



AGENDA ITEM SUMMARY

BACKGROUND

Columbia River white sturgeon are uniquely adapted to the large river systems which they inhabit, and, despite recent productivity issues, the lower Columbia River (LCR) still supports the most productive white sturgeon population in the world.

White sturgeon are long-lived, late-maturing fish, with females not reaching reproductive size/age for 20-25 years after hatching. Once mature, white sturgeon may spawn every three to five years, depending on conditions. Naturally reproducing white sturgeon in the Columbia River downstream of Bonneville Dam are ecologically, culturally, and economically important to the Pacific Northwest region. The high public interest and importance to local communities make white sturgeon a conservation priority for adjacent states, federal, and Tribal agencies carrying out fish and wildlife management responsibilities in the Pacific Northwest region.

Between 1996 and 2013, white sturgeon fisheries in the LCR were managed under a series of “management accords” between the Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish and Wildlife (WDFW). The central tenet of these accords and their management strategy was that sufficient numbers of fish should escape the fisheries to grow the adult (brood-stock) population on a sustained basis, while providing societal benefits from the fisheries. However, largely because of less robust population monitoring tools available prior to 2010, this goal was not consistently achieved.

In August 2011, the Oregon Fish and Wildlife Commission (OFWC) provided additional policy guidance for white sturgeon management by adopting the Lower Columbia River and Oregon Coast White Sturgeon Conservation Plan (hereafter, the Plan). The Plan sets long-term management goals for white sturgeon, including adult and sub-adult (which include legal-sized fish) abundance levels that represent a “healthy and harvestable population.” In order to rebuild the population to a healthy and harvestable state, the plan capped the long-term exploitation rate for legal-sized white sturgeon at 16%, a rate both states adopted beginning in 2012. Prior to the conservation plan the targeted long-term exploitation rate was 22.5%. When the revised rate was adopted by the Commissions, they also adopted a 10% management buffer to be applied whenever fisheries were managed to that maximum exploitation rate.

Prior to 2010, stock assessment abundance estimates relied on fishery-dependent mark and recapture methods. These assessments were the best available information given the resources available at the time, but they only provided an estimate of white sturgeon from 38 to 54-inch fork length (FL), the then legal slot limit. Furthermore, these estimates were not available until one year after the fishery to which they applied. In 2010, ODFW began annual fisheries-independent mark-recapture stock assessments in the lower Columbia River using set-line methodologies similar to those employed since the 1980s by ODFW, WDFW, and tribal co-managers in Bonneville, The Dalles, and John Day reservoirs. In addition to more timely abundance estimates, this methodology allows better monitoring of the growth and survival of many size classes of sturgeon (including adults and juveniles), providing a more complete picture of the LCR white sturgeon population segment.

The stock assessments showed a decline in abundance of adult (≥ 66 -inches FL) and legal-sized white sturgeon from 2010 through 2013. Exercising a precautionary approach, in 2014 both the Oregon and Washington Fish and Wildlife Commissions placed a moratorium on white sturgeon harvest in the Columbia River downstream of Bonneville Dam, including the lower Willamette River, along the coasts of both states, and in associated bays and estuaries – including Tillamook Bay and Puget Sound; catch and release sturgeon angling was still allowed.

This closure had the immediate effect of escaping a sizable number of white sturgeon into the over-legal (though not yet adult) size class of fish, protecting them from future harvest. However, this was also accompanied by a dramatic (~90%) decrease in the number of angler trips as recreational sturgeon fisheries transitioned to catch-and-release only.

Although consumptive fisheries were suspended, fishery independent stock assessments continued and a substantial increase in sub-adult and adult white sturgeon abundance was noted in the 2016 stock assessments. Beginning in 2017 and continuing through present, limited retention fisheries have occurred in the lower Columbia River using an 80/20 recreational/commercial allocation split per joint commission policy. Because they originate from the Columbia River population, and they lacked formal sub-allocations, retention fisheries have not been opened in Oregon and Washington coastal estuaries and bays. For the past two years (2020 and 2021) Oregon fisheries managers have been experimenting with ways to provide limited retention opportunities in the lower Willamette River using its small sub-allocation.

PUBLIC INVOLVEMENT

- 12 February 2021 — Informational briefing to the Oregon Fish and Wildlife Commission on 2020 Lower Columbia River white sturgeon population status
- 14 December 2021 — Virtual meeting with the Northwest Sportfishing Industry Association
- 11 January 2022 — Virtual meeting with the Columbia River Recreational Fisheries Advisory Group
- 11 January 2022 — Virtual meeting with the Columbia River Commercial Fisheries Advisory Group
- 12 January 2022 — Select Area Virtual Public Meeting

ISSUE

Update on Population Status of White Sturgeon in the Columbia River Downstream of Bonneville Dam.

ANALYSIS

Continuing a recent trend, white sturgeon status indicators in 2021 remain mixed (Table 1). The estimated abundance of white sturgeon in 2021 greater than 21-inches FL (the size at which white sturgeon recruit to our setline gear) was approximately 312,144, and three-year running averages of adult abundance continue to be above the desired status level. However, the proportion of juvenile fish (< 38 -inches FL) in the total population is currently below the

conservation status threshold, indicating productivity issues with the population. While funding constraints limited our ability to sample age-0 white sturgeon in 2020, we were able to reestablish this important indexing activity in 2021. Results in 2021 indicate that the extended period of low young-of-year white sturgeon recruitment seen preceding years has continued. Given the mixed indicators seen in our stock assessment, ODFW plans to continue to use the precautionary approach to fisheries management employed over the last several years.

Abundance Trends

Sub-Adult Metrics—The 2021 estimated abundance of white sturgeon in the 38 to 54-inches FL was 122,395 fish, a substantial decrease from the 2020 estimate. However, due to COVID-related sampling difficulties, the variability surrounding the 2020 estimate was quite large and the confidence intervals (CI) were the widest to date (Figure 1); the 2021 estimate is not out of line with the recent trend. Other indicators, such as the catch per set (CPUE) in our setline stock assessments are supportive of our 2021 abundance estimate (Figure 2). Fisheries managers should continue to view the magnitude of increases or decreases of individual annual estimates cautiously; and although the recent trend (since 2016) has been downward, when considered on a broader time scale, the trend in sub-adult abundance has remained positive since 2012.

TABLE 1 — Dashboard of key status indicators for lower Columbia River and Willamette River (WR) White Sturgeon in 2021. Color indicates status relative to Conservation Plan metrics.

Metric	N	Interpretation	Brief Summary
Abundance Trends			Abundance estimate continues recent declining trend; Significantly above conservation status level.
38" – 54" FL	122,395		
Adult (>66" FL)	2021: 6,769 3-yr avg.: 11,064		2021 3-yr adult abundance avg is above desired status level (threshold = 9,250 adults); point estimate is above conservation status level (3,900).
Population Structure	~56% juvenile		Low relative abundance of juvenile and sub-legal sized fish indicates population productivity issues; Below conservation status level (threshold = 60%).
Recruitment Index (CPN)	LCR: 0.02 WR: 0.17		Low recruitment numbers in both CR and WR indicate continued productivity issues with this population segment.
Fisheries	Total: 36,704 angler trips		Participation still down from pre-closure levels, but interest in retention fishing opportunity remains.

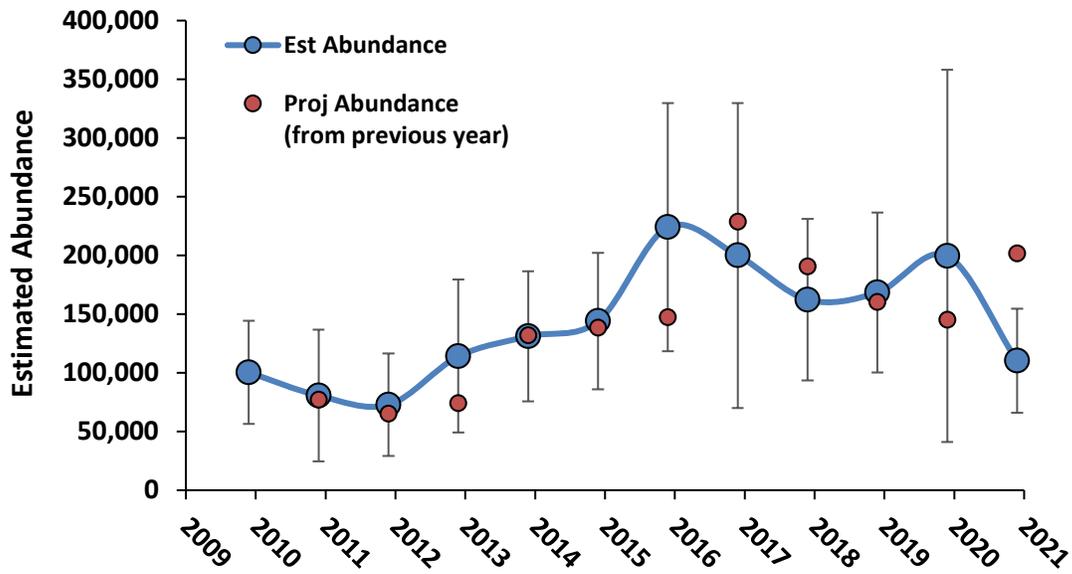


FIGURE 1 — Estimated and projected abundance for 38" - 54" FL white sturgeon from the LCR, 2010 - 2021. Error bars represent 95% CI's for the estimated abundance.

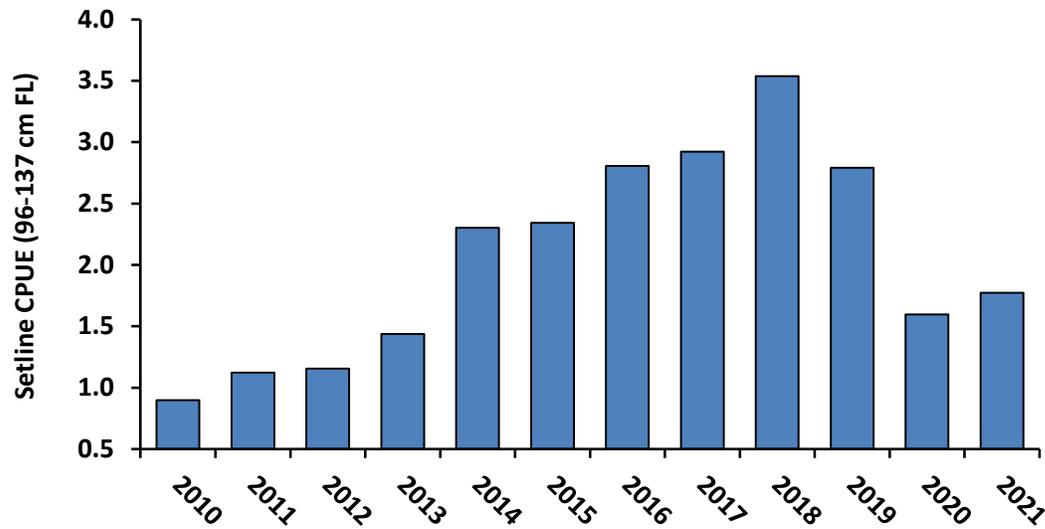


FIGURE 2 — CPUE of 38" - 54" FL white sturgeon caught with setlines in the LCR, 2010 - 2021.

Adult Metrics—ODFW uses a three-year running average for measuring adult abundance to smooth out some of the variability inherent in these estimates. The three-year running average abundance of 11,064 adult white sturgeon continues to be above the desired status of 9,250 adult white sturgeon. (Figure 3). The point estimate of 6,769 is below this threshold, but well above the conservation status threshold. Because of the variability of these point estimates we also examine other indicators, e.g., set line catch per unit effort (CPUE), to see if estimates are supportable by empirical data. Our estimates of adult abundance continue to be supported by CPUE information from our stock assessments in 2021 (Figure 4), which continue to be substantially higher than the 2010 – 2016 levels.

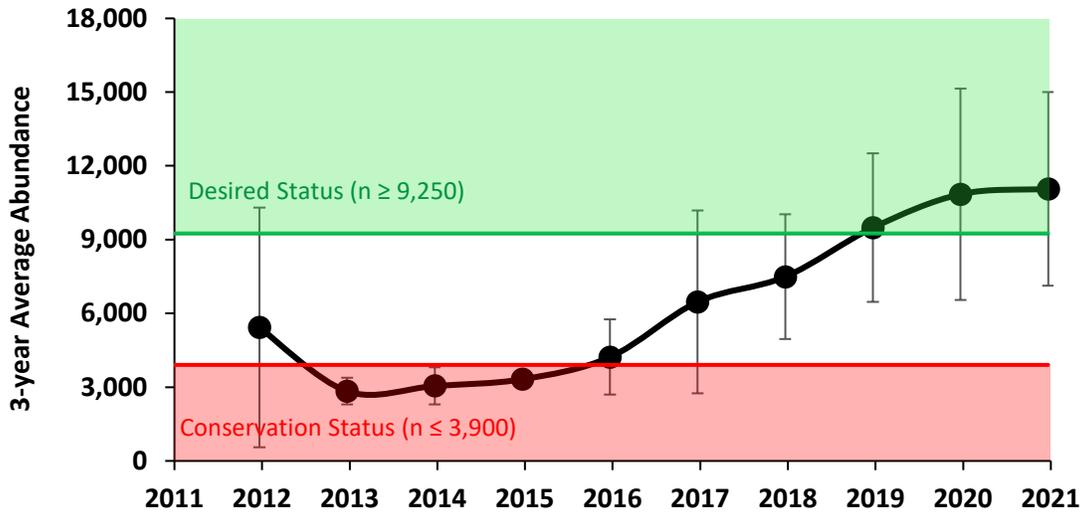


FIGURE 3 — Three-year running average of estimated abundance for adult ($\geq 65''$ FL) white sturgeon from the LCR, 2012 - 2021. Fewer than 3 years of data were available for 2011 so no averages were calculated. Error bars are ± 1 standard deviation from the mean abundance estimate.

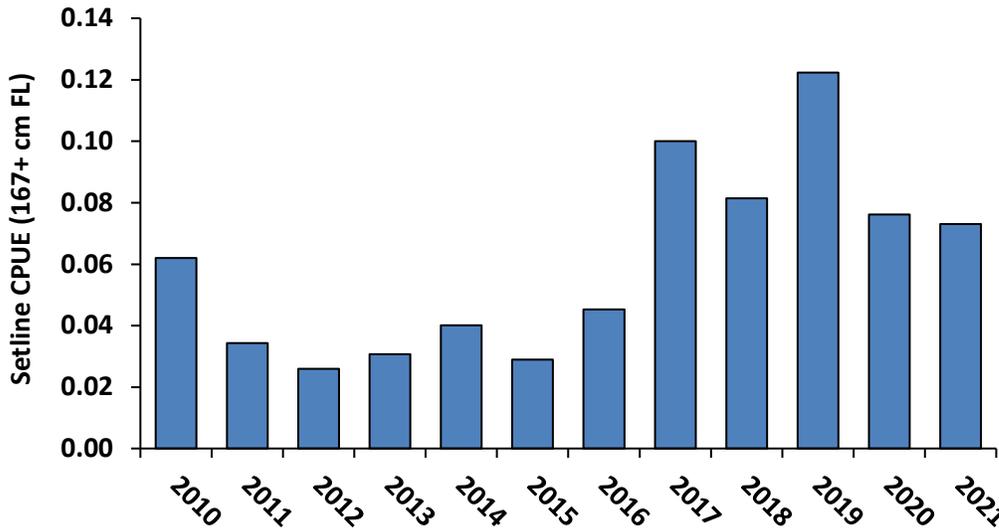


FIGURE 4 — CPUE of adult (≥ 167 cm FL) white sturgeon caught with setlines in the LCR, 2010 - 2021.

Productivity

Population Structure—A fully functioning LCR white sturgeon population segment will have both abundance and productivity targets that are met. Productivity in the population segment is measured as a sustainable stock structure across life history stages and annual age-0 recruitment. Robust abundance estimates and a stock structure dominated by juveniles would indicate successful recruitment is occurring regularly at a level sufficient to offset mortalities at older life stages. The percentage of the population made up of juvenile fish in 2021 was $\sim 56\%$. This is below the conservation status of 60% identified in the Plan, and well below the desired status level (95%) continuing the recent pattern (Figure 5). Although the abundance of adult white sturgeon is above the desired status threshold, the reduced proportion of the population made up of juvenile sized fish over time indicates ongoing productivity issues. Productivity, in terms of annual recruitment to the end of the first year of life, i.e., age-0 or young-of-year (YOY) recruitment, when year class strength is thought

to be set, will need to be consistently higher (see pre-2010 or 2017 levels) before this trend begins to reverse itself.

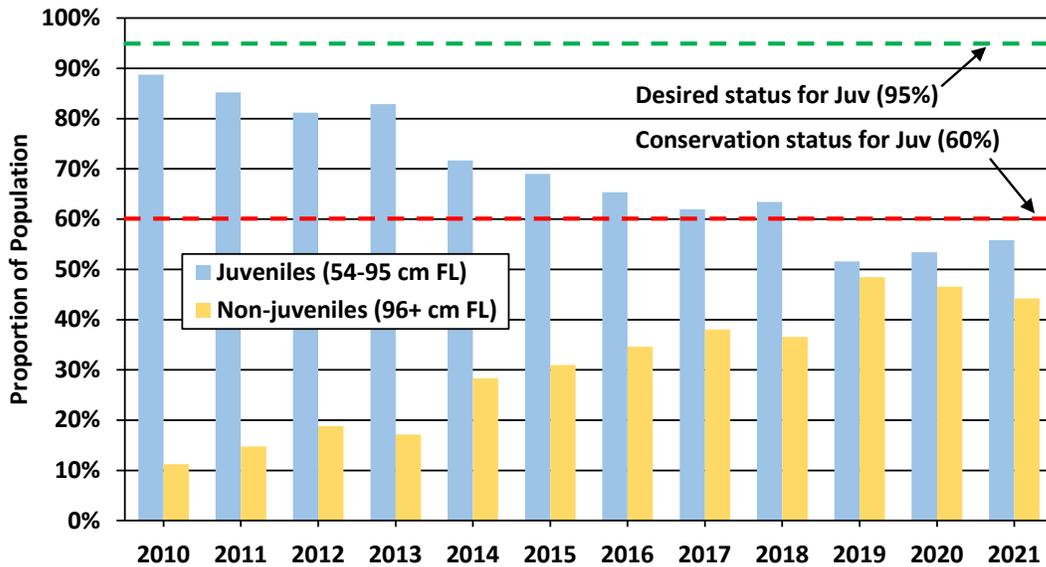


FIGURE 5 — Annual proportion of juvenile and non-juvenile (sub-adults + adults) white sturgeon in the lower Columbia River white sturgeon population segment, 2010-2021. Dashed, horizontal lines represent conservation status and desired status for juvenile white sturgeon.

Recruitment—Since 2004, ODFW has generally conducted annual surveys to index the recruitment of age-0 white sturgeon in the lower Columbia River to assess relative spawning success and productivity. Sampling is conducted in the late fall and is designed to target juvenile sturgeon that were spawned earlier the same year; late fall sampling also minimizes interactions with other fish and fisheries. ODFW, WDFW, and the Columbia River Inter-Tribal Fish Commission have jointly employed a similar methodology upstream of Bonneville Dam since 1997.

Staff deploy small-mesh gillnets at standard index sites throughout the lower Columbia and Willamette rivers to capture age-0 white sturgeon. We use the catch per net (CPN) and proportion of sets capturing at least one age-0 white sturgeon (E_p) as indices to monitor trends in recruitment (Table 2). To date we have not been able to relate the recruitment index data to our detailed stock assessment data. Therefore, it is problematic to infer absolute levels of recruitment from these data.

The conservation status threshold for this metric, based on a population viability analysis, is five years without measurable recruitment. While above that level in both the Columbia and Willamette rivers, the CPN and E_p levels measured in 2021 were the lowest or among the lowest yet observed. While these indices are useful to compare between years, values should not be compared between river systems, for example, a higher CPN in the Willamette – as witnessed in 2018 – does not allow us to conclude that higher absolute numbers of sturgeon were produced in the Willamette than the Columbia overall.

Funding shortfalls in 2007 and 2020 precluded indexing activities from taking place in those years, however, the department has been and remains committed to keeping this work going and have reprogrammed funds toward that end.

Table 2 — Catch per net (CPN) and proportion of positive sets (E_p) for age-0 white sturgeon in the lower Columbia and Willamette rivers from 2004 - 2021.

Year	Willamette R E_p	Willamette R CPN	Columbia R E_p	Columbia R CPN
2004			0.44	1.29
2005			0.49	1.74
2006			0.52	1.88
2007 ¹			--	--
2008			0.45	1.23
2009			0.78	5.66
2010	0.24	0.43	0.18	0.19
2011	0.06	0.06	0.34	0.58
2012	0.22	0.25	0.35	0.77
2013 ²	--	--	0.12	0.21
2014	0.38	1.38	0.31	0.56
2015	0.26	0.58	0.05	0.06
2016	0.50	0.75	0.14	0.20
2017	0.50	1.75	0.58	1.64
2018	0.83	3.96	0.27	0.43
2019	0.58	1.13	0.19	0.30
2020 ¹	--	--	--	--
2021	0.17	0.17	0.02	0.02

¹ No age-0 indexing in either the lower Columbia or Willamette rivers.

² No age-0 indexing in the Willamette River.

Fisheries

Recreational Fisheries—Although recreational sturgeon retention fisheries were closed from 2014 through 2016, catch-and-release fishing was still allowed and monitored (Table 3). Angler participation in 2016 was similar to 2014 and 2015 and down by 94% river-wide and 92% in the estuary when compared to the five-year average pre-retention closure (2009 – 2013). Despite the reduced effort during the retention closure, participating anglers reported high catch rates, and staff received reports of quality fishing days with high catch and release rates.

Oregon and Washington reinitiated limited retention fisheries for white sturgeon on the lower Columbia River in 2017, but with a modified approach from what had been used prior to 2014. The slot limit was narrowed from what had historically been used to 44 to 50-inch FL (previously 38 to 54-inch FL). This narrower slot limit was intended to reduce catch rates and lengthen the season. The allowable exploitation rate was also substantially reduced, instead of using the rate identified through our population viability analysis as sustainable under periods of average productivity (16%); reinstated fisheries limited harvest rates to less than 5% of the sub-adult population. Similar fishing opportunities have since been provided annually (though they were significantly curtailed in 2020 due to the pandemic).

When developing guidelines and fishery plans for 2021, fisheries managers, cognizant of the high degree of uncertainty associated with the 2020 abundance estimate decided to use guidelines from 2019, which were more conservative than they would have been than if the 2020 estimate had been used. Separate recreational white sturgeon catch guidelines in the 44 to 50-inch FL slot of 2,960, 1,230, and 740 were used for the Columbia River Estuary, Columbia River mainstem above Wauna Powerlines (~RM 40), and lower Willamette River, respectively.

Angler participation in 2021 lower Columbia River white sturgeon recreational fisheries was robust and, with the exception of 2020, were similar to levels observed since reopening retention fisheries in 2017. Including both retention and non-retention days there were 19,368 angler trips in the Columbia estuary (13 retention days), and 11,859 angler trips in the area above Wauna (6 retention days; Table 3); the two retention days in the Willamette River generated 2,801 angler trips out of a total of 5,477 total Willamette River angler trips for the year (March – June). Retained catch for both these areas remained within the guidelines (Tables 4 and 5).

Table 3 — Number of angler trips for the lower Columbia River (including catch and release, but not the Willamette River), 2013 - 2021. Most estuary sturgeon fishing trips occur from May through June.

Year	Total		Estuary	
	Trips(N)	% Change	Trips(N)	% Change
Avg: 2009-2013	69,553		30,313	
2014	3,120	-96%	1,651	-95%
2015	3,004	-96%	1,014	-97%
2016	4,372	-94%	2,482	-92%
2017	27,550	-60%	15,546	-49%
2018	31,923	-54%	19,253	-36%
2019	37,703	-46%	22,907	-24%
2020 ¹	12,099	-83%	832	-97%
2021	31,227	-55%	19,368	-36%

¹ No estuary recreational fishing periods were set in 2020 due to COVID-19 related issues

Table 4 — White sturgeon recreational catch and catch guidelines by area, 2009-2013 average and 2014-2021.

Year	Below Wauna		Above Wauna		Combined	
	Catch	Guideline	Catch	Guideline	Catch	Guideline
Avg: 2009-2013	6,948	8,026	3,228	4,755	10,176	12,781
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	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 ¹	0	2,750	843	1,140	843	3,890
2021	2,549	2,960	866	1,230	3,415	4,190

¹ No estuary recreational fishing periods were set in 2020 due to COVID-19 related issues

Table 5 — White sturgeon Willamette River recreational catch and catch guidelines, 2009-2013 average 2014-2021.

Year	Catch	Guideline
Avg: 2010-2013 ¹	2,291	2,413
2014	0	0
2015	0	0
2016	0	0
2017	0	745
2018	0	740
2019	0	740
2020	167	690
2021	87	740

¹ Willamette River harvest guidelines were first introduced in 2010

Commercial Fisheries—Along with recreational retention, commercial harvest of white sturgeon (44 – 50-inch FL) was also reinstated in 2017 and continued in 2021 with 20% of the overall allocation which resulted in a 1,230 fish guideline. The combined off-channel and mainstem commercial fisheries harvested a combined 1,194 of the 1,230 (97%) of the fish available in the commercial guideline (Table 6). In 2021, commercial harvest was primarily from off-channel areas as mainstem fisheries harvested fewer than expected. Mainstem sturgeon fisheries since 2017 have been restricted to, and concurrent with Zone 4/5 fall Chinook and late fall Coho commercial fisheries.

Table 6 — White sturgeon commercial catch and catch guidelines by area, 2009-2013 average and 2014-2021.

Year	Mainstem		Select Area		Combined	
	Catch	% of Total Catch	Catch	% of Total Catch	Catch	Guideline
Avg: 2009-2013	3,579	92%	306	8%	3,903	4,060
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	724	59%	503	41%	1,227	1,245
2018	413	50%	413	50%	826	1,230
2019	509	42%	691	58%	1,200	1,230
2020	567	51%	547	49%	1,114	1,140
2021	395	33%	799	67%	1,194	1,230

Plans for 2022

Stock assessments in the lower Columbia River are scheduled to commence in May 2022 and be completed by the end of September 2022. Fisheries managers plan to continue to employ a conservative approach to fisheries consistent with the past five years, balancing conservation needs and retention opportunities for recreational and non-treaty commercial fisheries.

OPTIONS

1. N/A

STAFF RECOMMENDATION

1. N/A

DRAFT MOTION

N/A

EFFECTIVE DATE: N/A