the mean rank	23	2	7	5	3	16	19	20	12	10	1	9	14	5	4	8	15	22	21	18	13	17	11
<i>Ecosystem Indicators not included in the mean of ranks or statistical analyses</i>																							
Physical Spring Trans. UI based (day of year)	3	7	22	19	4	14	17	23	14	1	6	2	9	12	20	10	21	11	5	18	12	14	8
Physical Spring Trans. Hydrographic (day of year)	22	3	13	8	5	12	15	23	6	9	1	9	19	3	11	2	17	7	18	20	15	14	20
Upwelling Anomaly (April-May)	11	3	19	7	10	16	14	23	11	5	8	9	17	19	17	13	21	1	2	22	6	4	14
Length of Upwelling Season UI based (days)	6	2	21	13	1	15	11	23	5	3	9	3	17	20	17	16	22	12	8	14	7	10	19
Copepod Community Index (MDS axis 1 scores; May-Sept)	22	3	5	8	2	17	15	21	18	10	1	7	14	9	6	4	12	20	23	19	13	16	11



¹ Sum of May-July PDO values two years prior to adult return; adjusted to return year.

² Includes species returning as adults primarily two years after ocean entry (Chinook, Sockeye, and summer steelhead).

Figure X. Annual return of adult salmonids to the Columbia River mouth and corresponding PDO Index, 1985-2020. Positive (red) PDO represents relatively poor (warm) ocean conditions and negative (blue) PDO represents relatively good (cool) ocean conditions.

<i>Columbia River Adult Salmon Returns: Actual and Forecasted</i> [†]				
		2020	2020	2021
		Forecast	Return	Forecast
Spring Chinook	Upriver Total *	81,700	81,300	75,200
	Upper Columbia	13,600	12,815	13,000
	<i>Upper Columbia natural-origin</i>	2,300	2,189	2,200
	Snake River Spring/Summer **	56,400	51,605	40,000
	<i>Snake River natural-origin **</i>	9,600	14,574	11,100
	Lower River Total	54,100	61,194	68,000
	Total Spring Chinook	135,800	142,494	143,200
	<u>Area-specific detail</u>			
	Willamette River	40,800	45,965	50,000
	Sandy River	5,200	7,518	5,300
	Select Areas ***	4,300	3,714	6,300
	Cowlitz River	1,400	908	1,800
	Kalama River	1,000	1,215	2,200
	Lewis River	1,400	1,874	2,400
	Wind River ***	2,000	2,076	1,200
	Drano Lake/Little White Salmon River ***	4,600	3,850	3,900
	Hood River ***	2,300	n/a	n/a
	Klickitat River ***	1,800	1,517	1,500
	Deschutes River ***	n/a	1,015	n/a
	John Day River ***	2,800	2,095	n/a
	Umatilla River ***	900	516	900
	Yakima River ***	2,800	2,830	3,200
Summer Chinook	Upper Columbia	38,300	65,494	77,600
Sockeye	Total Sockeye	246,300	345,018	155,600
	Wenatchee	39,400	56,111	27,300
	Okanogan	201,800	273,667	127,300
	Yakima	2,500	11,790	200
	Deschutes	300	n/a	100
	Snake River	2,300	734	700
† All forecasts are rounded to the nearest 100s place.				
* Upriver totals are developed by TAC for use in management of <i>U.S. v. OR</i> fisheries. Wild components are included in the stock total. Area-specific estimates for upriver tributaries detailed here are provided by other agencies/entities and may not sum to TAC's upriver abundance estimates.				
** 2020 return is based on current TAC run reconstruction methodology.				
*** Return to tributary mouth.				
				12/11/2020