

**Lower Columbia River Sturgeon Population Status and Management
Annual Review Policy (C-3001) (Briefing/Public Comment)**

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Summary Sheet

Meeting dates:	February 9-10, 2018
Agenda item:	Lower Columbia River Sturgeon Population Status and Management Annual Review - (Briefing)
Presenter(s):	Laura Heironimus, Region 5 Sturgeon/Smelt/Pikeminnow Unit Lead (Fish Program) Cindy LeFleur, Federal Policy Program Coordinator

Background summary:

The purpose of the Lower Columbia Sturgeon Management Policy (C-3001) “is to provide guidelines for management of the Lower Columbia River white sturgeon population and fisheries” and the intent “is to provide consistent management guidelines that promote a healthy population.” The Commission has adopted a precautionary approach to management based on uncertainties around several factors affecting the population. The policy calls for an annual review for the Commission, as an essential component of this precautionary approach, to include updated information on:

- stock status;
- predation rates;
- review of in-season management actions;
- accounting of fish left unharvested;
- review of sturgeon harvest in areas outside of the lower Columbia River;
- by-catch in all fisheries;
- recommended management changes; and
- other pertinent information

Detailed information regarding stock status, predation, harvest, and by-catch is summarized in Attachment 1: “Lower Columbia River White Sturgeon – Stock Assessment and Fishery Management – 2017 Update”

Stock Status

Since 2010, setlines have been used to capture and tag sturgeon and, based on the number of recaptured tagged sturgeon, population estimates were calculated using a mark-recapture model that is currently used two ways. Method A estimates the abundance of fish across size-classes (approximately 20–200 inches FL) based on the setline catch rates and gear vulnerability, both of which vary with fork length. Method A has been the traditional approach to estimating abundance. Method B estimates the abundance of “legal-size” fish, those ranging 38–54 inches fork length, based on the setline catch rates and vulnerability of that size fish. Method B has more recently been used to estimate abundance of legal size to address concerns with the sample size of outlier size-classes.

Based on Method A, abundance of legal-size fish declined from 2006 through 2012, but has since increased annually from a low of 72,200 fish in 2012 to 223,960 fish in 2016. The abundance for 2017 is 199,800 legal-size fish, compared to the projected abundance estimate of 237,900. Method B estimated a lower abundance of 155,000 legal-size fish in 2017. The harvest guidance in 2017 was determined using the most conservative of the two estimates.

Based on Method A, the estimated number of adult White Sturgeon (>65 inches FL) has continued to increase from 5,950 fish in 2016 to 10,420 fish in 2017. The three-year average adult abundance increased from 4,227 in 2016 to 6,470 in 2017. In 2016, this estimate moved the adult status above the conservation threshold specified in Oregon’s Lower Columbia River and Oregon Coast White Sturgeon Conservation Plan for the first time and we are continuing to see a positive trend in abundance towards the desired level in 2017.

The continued low relative abundance of juvenile sturgeon indicates that there may still be prolonged productivity issues within the system. However, the annual sub-yearling production index in the mainstem Columbia River (1.64 catch-per-net) was the highest it has been since 2009 with additional increased catch within the Willamette River (1.75 catch-per-net).

Predation Rates

Steller sea lion predation of White Sturgeon began around the mid-2000's in the gorge below Bonneville Dam. Numbers of Steller sea lions present in the tailrace immediately below the dam remain at high levels. Observed consumption of White Sturgeon at Bonneville Dam during the past five years has decreased annually, to less than 5% of the peak level reached 2011, indicating few sturgeon remain in the area when sea lions are present. The predation rates are based on observations by the Corps of Engineers in the mile-long stretch of river below Bonneville Dam. Predation rates throughout the remaining 145 miles of the lower Columbia River and in tributaries of the river are unknown at this time.

In-season Management/Harvest

Sport Fisheries

In 2017, a short-duration retention sturgeon fishery opened for the first time since 2013. There were positive responses from anglers that participated in the fishery. While participation was still lower than pre-closure levels, overall angler trips (both retention and catch-and-release) increased six-fold when compared to the catch-and-release only season during 2016.

In the Estuary (below Wauna), the fishery was open for 5 retention days (June 5-14) with a 2pm closure, 3,000 fish guideline, and size limit of 44-50" fork length. Sport anglers harvested 3,235 fish from approximately 13,700 angler trips. Upstream of Wauna to Bonneville Dam, the fishery was open for three retention days (Oct 21, 26, and 28) with a 1,250 fish guideline and the same size limit. Sport anglers harvested 430 fish from approximately 9,500 angler trips.

Commercial Fisheries

The retention of sturgeon in commercial fisheries was also opened in 2017, for the first time since 2013. In the mainstem, commercial fisheries were divided between early fall (August 22-September 1) and late fall (September 17-20) fisheries. The early fall fishery was limited to a catch of six fish per vessel and caught a reported 485 White Sturgeon. The late fall fishery was limited to five fish per vessel and caught a reported 235 White Sturgeon.

In the Select Area, commercial fisheries were divided between summer and fall fisheries. Summer fisheries were limited to five fish per vessel and captured 266 White Sturgeon. Fall fisheries were limited to three fish per vessel and captured 237 fish.

Accounting of fish left unharvested

Commercial Fisheries

The 2017 white sturgeon commercial fisheries had a total guideline of 1,245 fish and total catch of 1,223 fish (98% of the guideline). The mainstem commercial fisheries harvested 485 fish were in the early fall and 235 fish in the late fall. The select area commercial fisheries harvested 266 fish during the summer and 237 in the fall.

Sport Fisheries

The 2017 white sturgeon sport fisheries had a total guideline of 4,990 fish and a total catch of 3,665 fish (86% of the guideline). Sport anglers fishing in the estuary (below Wauna) captured a 3,235 fish. Anglers fishing from Wauna to Bonneville captured 430 fish.

Sturgeon harvest in areas outside of the lower Columbia River

Since 2014, retention of White Sturgeon has been prohibited in recreational and non-Indian commercial fisheries on the Oregon and Washington coasts, Puget Sound, and their tributaries. This continued in 2017.

By-Catch

Commercial fisheries were monitored during the fall of 2017. Approximately 700 White Sturgeon and 3,700 Chinook Salmon were observed during the Zone 4-5 Gillnet fishery. During the recreational sturgeon fishery, an estimated 12,300 white sturgeon were caught and released which represents 1.8% of the estimated 680,000 fish greater than 40 cm FL.

Recommended Management Changes

Staff is planning to work with Oregon Department of Fish and Wildlife to develop another short-duration sport retention fishery, similar to 2017. The downward trend in legal-size white sturgeon abundance that led to prohibiting harvest in 2014 has shown continued growth since 2011. Adult sturgeon, those spawning and contributing most to the population growth, has seen a positive increase in both the annual abundance estimate and three-year average abundance estimate. Additionally, the sub-yearling production index for the lower Columbia River was the highest since 2009 and the lower Willamette River was the highest ever recorded. However, the current status of the overall population, which includes both the adult and juvenile segments, is not as robust as in the early 2000's. Uncertainty exists regarding future trends in legal and adult abundance, production of juvenile fish, and recruitment of juvenile fish to the legal-size segment (see Table 1 in Attachment 1).

Other Pertinent Information

A new policy is needed for 2019.

Policy issue(s) you are bringing to the Commission for consideration:

Briefing only. The current policy, C-3001 (Attachment 2), was adopted for a 5-year time period and will expire December 31, 2018.

Fiscal impacts of agency implementation:

A 2018 sport retention fishery, similar to 2017, would require WDFW to sample the fishery and impacts to the agency would include employee time and salary for fish management staff and enforcement officers. The amount of fiscal impact would be affected by the length of time a fishery is open, the time-period in which it is open (i.e., weekday or weekend), and the intensity of the fishery (how many anglers are present).

Public involvement process used and what you learned:

Staff met with the Columbia River Recreational and Commercial advisor groups on January 10 and 11, 2018, and provided updates on the status of the LCR White Sturgeon population. Staff generally received support from recreational advisors to open another retention fishery in 2018, similar to the fishery in 2017. Commercial advisors had mixed reactions. Both groups seemed to think a conservative approach was appropriate.

Action requested:

Briefing only.

Draft motion language:

N/A

Justification for Commission action:

N/A

Post decision communications plan:

N/A

Form revised 9/13/17






Lower Columbia River White Sturgeon Stock Assessment and Fishery Management 2017 Update

Summary Prepared by

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

January 10, 2018

Table 1. Summary of key status indicators for lower Columbia River (LCR) white sturgeon in 2017. Arrow color indicates relationship to Conservation Plan, direction to current trend.

Metric	N	Interpretation	Brief Summary
Abundance Trends			
38" – 54" FL	199,830		Decrease of 11% from 2016, but 39% greater than 2015. Also, increasing trend in CPUE setline tagging fisheries continues.
Adult (>65" FL)	2017: 10,400 3-yr avg.: 6,450		2017 adult abundance point estimate is above desired status level, but 3-year average is not (threshold = 9,250 adults).
Population Structure	~62% juvenile		Continued low relative abundance of juvenile and sub-legal sized fish indicates productivity issues. 2017 recruitment index improved from previous years; however, the juvenile proportion of the population continued to decline in 2017.
Recruitment Index (CPN)	LCR: 1.64 WR: 1.75		Significant improvement, 2017 highest YOY CPN since 2009 in LCR and ever (since 2010) for LWR.
Fisheries	Estuary: 15,586 (650%) Total: 27,550 (630%)		Participation still down from pre-closure levels, but increased by more than 6-fold from 2016.

Abundance and CPUE Trends

Table 2. Estimated and projected abundance of 38-54 inch FL (96-137 cm) white sturgeon in the LCR from 2008-2018 based on mark-recapture surveys.

Year	Historic method estimate ¹	Setline method ¹		Harvest guideline
		Estimate (95% C.I.)	Projection	
2008	101,200	N/A	N/A	40,000
2009	95,000	N/A	N/A	40,000
2010	65,300	100,200	N/A	24,000
2011	72,800	80,500	77,000	17,000
2012	83,400	72,700	65,000	10,400
2013	--	114,200	74,300	10,105
2014	--	130,990 (75,500 – 186,480)	131,700	--
2015	--	143,890 (85,700 – 202,100)	138,200	--
2016	--	223,960 (118,300 – 329,600)	147,100	--
2017	--	199,830 ² (69,900 – 329,700)	237,900	6,235
2018	--		198,300 ²	TBD

¹ Historic method is the number of fish present at the start of July (2008-09) or May (2010-2012), while the setline method is the number of fish present at the start of the year.

² Preliminary.

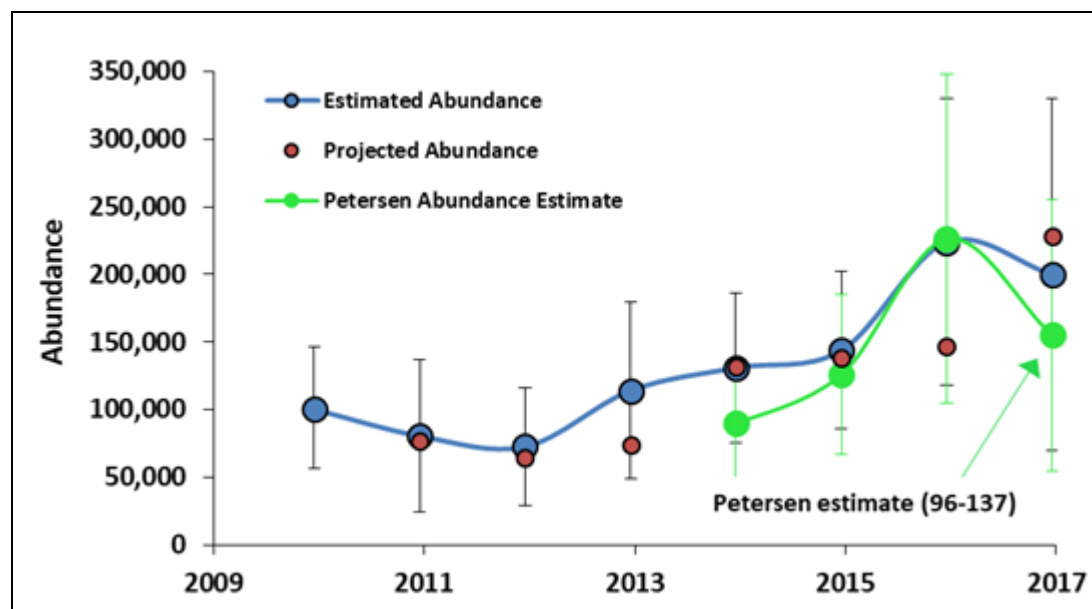


Figure 1. Estimated and projected abundance for 96-137 cm FL white sturgeon from the LCR, 2010-2017 (based on the proportion 96-137 cm FL fish within the total abundance estimate for fish ≥ 40 cm FL). Error bars represent 95% CI's for the estimated abundance. Green data points represent the Petersen estimate for 96-137 cm FL white sturgeon only.

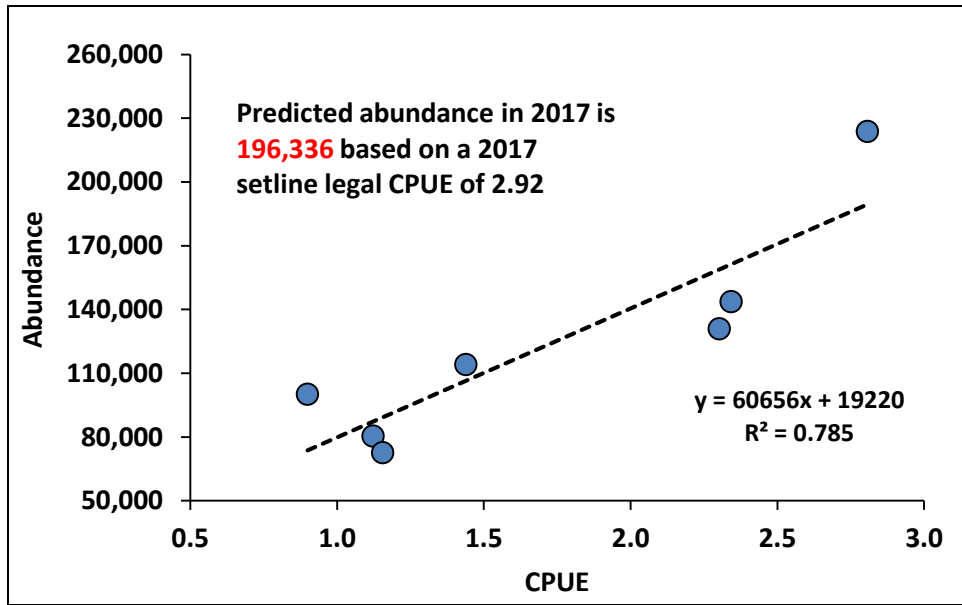


Figure 2. Relationship between estimated abundance and catch-per-set (CPUE) for 96-137 cm FL white sturgeon in the LCR, 2010-2016.

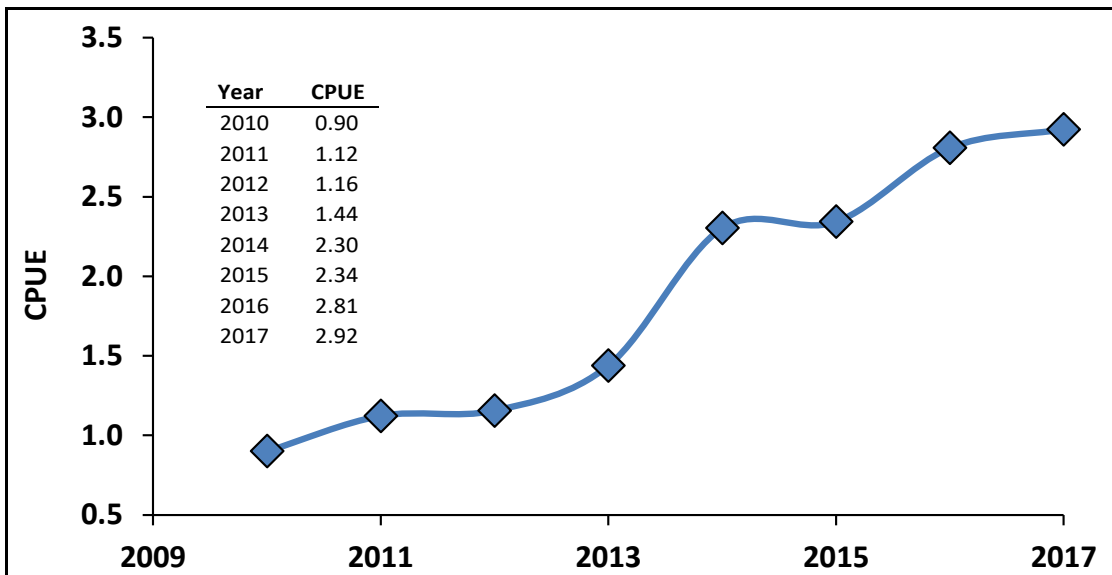


Figure 3. CPUE of 96-137 cm FL white sturgeon caught with setlines in the LCR, 2010-2017.

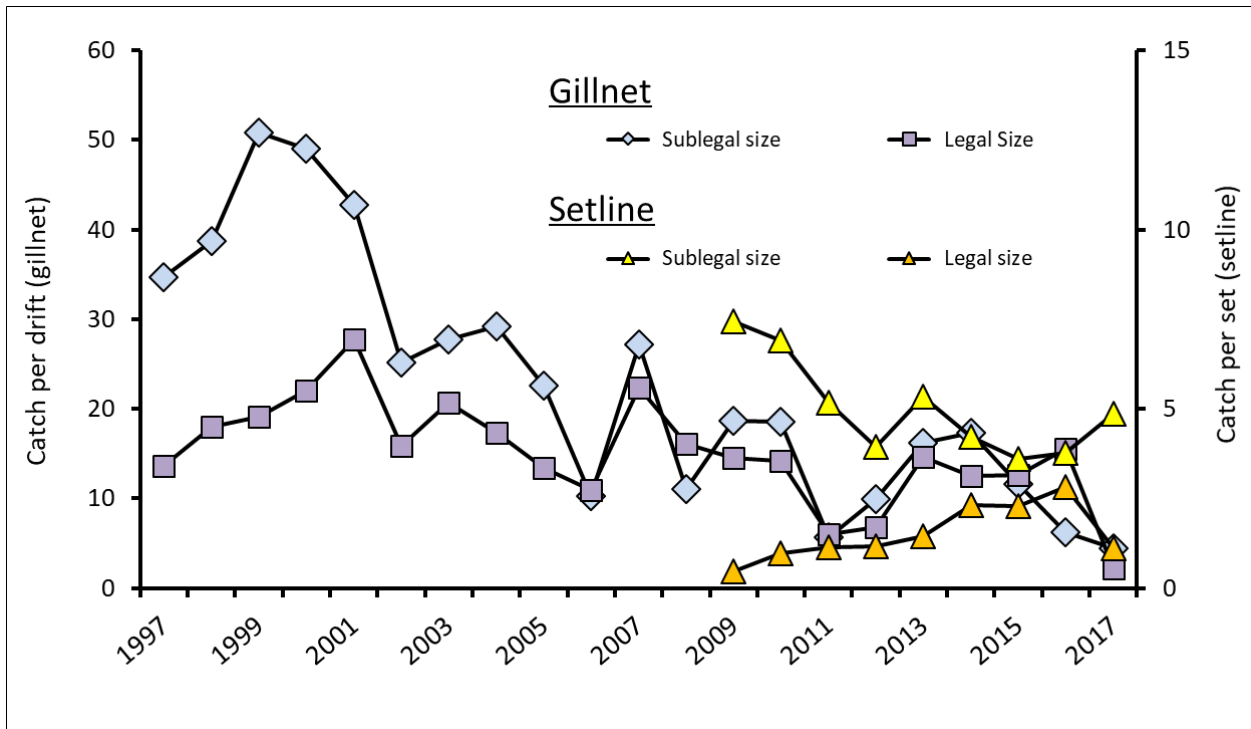


Figure 4. Catch per drift (research gillnet) and catch per set (research setline) of “sublegal” and “legal-size” white sturgeon during LCR sturgeon tagging and stock assessment projects, 1998-2017. Size classes not standardized among years.

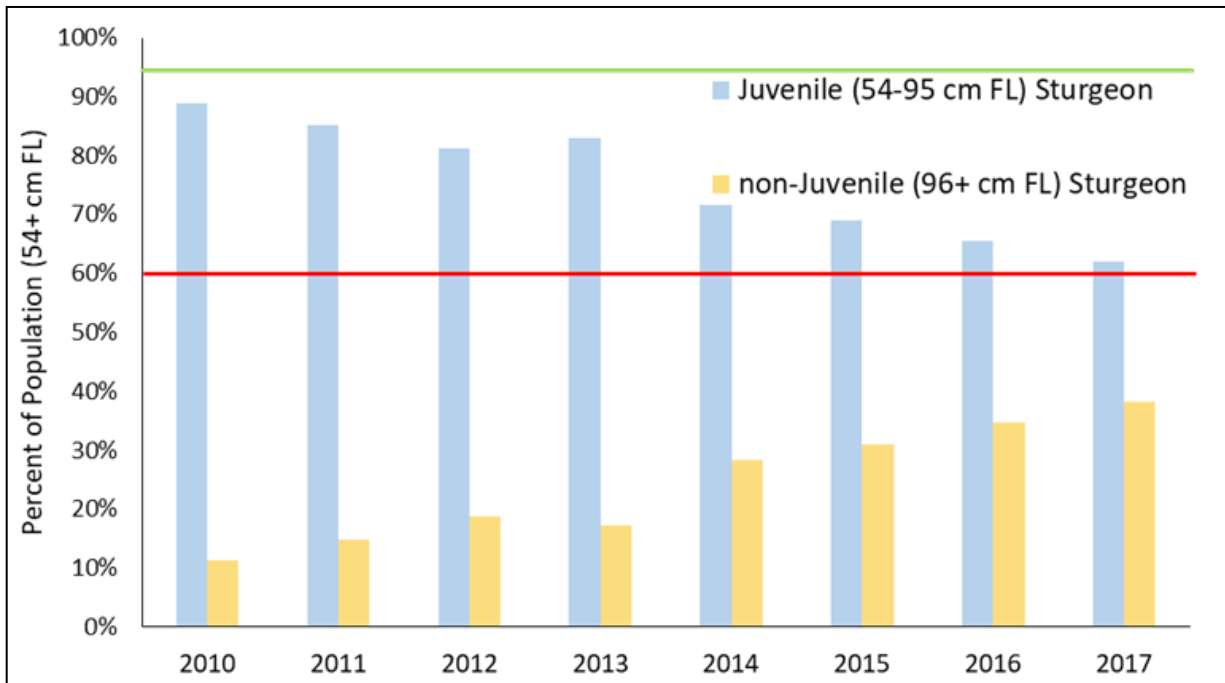
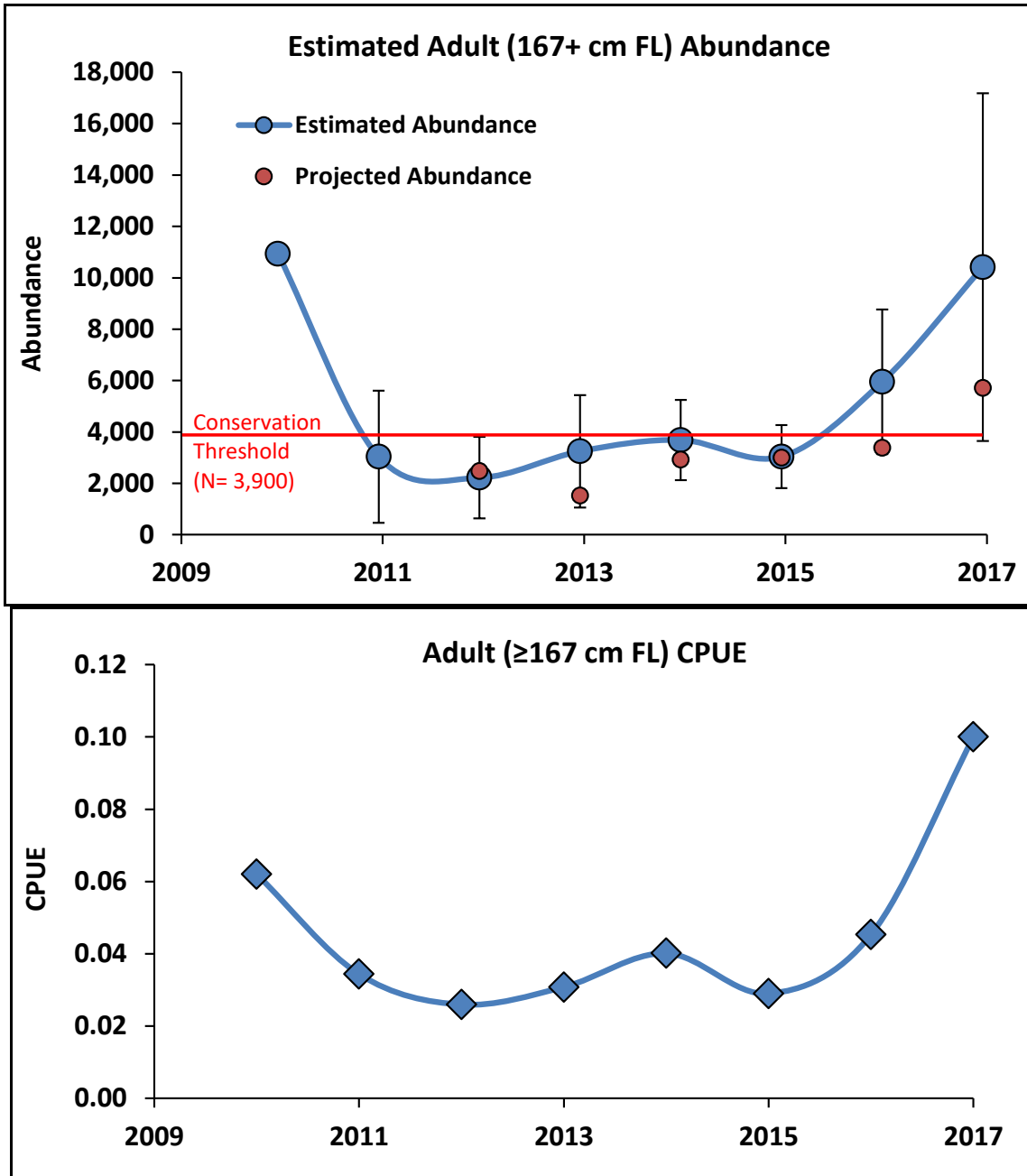


Figure 5. Annual proportion of juvenile and non-juvenile (sub-adults + adults) white sturgeon in the lower Columbia River, 2010-2017. Red horizontal line represents conservation status green horizontal line represents desired status.

Adult Abundance and CPUE Trends



Figures 6 and 7. Estimated adult white sturgeon abundance (fish ≥ 167 cm FL), top figure, and adult white sturgeon CPUE, bottom figure, during LCR sturgeon stock assessments, 2010-2017.

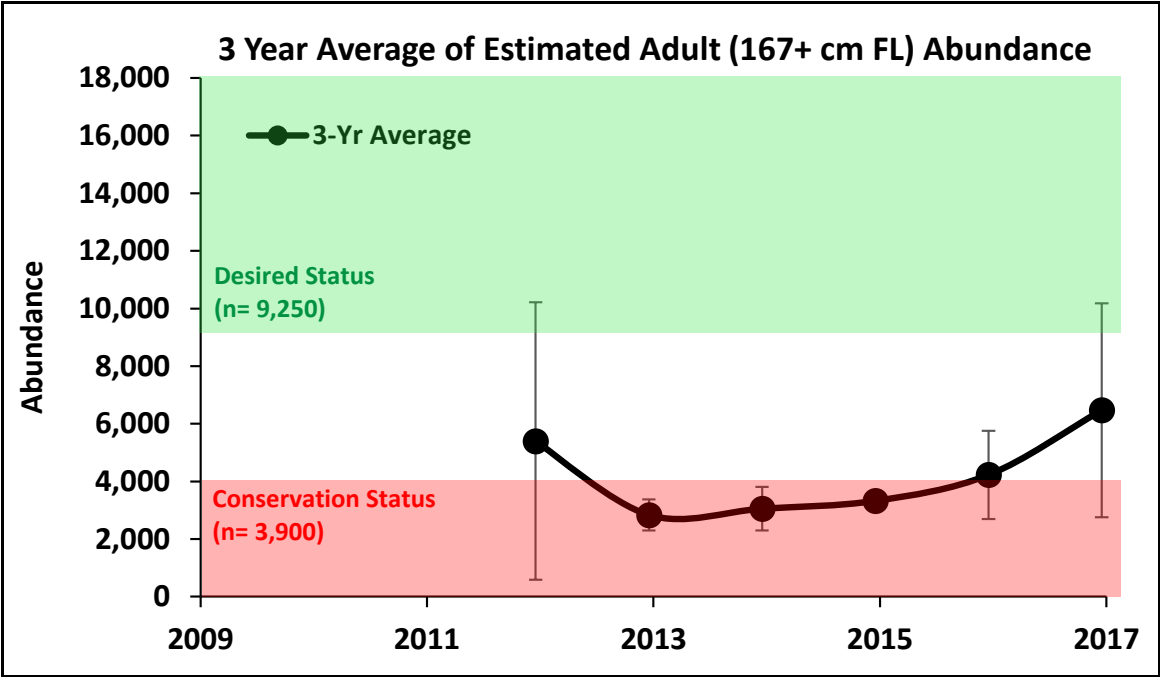


Figure 8. Three-year average estimated abundance for adult (≥ 167 cm FL) white sturgeon from the LCR, 2012-2017. Less than 3 years of data were available for 2010 and 2011 so no averages were calculated. Error bars represent 95% CI's for the estimated abundance.

Length Frequency Trend

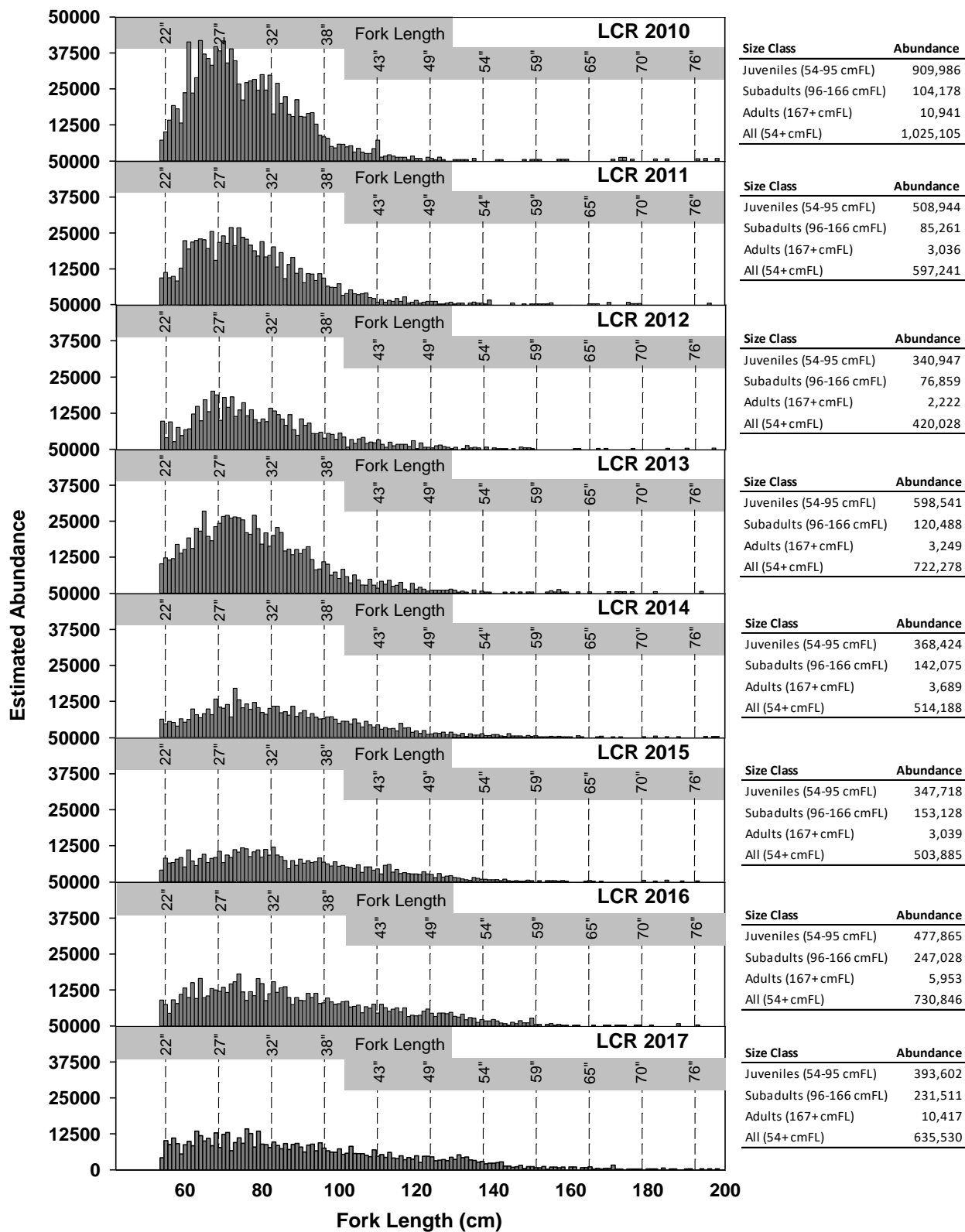
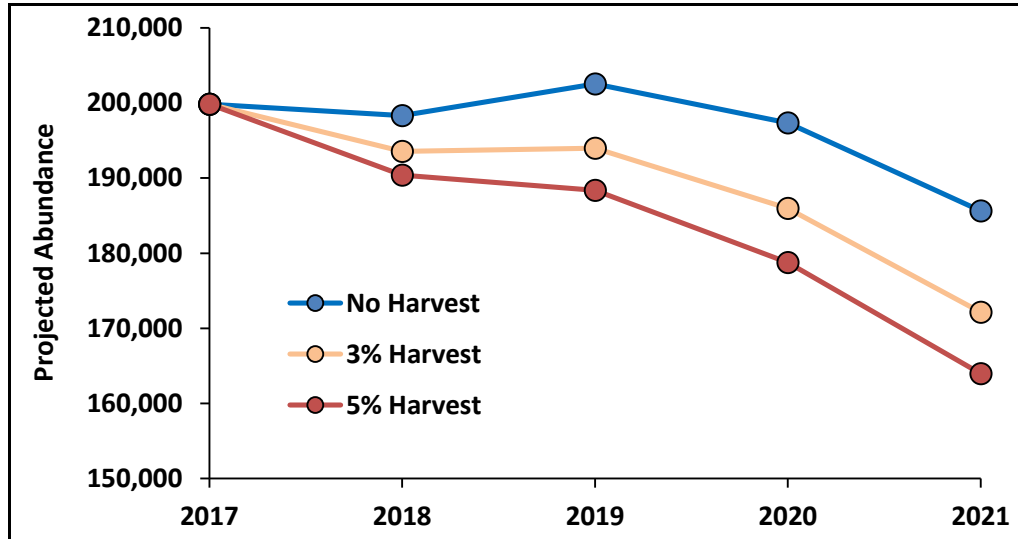


Figure 9. Frequency (percent) by 1 cm size intervals of white sturgeon captured in the LCR using research setlines, 2010-2017. Preliminary data for 2017.

Legal-size Abundance Forecasts

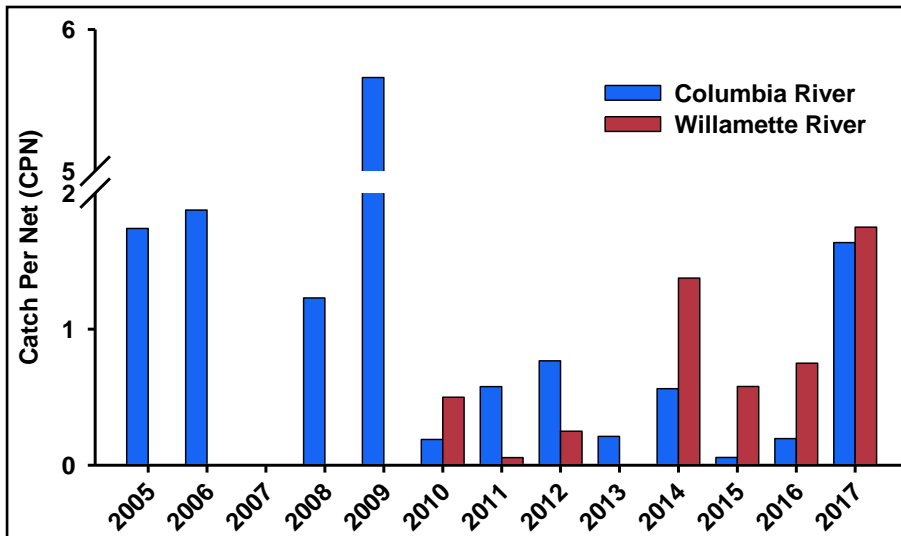
Figure 10 and Table 3. Projected abundance of 96-137cm FL white sturgeon in the LCR under various harvest rate scenarios.



Year	No Harvest	3% Harvest	5% Harvest
2017		199,830	
2018	198,331	193,558	190,377
2019	202,543	193,963	188,374
2020	197,350	185,983	178,761
2021	185,644	172,150	163,978

Sub-yearling (Age-0) Production

Figure 11 and Table 4. Catch-per-net (and annual recruitment index (Ep) in Table 4) for age-0 white sturgeon from the lower Columbia and Willamette rivers, 2005-2017.



Year	Lower Columbia River		Willamette River	
	CPUE	Ep	CPUE	Ep
2005	1.74	0.49		
2006	1.88	0.52		
2007	--	--		
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	0.22	0.22
2013 ¹	0.21	0.12	--	--
2014 ²	0.56	0.31	1.38	0.38
2015 ²	0.06	0.05	0.58	0.26
2016 ²	0.20	0.14	0.75	0.50
2017 ²	1.64	0.58	1.75	0.46

¹ Incomplete sampling year in both LCR and Willamette rivers.

² Preliminary assessments based on length frequency examinations.

Sea Lion Abundance and Predation *(update pending 2017 USACE Final Report)*

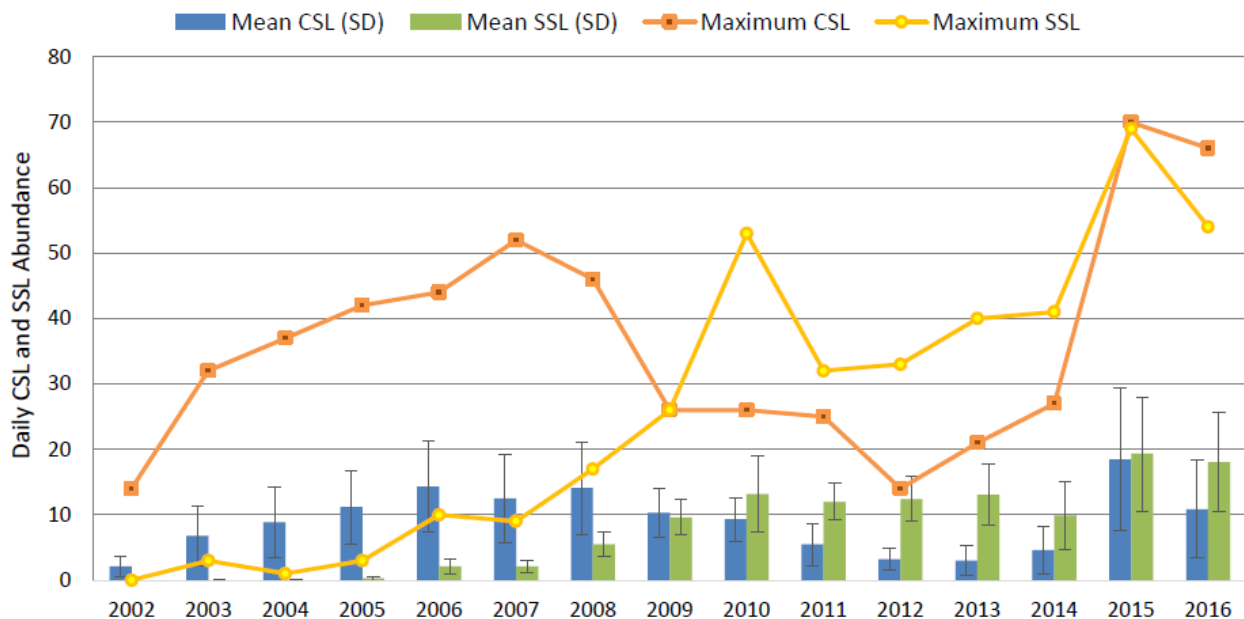


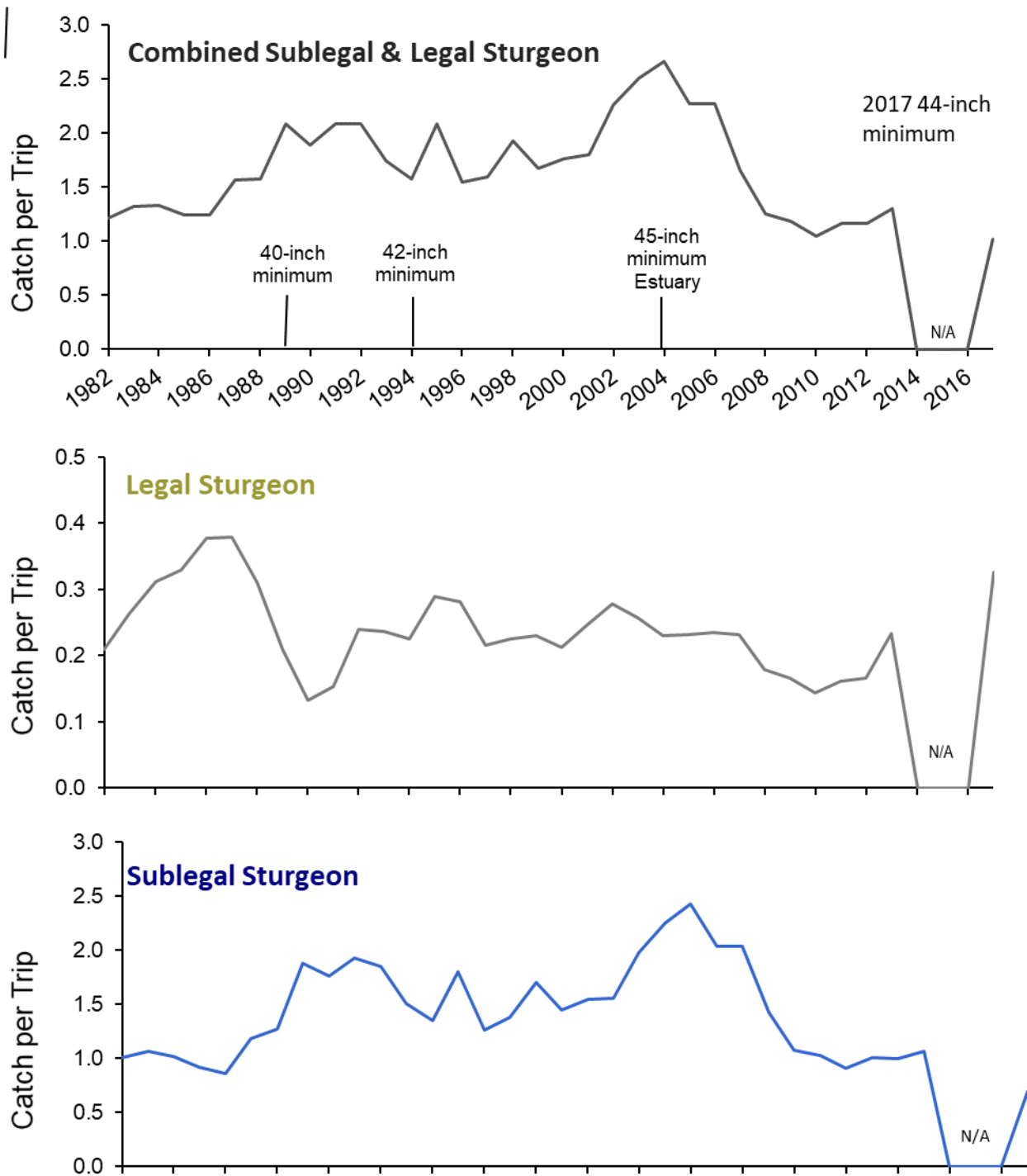
Figure 12. Abundance of California sea lions (CSL) and Steller sea lions (SSL) present at Bonneville Dam between January and the end of May, 2002 to 2016. U.S. Army Corps of Engineers (USACE) data.

Table 5. Consumption of white sturgeon by CSL and SSL observed during USACE monitoring of the Bonneville Dam tailrace, 2005-2017. Adjusted estimates include a proportion of the total unidentified catch.

Year	Total hours observed	Observed sturgeon catch	Sturgeon catch per hour observed	Expanded sturgeon catch estimate	Adjusted sturgeon catch estimate
2005	1,108	1	0.001	--	--
2006	3,647	265	0.073	315	413
2007	4,433	360	0.081	467	664
2008	5,131	606	0.118	792	1,139
2009	3,455	758	0.219	1,241	1,710
2010	3,609	1,100	0.305	1,879	2,172
2011	3,315	1,353	0.408	2,178	3,003
2012	3,404	1,342	0.394	2,227	2,498
2013	3,247	314	0.097	552	635
2014	2,947	79	0.027	127	147
2015	2,995	24	0.008	39	44
2016	1,974	30	0.015	82	90
2017	??	6	??	??	??

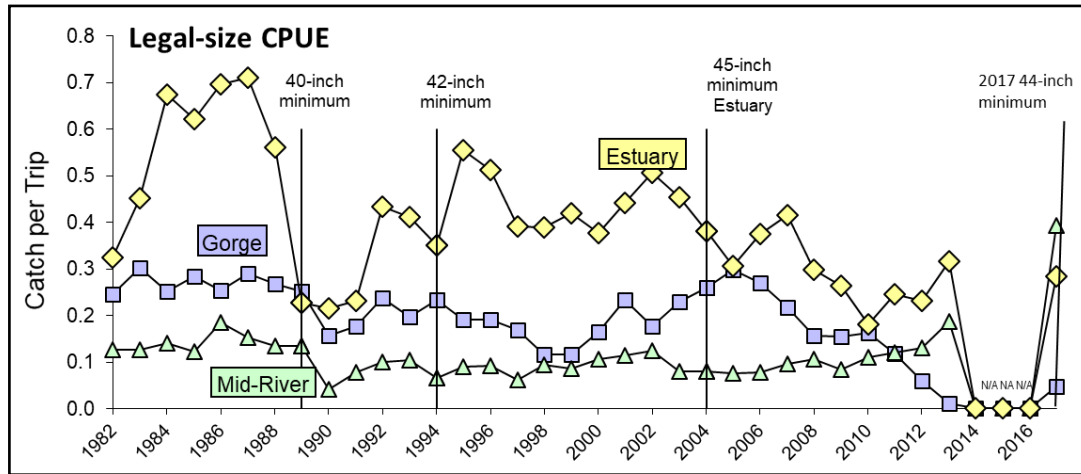
Appendix

Historic Abundance, Harvest and Monitoring Data



Appendix Figure 1. Catch rates of sublegal, legal-size, and combined sublegal and legal-size white sturgeon in LCR recreational fisheries, 1982-2017 (except 2014-16). Data not standardized for length. Includes data from sampling the lower Willamette River recreational fishery for 2000-2013 and 2017. No retention fishery in 2014, 2015, or 2016.

Appendix Figure 2 and Table 1. Catch rates by area of released and kept legal-size white sturgeon in LCR recreational fisheries, 1982-2017 (except 2014-16). Comparable catch rate data unavailable in 2014, 2015 or 2016 due to very low angling effort associated with retention prohibition.

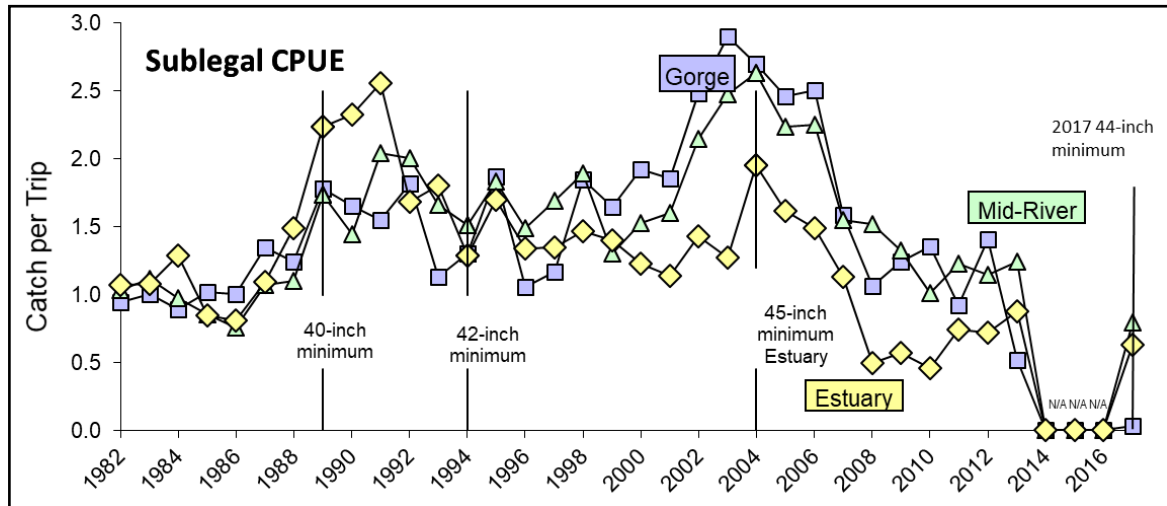


Year	Angler trips				Gorge		Mid & WR ¹		Above Wauna		Estuary		LCR CPUE
	Gorge	Mid-River	Estuary	Total	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
1982	48,636	50,185	20,839	119,660	11,971	0.25	6,329	0.13	18,300	0.19	6,758	0.32	0.21
1983	56,578	52,961	26,803	136,342	17,131	0.30	6,740	0.13	23,871	0.22	12,109	0.45	0.26
1984	50,934	51,199	32,455	134,588	12,865	0.25	7,207	0.14	20,072	0.20	21,902	0.67	0.31
1985	53,859	41,133	37,907	132,899	15,286	0.28	4,993	0.12	20,279	0.21	23,543	0.62	0.33
1986	47,223	41,410	43,357	131,990	12,022	0.25	7,663	0.19	19,685	0.22	30,159	0.70	0.38
1987	61,140	51,681	51,907	164,728	17,714	0.29	7,885	0.15	25,599	0.23	36,848	0.71	0.38
1988	53,361	45,436	40,601	139,398	14,283	0.27	6,093	0.13	20,376	0.21	22,755	0.56	0.31
1989	54,759	37,974	28,564	121,297	13,751	0.25	5,129	0.14	18,880	0.20	6,500	0.23	0.21
1990	50,805	45,881	34,779	131,465	7,949	0.16	1,908	0.04	9,857	0.10	7,453	0.21	0.13
1991	68,888	55,393	32,394	156,675	12,164	0.18	4,268	0.08	16,432	0.13	7,464	0.23	0.15
1992	75,004	64,497	47,540	187,041	17,826	0.24	6,399	0.10	24,225	0.17	20,607	0.43	0.24
1993	72,167	56,332	59,261	187,760	14,150	0.20	5,827	0.10	19,977	0.16	24,348	0.41	0.24
1994	73,866	43,771	51,397	169,034	17,299	0.23	2,852	0.07	20,151	0.17	18,049	0.35	0.23
1995	67,524	56,700	67,155	191,379	12,879	0.19	5,109	0.09	17,988	0.14	37,312	0.56	0.29
1996	72,083	43,840	63,848	179,771	13,717	0.19	3,989	0.09	17,706	0.15	32,760	0.51	0.28
1997	73,545	57,780	69,140	200,465	12,482	0.17	3,584	0.06	16,066	0.12	27,015	0.39	0.21
1998	62,158	55,064	86,416	203,638	7,174	0.12	5,130	0.09	12,304	0.10	33,676	0.39	0.23
1999	59,378	55,340	77,611	192,329	6,947	0.12	4,709	0.09	11,656	0.10	32,468	0.42	0.23
2000	62,464	77,775	69,151	209,390	10,275	0.16	8,245	0.11	18,520	0.13	26,088	0.38	0.21
2001	61,929	76,593	55,871	194,393	14,398	0.23	8,677	0.11	23,075	0.17	24,691	0.44	0.25
2002	45,306	59,099	59,279	163,684	7,986	0.18	7,390	0.13	15,376	0.15	30,061	0.51	0.28
2003	55,758	42,565	46,416	144,739	12,819	0.23	3,395	0.08	16,214	0.16	21,036	0.45	0.26
2004	36,728	49,076	41,759	127,563	9,526	0.26	3,953	0.08	13,479	0.16	15,867	0.38	0.23
2005	39,745	45,773	61,946	147,464	11,826	0.30	3,469	0.08	15,295	0.18	18,974	0.31	0.23
2006	31,471	46,401	45,051	122,923	8,479	0.27	3,574	0.08	12,053	0.15	16,887	0.37	0.24
2007	42,634	62,522	49,722	154,878	9,224	0.22	6,043	0.10	15,267	0.15	20,690	0.42	0.23
2008	42,034	64,759	48,421	155,214	6,568	0.16	6,864	0.11	13,432	0.13	14,404	0.30	0.18
2009	26,985	56,554	51,068	134,607	4,161	0.15	4,780	0.08	8,941	0.11	13,509	0.26	0.17
2010	25,499	55,570	37,741	118,810	4,135	0.16	6,138	0.11	10,273	0.13	6,820	0.18	0.14
2011	15,784	37,516	26,367	79,667	1,858	0.12	4,474	0.12	6,332	0.12	6,487	0.25	0.16
2012	2,883	28,219	19,718	50,820	174	0.06	3,665	0.13	3,839	0.12	4,570	0.23	0.17
2013	1,603	21,616	16,428	39,647	17	0.01	4,019	0.19	4,036	0.17	5,184	0.32	0.23
2014	270	4,447	1,651	6,368	37	NA	4,503	NA	4,540	NA	3,255	NA	NA
2015	139	6,894	1,014	8,047	74	NA	8,636	NA	8,710	NA	2,409	NA	NA
2016 ²	109	6,703	2,517	9,329	204	NA	10,203	NA	10,407	NA	10,548	NA	NA
2017 ²	1,374	15,086	15,226	31,686	66	0.05	5,918	0.39	5,984	0.36	4,323	0.28	0.33

¹ Includes Willamette River sampling for 2000-2017

² Preliminary

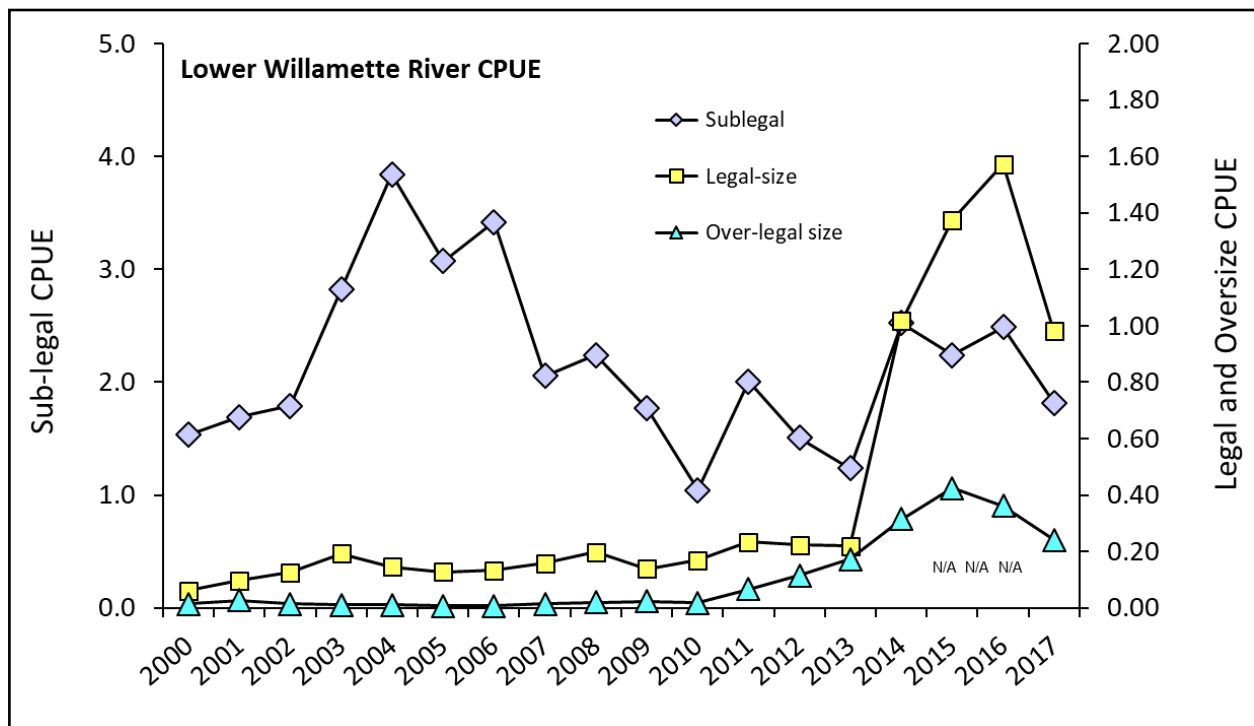
Appendix Figure 3 and Table 2. Catch rates by area of sublegal white sturgeon in LCR recreational fisheries, 1982-2017. Comparable catch rate data unavailable in 2014, 2015 or 2016 due to very low angling effort associated with retention prohibition.



Year	Angler trips				Gorge		Mid & WR ¹		Above Wauna		Estuary		LCR CPUE
	Gorge	Mid-River	Estuary	Total	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
1982	48,636	50,185	20,839	119,660	46,008	0.95	52,038	1.04	98,046	0.99	22,305	1.07	1.01
1983	56,578	52,961	26,803	136,342	56,753	1.00	59,083	1.12	115,836	1.06	28,875	1.08	1.06
1984	50,934	51,199	32,455	134,588	45,388	0.89	49,788	0.97	95,176	0.93	41,772	1.29	1.02
1985	53,859	41,133	37,907	132,899	54,744	1.02	35,196	0.86	89,940	0.95	32,059	0.85	0.92
1986	47,223	41,410	43,357	131,990	47,456	1.00	31,497	0.76	78,953	0.89	35,004	0.81	0.86
1987	61,140	51,681	51,907	164,728	82,569	1.35	55,448	1.07	138,017	1.22	56,807	1.09	1.18
1988	53,361	45,436	40,601	139,398	66,161	1.24	50,160	1.10	116,321	1.18	60,610	1.49	1.27
1989	54,759	37,974	28,564	121,297	97,504	1.78	65,980	1.74	163,484	1.76	63,921	2.24	1.87
1990	50,805	45,881	34,779	131,465	83,991	1.65	66,212	1.44	150,203	1.55	80,903	2.33	1.76
1991	68,888	55,393	32,394	156,675	106,807	1.55	113,022	2.04	219,829	1.77	82,878	2.56	1.93
1992	75,004	64,497	47,540	187,041	136,558	1.82	129,229	2.00	265,787	1.91	80,094	1.68	1.85
1993	72,167	56,332	59,261	187,760	81,618	1.13	93,648	1.66	175,266	1.36	106,678	1.80	1.50
1994	73,866	43,771	51,397	169,034	96,256	1.30	66,076	1.51	162,332	1.38	65,998	1.28	1.35
1995	67,524	56,700	67,155	191,379	126,255	1.87	103,933	1.83	230,188	1.85	113,994	1.70	1.80
1996	72,083	43,840	63,848	179,771	76,031	1.05	65,184	1.49	141,215	1.22	85,534	1.34	1.26
1997	73,545	57,780	69,140	200,465	85,769	1.17	97,690	1.69	183,459	1.40	92,972	1.34	1.38
1998	62,158	55,064	86,416	203,638	114,905	1.85	104,270	1.89	219,175	1.87	126,935	1.47	1.70
1999	59,378	55,340	77,611	192,329	97,715	1.65	72,003	1.30	169,718	1.48	108,445	1.40	1.45
2000	62,464	77,775	69,151	209,390	120,078	1.92	118,766	1.53	238,844	1.70	84,948	1.23	1.55
2001	61,929	76,593	55,871	194,393	114,976	1.86	122,706	1.60	237,682	1.72	63,779	1.14	1.55
2002	45,306	59,099	59,279	163,684	112,625	2.49	126,693	2.14	239,318	2.29	84,772	1.43	1.98
2003	55,758	42,565	46,416	144,739	161,788	2.90	105,259	2.47	267,047	2.72	58,927	1.27	2.25
2004	36,728	49,076	41,759	127,563	99,179	2.70	129,158	2.63	228,337	2.66	81,439	1.95	2.43
2005	39,745	45,773	61,946	147,464	97,815	2.46	102,410	2.24	200,225	2.34	100,047	1.62	2.04
2006	31,471	46,401	45,051	122,923	78,852	2.51	104,328	2.25	183,180	2.35	67,112	1.49	2.04
2007	42,634	62,522	49,722	154,878	67,504	1.58	96,896	1.55	164,400	1.56	56,082	1.13	1.42
2008	42,034	64,759	48,421	155,214	44,632	1.06	98,474	1.52	143,106	1.34	24,184	0.50	1.08
2009	26,985	56,554	51,068	134,607	33,524	1.24	74,748	1.32	108,272	1.30	29,229	0.57	1.02
2010	25,499	55,570	37,741	118,810	34,547	1.35	56,048	1.01	90,595	1.12	17,236	0.46	0.91
2011	15,784	37,516	26,367	79,667	14,530	0.92	46,082	1.23	60,612	1.14	19,667	0.75	1.01
2012	2,883	28,219	19,718	50,820	4,046	1.40	32,275	1.14	36,321	1.17	14,244	0.72	0.99
2013	1,603	21,616	16,428	39,647	834	0.52	26,939	1.25	27,773	1.20	14,458	0.88	1.07
2014	270	4,447	1,651	6,368	249	N/A	10,926	N/A	11,175	N/A	2,573	N/A	N/A
2015	139	6,894	1,014	8,047	176	N/A	16,067	N/A	16,243	N/A	992	N/A	N/A
2016 ²	109	6,703	2,517	9,329	99	N/A	16,971	N/A	17,070	N/A	3,570	N/A	N/A
2017 ²	1,374	15,086	15,226	31,686	43	0.03	11,972	0.79	12,015	0.73	9,601	0.63	0.68

¹ Includes Willamette River sampling for 2000-2017

² Preliminary



Appendix Figure 4. Catch rates of white sturgeon in the lower Willamette River recreational fishery, March-June 2000-2009, January-June and November 2010, February-March 2011, February 2012, July and October 2013, and March-June 2013-2017.

Appendix Table 3. Annual recreational catch of white sturgeon in the LCR and comparisons to catch guidelines, 1994-2017¹.

Year	Below Wauna ¹		Above Wauna ¹		Combined		
	Kept Catch	Guideline ²	Kept Catch	Guideline ³	Sum	Guideline	Percent
1994	15,578	N/A	17,893	N/A	33,500	N/A	
1995	29,714	N/A	15,423	N/A	45,100	N/A	
1996	27,694	N/A	15,068	N/A	42,800	N/A	
1997	24,511	N/A	13,646	N/A	38,200	53,840	71%
1998	30,303	N/A	11,293	N/A	41,600	53,840	77%
1999	29,238	N/A	10,561	N/A	39,800	40,000	100%
2000	24,267	N/A	16,238	N/A	40,500	40,000	101%
2001	21,619	N/A	19,597	N/A	41,200	39,500	104%
2002	26,234	N/A	12,045	N/A	38,300	38,300	100%
2003	18,367	19,200	13,565	12,800	31,932	32,000	100%
2004	15,050	16,000	10,519	12,800	25,569	28,800	89%
2005	17,911	17,783	11,891	11,560	29,802	29,343	102%
2006	15,726	16,000	8,545	12,800	24,271	28,800	84%
2007	19,131	16,274	10,675	13,852	29,806	30,126	99%
2008	13,614	13,143	7,959	12,387	21,573	25,530	85%
2009	13,109	15,529	4,599	11,430	17,708	26,959	66%
2010	6,491	9,600	4,831	4,835	11,322	14,435	78%
2011	6,117	6,800	2,908	3,410	9,025	10,210	88%
2012	4,466	4,160	1,859	2,080	6,325	6,240	101%
2013	4,559	4,042	1,942	2,021	6,501	6,240	107%
2014-16	0	0	0	0	0	0	N/A
2017	3,235	3,000	430	1,245	3,665	4,245	86%

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 excludes the separate Willamette guideline.

Appendix Table 4. Annual recreational catch of white sturgeon in the lower Willamette River and comparisons to catch guidelines, 2003-2017.

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	0	0	0	0	N/A
2017 ³	0	0	0	745	0%

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 was decreased to 735 fish in 2010 and 520 fish in 2011 consistent with reductions in the overall harvest guideline. The baseline concept was eliminated in 2017.

³ A retention fishery was considered but did not occur in the lower Willamette River 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.

Appendix Table 5. Commercial catch of white sturgeon in the LCR by season, and comparisons to catch guidelines, 1993-2017.

Year ¹	Mainstem							Select Area			Grand Total	Guide-line	%
	Winter Sturgeon ²	Winter Salmon	Summer	Early August	Late August	Late Fall	Total	Spring/Summer	Fall	Total			
1993	990			0	0	7,010	8,000	30	20	50	8,050	6,000	134%
1994	2,990			0	0	3,380	6,370	30	0	30	6,400	6,000	107%
1995	0			0	0	5,980	5,980	110	70	180	6,160	8,000	77%
1996	800			0	330	6,580	7,710	580	110	690	8,400	8,000	105%
1997	2,710			1,740	140	7,790	12,380	350	100	450	12,830	13,460	95%
1998	2,680			2,540	90	8,060	13,370	360	170	530	13,900	13,460	103%
1999	1,780			2,770	60	4,180	8,790	520	190	710	9,500	10,000	95%
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	0	0	0	0	0	0	0	0	0	0	0	0	N/A
2015	0	0	0	0	0	0	0	0	0	0	0	0	N/A
2016	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%

¹ Data since 2003 preliminary.

² Prior to 2003, values reflect all winter fisheries.

Lower Columbia River commercial landings, 2017

<i>Winter/Spring/Summer</i>										
<i>(Prelim/FINAL – OR/WA Fish Tickets – January 4, 2017)</i>										
<u>Season</u>	<u>CHINOOK</u>		<u>Z 1–5 Spring Chinook</u>		<u>SOCKEYE</u>		<u>SHAD</u>		<u>WHITE STURGEON¹</u>	
	<u>Numbers</u>	<u>Pounds</u>	<u>Adults</u>	<u>Jacks</u>	<u>Numbers</u>	<u>Pounds</u>	<u>Numbers</u>	<u>Pounds</u>	<u>Numbers</u>	<u>Pounds</u>
<i>Mainstem</i>										
Winter Sturgeon (no season during 2017)	0	0	—	—	0	0	0	0	No Retention	--
Spring (no season during 2017)	0	0	0	0	0	0	0	0	No Retention	--
Summer (no season during 2017)	0	0	—	—	0	0	0	0	No Retention	--
Shad (Area 2S)	—	—	—	—	—	—	2,007	5,417	No Retention	--
Mainstem Totals	0	0	—	—	0	0	2,007	5,417	0	0
<i>Select Areas</i>										
Youngs Bay Winter	630	7,752			0	0	0	0	No Retention	--
Youngs Bay Spring	7,345	79,204			8	29	0	0	No Retention	--
Youngs Bay Summer	2,822	31,889			7	25	0	0	31	969
Tongue Point Winter	82	1,162			0	0	0	0	No Retention	--
Tongue Point Spring	1,952	21,477			0	0	0	0	No Retention	--
Tongue Point Summer	1,483	17,095			0	0	0	0	203	6,495
Blind & Knappa Sloughs Winter	136	1,696			0	0	0	0	No Retention	--
Blind & Knappa Sloughs Spring	1,964	21,231			0	0	0	0	No Retention	--
Blind & Knappa Sloughs Summer	1,161	13,786			0	0	0	0	32	966
Deep River Winter	8	132			0	0	0	0	No Retention	--
Deep River Spring	13	173			0	0	0	0	No Retention	--
Select Area Totals	17,596	195,597			15	54	0	0	266	8,430
Lower Columbia River Commercial GRAND TOTALS	17,596	195,597			15	54	2,007	5,417	266	8,430
Winter/Spring/Summer 2017										
<i>Fall</i>										
<i>(Prelim/FINAL – OR/WA Fish Tickets – January 4, 2017)</i>										
<u>Season</u>	<u>CHINOOK</u>		<u>COHO</u>		<u>PINK</u>		<u>CHUM</u>		<u>WHITE STURGEON¹</u>	
	<u>Numbers</u>	<u>Pounds</u>	<u>Numbers</u>	<u>Pounds</u>	<u>Numbers</u>	<u>Pounds</u>	<u>Numbers</u>	<u>Pounds</u>	<u>Numbers</u>	<u>Pounds</u>
<i>Mainstem</i>										
August (Zone 4–5; 9-9 3/4 inch gill)	13,959	227,268	218	1,373	0	0	No Retention		485	15,061
<i>August Subtotals</i>	13,959	227,268	218	1,373	0	0	<i>No Retention</i>		485	15,061
Late-Fall (Zone 4–5; 9-9 3/4 inch gill)	5,439	85,924	713	5,489	0	0	No Retention		239	7,745
<i>Late-Fall Subtotals</i>	5,439	85,924	713	5,489	0	0	<i>No Retention</i>		239	7,745
Fall Mainstem Totals	19,398	313,192	931	6,862	0	0	0	0	724	22,806
<i>Select Areas</i>										
Youngs Bay	6,275	65,478	13,603	104,747	3	16	No Retention		115	3,738
Tongue Point	2,251	24,170	12,534	93,169	0	0	No Retention		82	2,693
Blind Slough & Knappa Slough	1,636	19,941	2,460	18,093	0	0	No Retention		9	281
Deep River	1,870	18,863	9,382	67,842	3	7	No Retention		31	1,002
Fall Select Area Totals	12,032	128,452	37,979	283,851	6	23	0	0	237	7,714
Lower Columbia River Commercial GRAND TOTALS	31,430	441,644	38,910	290,713	6	23	0	0	961	30,520
Fall 2017										
PRELIMINARY GRAND TOTALS 2017	49,026	637,241	38,910	290,713	6	23	1	9	1,227	38,950
for Lower Columbia R. Commercial Fisheries	SOCKEYE		SHAD		SMELT (Mainstem)				GREEN STURGEON	
	Numbers	Pounds	Numbers	Pounds	Pounds				Numbers	Pounds
	15	54	2,007	5,417	5,019				<i>No Retention</i>	

FISH AND WILDLIFE COMMISSION

POLICY DECISION

**POLICY TITLE: Lower Columbia
Sturgeon Management**

POLICY NUMBER: C-3001

Supercedes: 2011-2013 Lower Columbia
Sturgeon Management C-3001

Effective Date: March 1, 2014
Termination Date: December 31, 2018

See Also: Policy C-3608

Approved February 7, 2014 by:

 , Chair
Washington Fish and Wildlife Commission

Purpose

The purpose of this policy is to provide guidelines for management of the Lower Columbia River white sturgeon population and fisheries.

Definition and Intent

The Lower Columbia River white sturgeon population inhabits the waters of the Columbia River and tributaries downstream of Bonneville Dam and migrates into ocean and coastal estuaries. The intent of the policy is to provide consistent management guidelines that promote a healthy population.

General Policy Statement

Manage the Lower Columbia River white sturgeon population with conservation and fishery management objectives that are consistent with a healthy population.

Policy Guidelines

Lower Columbia Sturgeon Conservation Objectives:

- Provide recruitment and regulatory protection to increase the abundance of the spawning population.
- Manage with a precautionary approach due to uncertainties in population parameters.
- Manage for an annual combined sport and commercial harvest of white sturgeon to provide measurable population growth to achieve the goals of: (1) fully seeded habitats and (2) full representation of each age class within the population.
- Population Monitoring (within available resources):
 - Continue young-of-the-year (YOY) sampling to track spawning success.
 - Evaluate legal-size abundance methodology to improve accuracy of estimates.
 - Continue to monitor sea lion predation for incorporation into stock status

evaluations.

Fishery Management Objectives:

- Provide sufficient sturgeon spawning sanctuaries or other protection measures where and when appropriate.
- Conduct research, within available resources, to assess spawner and sublegal abundance and to quantify impacts of commercial and recreational fisheries on these abundances.
- Provide appropriate added protective measures to prevent further decline of green sturgeon.
- Limit incidental impacts on other species.

When Retention Fisheries are Allowed:

- Manage Lower Columbia River sturgeon fisheries through an agreement with Oregon.
- Maintain concurrent Washington and Oregon regulations in the Columbia River.
- Manage fisheries in a manner that takes into consideration projected recruitment, with the objective of increasing abundance of the legal size segment, and increasing escapement into the spawning segment of the population. Management should be based on consideration of all mortality factors, including sea lion predation and both recreational and commercial fishery related mortalities.
- Maintain the 80/20 sport/commercial harvest allocation.
- Maintain viable and diverse recreational and commercial fishing opportunities.
- Develop sport fishery regulations consistent with the following objectives:
 - Minimize emergency in-season action.
 - Balance catch between estuary and non-estuary fisheries and maintain a diverse array of sturgeon fishing opportunity.
 - Maintain fishery monitoring and management capabilities.
- Develop commercial fishery regulations consistent with the following objectives:
 - Optimize economic value (adjust to market needs).
 - Spread harvest opportunity throughout the year.
 - Minimize impacts to green sturgeon listed under the Endangered Species Act.
- Manage sturgeon harvests outside the mainstem lower Columbia River consistent with Lower Columbia River sturgeon conservation and management needs.

Annual Review

Given the degree of uncertainty about the current state of the Columbia River white sturgeon, including the impact of population stress factors such as increased predation and decreased food base, the Commission is adopting a precautionary approach to management. The Director will provide an annual review for the Commission, as an essential component of this precautionary approach, to include updated information on:

- stock status;
- predation rates;

- review of in-season management actions;
- accounting of fish left unharvested;
- review of sturgeon harvest in areas outside the mainstem lower Columbia River;
- by-catch in all fisheries;
- recommended management changes; and
- other pertinent information.

Delegation of Authority

The Commission delegates the authority to the Director to develop and negotiate Lower Columbia Sturgeon Management Accords with Oregon Department of Fish and Wildlife that are consistent with these policies and objectives. Additionally, the Commission delegates the authority to the Director, through the Columbia River Compact, to set seasons for recreational and commercial fisheries in the Columbia River, and to adopt permanent and emergency regulations to implement these fisheries. The Director shall work with the Oregon Department of Fish and Wildlife to achieve implementation of this Commission action in a manner that results in concurrent regulations between the two states. The Director shall consult with the Commission Chair if it becomes necessary to deviate from the Commission's policy to achieve concurrent regulations with Oregon.