

Agenda Item Summary

BACKGROUND Between 1996 and 2013 white sturgeon fisheries in the Columbia River downstream from Bonneville Dam 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). A central tenet of these accords was the management of fisheries for optimum sustainable yield (OSY), a philosophy that required that fisheries be managed to allow sufficient recruitment of fish to the adult (brood-stock) population on a sustained basis while optimizing societal benefits from the fisheries.

In August 2011, the Commission provided additional policy guidance for white sturgeon management by adopting the Lower Columbia River and Oregon Coast White Sturgeon Conservation Plan. The plan sets long-term management goals for white sturgeon, including abundance levels for adults and sub-adults (which include legal-sized fish) that constitute a “healthy and harvestable population.” In order to rebuild the current 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.

In 2010, ODFW began regular fisheries-independent stock assessments using setlines. This gear allows us to monitor the abundance, growth and survival of many size classes of sturgeon (including adults and juveniles), improving monitoring of the lower Columbia River white sturgeon population. Prior to these stock assessments, abundance estimates relied on a fishery-dependent tag and recapture methodology. These assessments were the best available information in their time, but they only allowed the estimation of the legal-size class (38 – 54-inch fork length) white sturgeon, and were not available until a year after the fishery to which they applied.

These regular stock assessments showed a decline in 38 – 54 inch FL and juvenile (< 38 inch FL) sized white sturgeon. Exercising a precautionary approach, both states placed a moratorium on recreational and commercial white sturgeon harvest in 2014. The moratorium was applied in the Columbia River downstream of Bonneville Dam, in the lower Willamette River, along both coasts, and in associated bays and estuaries – including Tillamook Bay and Puget Sound. Catch and release sturgeon fishing continued to be 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. At the same time a dramatic (~90%) decrease in the number of angler trips was noted as recreational sturgeon fisheries shifted to catch-and-release only.

Following an increase in sub-adult and adult white sturgeon abundance, first noted in the 2016 stock assessments, limited retention fisheries, using an 80/20 recreational/commercial allocation split as per commission policy, were opened in the lower Columbia River in 2017 and 2018. Retention fisheries were not opened in other previously open locations, e.g., coastal estuaries and bays.

Public Involvement

- 9 February 2018—Informational briefing to the Oregon Fish and Wildlife Commission on 2017 Lower Columbia River white sturgeon population status
- 11 December 2018—Meeting with the Northwest Sportfishing Association in Clackamas, Oregon.
- 8 January 2019—Select Area Public Meeting in Astoria, Oregon

- 15 January 2019—Meeting with the Columbia River Commercial Fisheries Advisory Group in Rainier, Oregon
- 16 January 2019— Meeting with the Columbia River Recreational Fisheries Advisory Group in Ridgefield, Washington.

ISSUE

UPDATE ON POPULATION STATUS OF WHITE STURGEON IN THE COLUMBIA RIVER DOWNSTREAM OF BONNEVILLE DAM

ANALYSIS

Indications of the status of white sturgeon in 2018 are mixed (Table 1). Positive indicators are reasonable abundance of legal-sized fish and adult (broodstock) fish firmly above conservation status. Cautionary signs include reduced relative abundance of juvenile and sub-legal sized fish, an extended period of low young-of-year (YOY) recruitment, as measured by catch per net (CPN), and a leveling out or downturn year-over-year in most metrics. Taken together these signs point to ongoing low productivity over the last several years, and indicate that the precautionary approach to fisheries management we have used over the last several years should continue.

TABLE 1—Dashboard of key status indicators for lower Columbia River White Sturgeon in 2018. Arrow color indicates status relative to Conservation Plan metrics; direction indicates current trend.

Metric	N	Interpretation	Brief Summary
Abundance Trends			
38" – 54" FL	162,182		Decrease of 19% from 2017, and 28% less than peak in 2016. However, increasing trend in CPUE setline tagging fisheries continues.
Adult (>65" FL)	2018: 6,108 3-yr avg.: 7,493		2018 3-yr adult abundance average is above conservation status level, but not at desired status (threshold = 9,250 adults); Trend has leveled-out.
Population Structure	~63% juvenile		Low relative abundance of juvenile and sub-legal sized fish indicates population productivity issues;
Recruitment Index (CPN)	LCR: 0.43 WR: 3.96		Mixed results. Return to CPNs of <1 after strong 2017 in LCR; but highest (by far) in LWR since monitoring began in 2010).
Fisheries	Estuary: 18,735 angler trips Total: 31,923 angler trips		Participation still down from pre-closure levels, but much higher (>7x) Catch-and-release only fisheries.

Abundance Trends

The estimated abundance of white sturgeon 38 – 54-inches fork length in 2018 was ~162,000 fish, representing 63% of the desired status. This estimated abundance represents a 19% decrease from the 2017 estimate and a 28% decrease from 2015 (Figure 1). Given the variability associated with the data, the precise increase in

abundance (peaking in 2016) is hard to measure, but multiple indicators, including catch per set (CPUE) in our setline stock assessments (Figure 2), supported the increasing trend. The 2018 data reaffirms our cautionary statements from previous years that the absolute magnitude of the increase in sub-adult abundance should be viewed cautiously and was likely never as high as the point estimate. When considered in a broader time scale the trend in sub-adult abundance has been, and continues to be, positive since 2012.

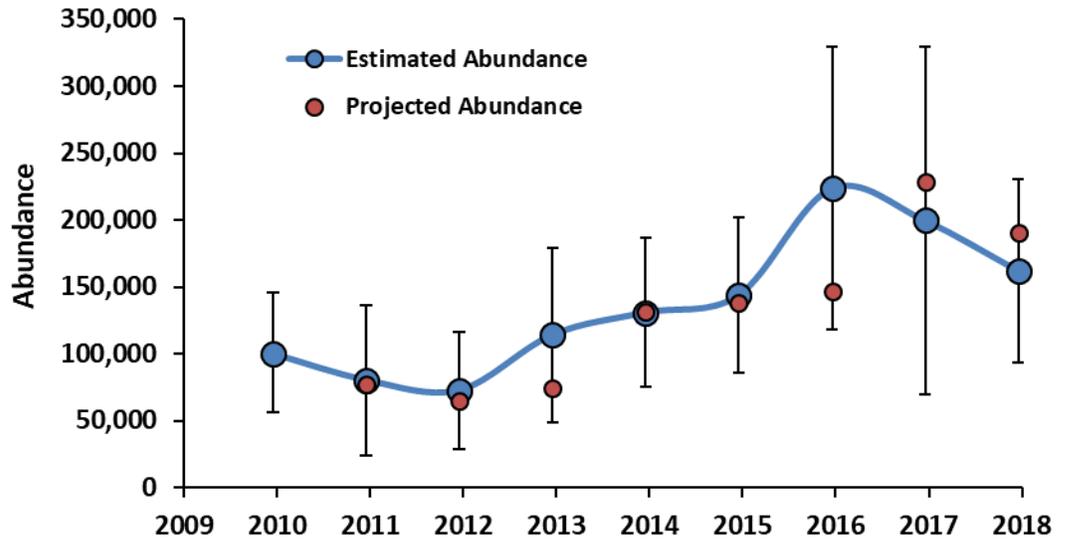


FIGURE 1—Estimated and projected abundance for 38''-54'' FL white sturgeon from the LCR, 2010-2018. Error bars represent 95% CI's for the estimated abundance.

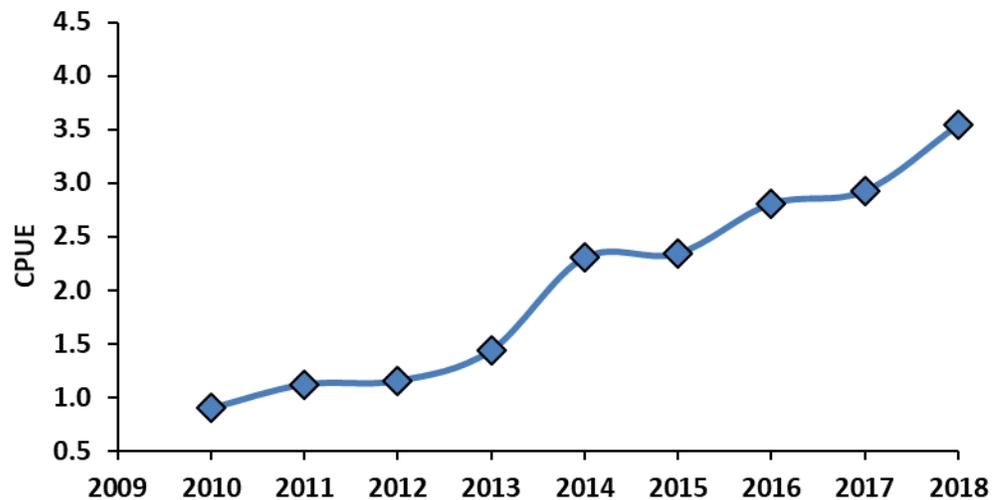


FIGURE 2—CPUE of 38''-54'' FL white sturgeon caught with setlines in the LCR, 2010-2018.

Based on current estimates, the abundance of adult white sturgeon remains below desired status of a three-year running average of 9,250 adult fish identified in the Lower Columbia River and Oregon Coast White Sturgeon Conservation Plan previously adopted by the Commission (hereafter, the Plan). Both the point estimate for 2018, about 6,100 fish, and the 2016 - 2018 running average of 7,493 fish are still below the desired status level (Figure 3). This increase in estimated adult abundance is also supported by catch effort information from our stock assessments in 2018, which had the second highest CPUE measured to date despite a year-over-year decline (Figure 4). It should also be noted that both the point estimate and the three-year average are above the conservation status threshold of 3,900.

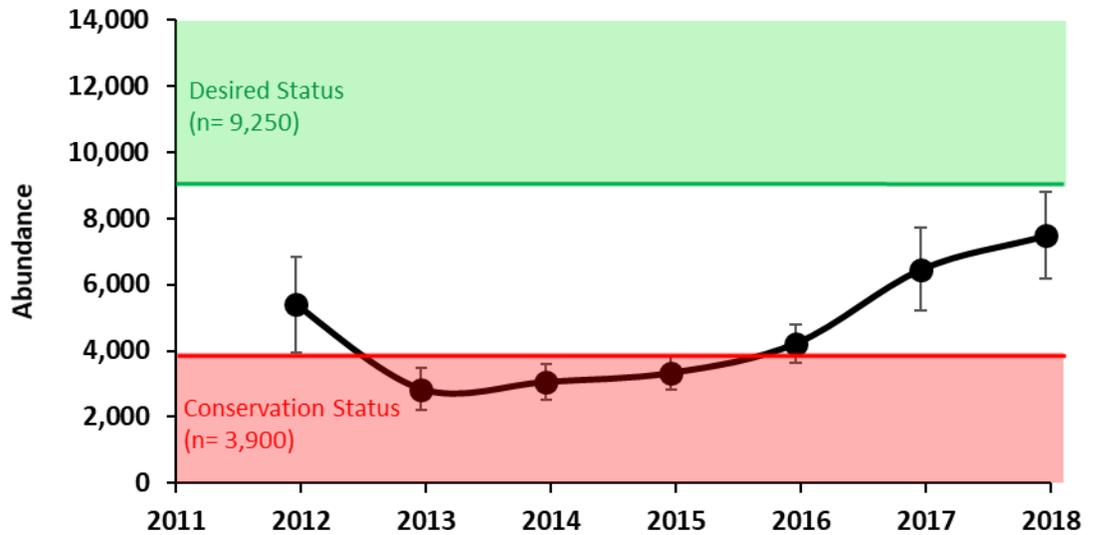


FIGURE 3—Three-year running average of estimated abundance for adult (≥ 65 " FL) white sturgeon from the LCR, 2012-2018. Fewer than 3 years of data were available for 2010 and 2011 so no averages were calculated. Error bars are ± 1 standard deviation from the mean abundance estimate.

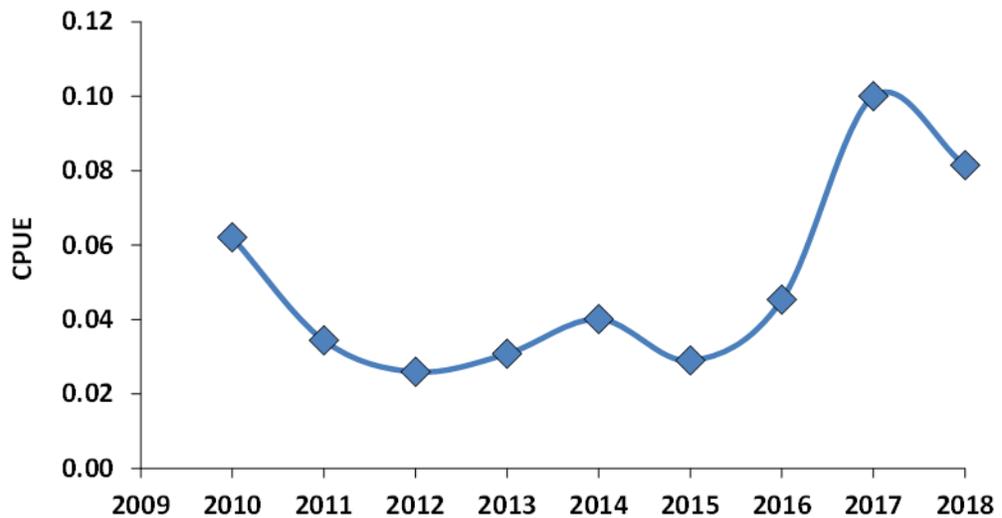


FIGURE 4—CPUE of adult (≥ 167 cm FL) white sturgeon caught with setlines in the CR, 2010-2018.

Recruitment

We have indexed the recruitment of young-of-year (YOY) white sturgeon in the lower Columbia River to assess annual spawning success and productivity since 2004. 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. A similar methodology has been employed jointly by ODFW, WDFW, and CRITFC upstream of Bonneville Dam since 1997.

Staff deploy small-mesh gillnets at standard index sites throughout the lower Columbia and Willamette rivers to capture YOY white sturgeon. The catch per net (CPN) and proportion of sets capturing at least one YOY (Ep) are used as indices to monitor trends in recruitment (Table 2). However, until enough paired years of recruitment index data and detailed stock assessment data are available, it is problematic to infer absolute levels of recruitment from these data. The conservation status threshold, based on a population viability analysis, is five years without measureable recruitment. In the Columbia River both CPN and Ep levels measured in 2018 returned to the levels measured in between 2010 and 2016 despite favorable flow conditions similar to 2017. It is clear that factors, in addition to flow, influence white sturgeon recruitment in the lower Columbia River. Observations of YOY recruitment in the Willamette River continued the recent upward trend posting by far its strongest recruitment year on record; the CPN (2018: 3.96) was more than double the previous high set in 2017 and Ep (2018: 0.83) was nearly double the previous high set in 2016. It should be noted that while these indices are useful to compare between years, values should not be compared between river systems, i.e., a higher CPN in the Willamette – as witnessed in 2018 – does not imply that higher absolute numbers of sturgeon were produced in the Willamette than the Columbia overall.

Table 2—CPN and proportion of positive sets (Ep) for YOY white sturgeon in the lower Columbia and Willamette rivers from 2004-2018.

Year	Lower Columbia R		Willamette R	
	CPN	Ep	CPN	Ep
2004	1.29	0.44		
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	0.25	0.22
2013 ¹	0.21	0.12	--	--
2014	0.56	0.31	1.38	0.38
2015	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
2018 ²	0.43	0.27	3.96	0.83

¹ Incomplete sampling year in both LCR and Willamette R.

² Preliminary assessments based on length frequency examinations.

Population Structure

The lower Columbia River white sturgeon population cannot be considered truly healthy unless abundance targets are met *and* it has a balanced, sustainable stock structure across life history stages. Large abundance estimates with a stock structure dominated by juveniles indicates successful recruitment is occurring regularly, assuring replacements for mortality at older life stages. The percentage of the population made up of juvenile fish in 2018 was ~63%. This is above the conservation status identified in the Plan (60%), but well below the desired status level (95%) and continues the recent trend (Figure 5). The reduced relative abundance of juvenile and sub-legal sized fish over time indicates ongoing productivity issues. We do not anticipate this trend changing in the immediate future; however, if future recruitment is more like that witnessed in pre-2009 or 2017, this trend may, with time, reverse itself.

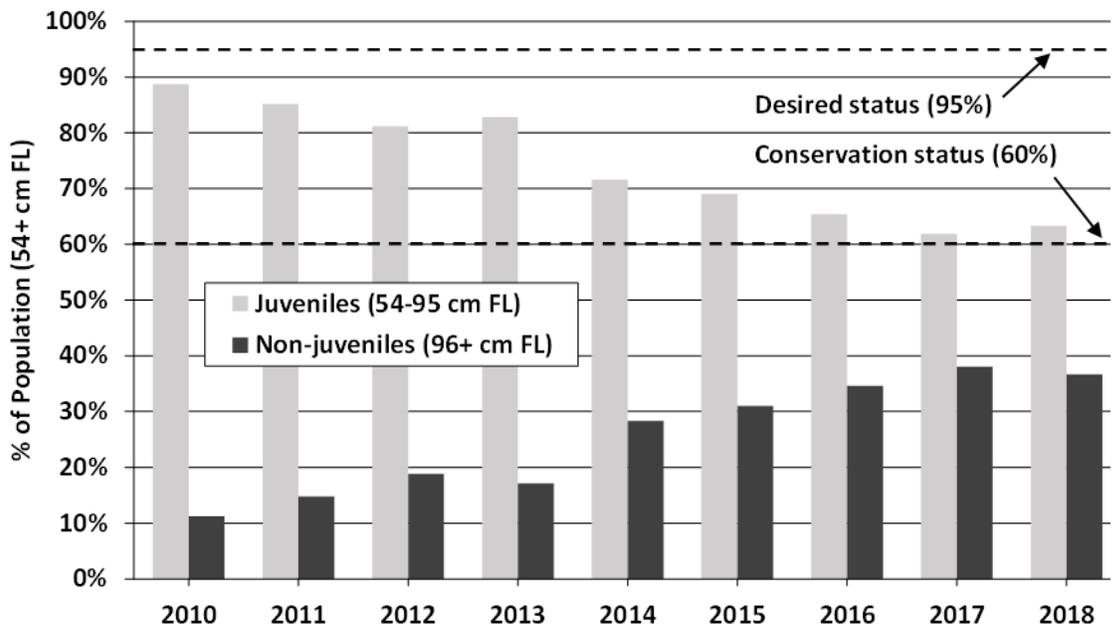


FIGURE 5—Annual proportion of juvenile and non-juvenile (sub-adults + adults) white sturgeon in the lower Columbia River, 2010-2018. Dashed, horizontal lines represent conservation status and desired status for juvenile white sturgeon.

Fisheries

Although sturgeon retention fisheries were closed in 2016, catch-and-release was still allowed and fisheries were monitored (Table 3). Angler participation in 2016 was similar to 2014-2015 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, participating anglers reported very high catch rates, and staff received many reports of high total catches during the season.

The states reinitiated limited retention fisheries for white sturgeon on the lower Columbia River in 2017 and provided similar fishing opportunities in 2018. Separate 2018 catch guidelines of 2,960 white sturgeon, 1,230 white sturgeon and 740 white sturgeon were adopted for the Columbia River Estuary, Columbia River main-stem above Wauna Powerlines (~RM 40), and lower Willamette River, respectively. Although no season was ultimately adopted for the lower Willamette River, angler participation was high in the Columbia River main-stem and estuary

fisheries. A narrower slot, 44 – 50-inches FL, than has traditionally been used was continued for the second year to dampen catch rates and lengthen the seasons. The estuary fishery was scheduled for ten days during mid-May through early June, and was ultimately extended for an eleventh day with an estimated catch of 2,412 white sturgeon from 18,294 angler trips (Table 4). The main-stem fishery was scheduled for two Saturdays during September and produced a catch of 1,049 white sturgeon from 11,031 trips.

TABLE 3—Number of angler trips for the lower Columbia River, 2013 - 2018. Estuary trips are tallied for the May-July timeframe when the vast majority of estuary sturgeon fishing trips occur.

Year	Total		May - July Estuary	
	Trips(N)	% Change	Trips(N)	% Change
2009-2013 AVG	69,553		29,955	
2014	3,120	-95%	1,620	-95%
2015	3,004	-96%	954	-97%
2016	4,372	-94%	2,380	-92%
2017	27,550	-60%	15,546	-48%
2018 ¹	31,923	-54%	18,735	-37%

¹ More than 7-fold increase between 2016 and 2018 with addition of 13 retention fishing days

TABLE 4—White sturgeon recreational catch and catch guidelines by area, 2009-2013 average and 2014-2018.

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

Along with recreational retention, commercial harvest was also continued in 2018 with a guideline of 1,230 44 – 54-inch FL white sturgeon available. In off-channel and fall mainstem Zone 4/5 commercial fisheries, a combined 826 of the 1,230 commercial guideline was harvested.

Plans for 2019

Stock assessments in the lower Columbia River are scheduled to commence in mid-May 2019 and to be completed by the end of September 2019. Age-0 (i.e., YOY) recruitment surveys are scheduled to commence in late-October and to be completed by the first week of December.

Fisheries may occur in all three sub-areas (estuary, mainstem above Wauna, and the Willamette River), and if implemented, would include both recreational and commercial fishing, per policy from the commissions of both states.

OPTIONS

1. NA

STAFF

1. NA

RECOMMENDATION

DRAFT MOTION	NA
	NA
EFFECTIVE DATE	