

## 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 set-lines. 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. While past assessments were fairly robust, they only allowed the estimation of the legal-size class (38 – 54-inch fork length) white sturgeon.

Through these regular stock assessments a decline of legal-sized and sub-legal sized white sturgeon was observed. Exercising a precautionary approach, both states placed a moratorium on recreational and commercial white sturgeon harvest in 2014. The moratorium was applied downstream of Bonneville Dam, the lower Willamette River, along both coasts, and in associated bays and estuaries. Catch and release sturgeon fishing continues to be allowed.

This closure had the immediate effect of escaping a substantial 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.

### Public Involvement

- 9 January 2017 - Meeting with the Columbia River Recreational Fisheries Advisory Group in Clackamas, OR
- 14 January 2017 – Meeting of Washington Fish and Wildlife Commission

### 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 2016 are mixed (Table 1). Positive indicators are increasing abundance of legal-sized fish and increased abundance of adult (broodstock) fish. Cautionary signs include reduced relative abundance of

juvenile and sub-legal sized fish and continued low young-of-year (YOY) recruitment. Taken together these signs point to ongoing low productivity over the last several years.

**Table 1:** Dashboard of key status indicators for lower Columbia River White Sturgeon in 2016.

Metric	N	Interpretation	Brief Summary
Abundance Trends			81,300 fish (57%) increase from 2015. Also, increasing trend in CPUE from gillnet & setline tagging fisheries.
Legal-sized (38" – 54" FL)	223,960		
Adult (>65" FL)	2016: 5,950 3-yr avg.: 4,230		Adult abundance metric is above Oregon Conservation Plan conservation status threshold (3-year average of 3,900 adults).
Population Structure	~65% juvenile		Continued low relative abundance of juvenile and sub-legal sized fish indicates productivity issues. Supported by CPUE trend in gillnet & setline tagging fisheries.
Recruitment Index	LCR: 0.13 WR: 0.48		Mixed – For the 7 <sup>th</sup> consecutive year LCR white sturgeon production remains low for the lower Columbia River, but is up in the Willamette River. This continues the recent trend.
Fisheries	Estuary: 2,380 (-86%) Total: 4,372 (-87%)		Participation still down substantially from retention fishery levels (2013) but up 46% total and 150% in estuary from 2015 levels.

**Abundance Trends**

The estimated abundance of legal-sized white sturgeon in 2016 was 223,960 fish, representing 87% of the desired status. This estimated abundance also represents a 56% increase from the 2015 estimate of 143,840 fish, and 71% increase from the 2014 estimate of 130,990 fish (Table 2). While substantially above modeled projections, an increase in abundance is supported by catch per set (CPUE) trend in gillnet and setline tagging fisheries. While the increasing trend is consistent with past years and likely accurate, the absolute magnitude should be viewed cautiously. This continues an expected and generally positive trend in legal abundance since 2010, when the legal population declined to a near 30-year low. The abundance trend of legal-sized fish is projected to stay positive in 2017.

Based on current estimates, the abundance of adult white sturgeon remains below desired status. The abundance estimate for 2016 is about 5,950 fish with a 2014 - 2016 running average of about 4,230 fish. This three-year running average is above the conservation status threshold of 3,900 adult fish identified in the Lower Columbia River and Oregon Coast White Sturgeon Conservation Plan (hereafter, the Plan) previously adopted by the Commission. However, it is still well below the desired

status threshold of 9,250 fish.

**Table 2.** Estimated and projected abundance of 38 – 54-inch fork length white sturgeon in the lower Columbia River, 2008-2017.

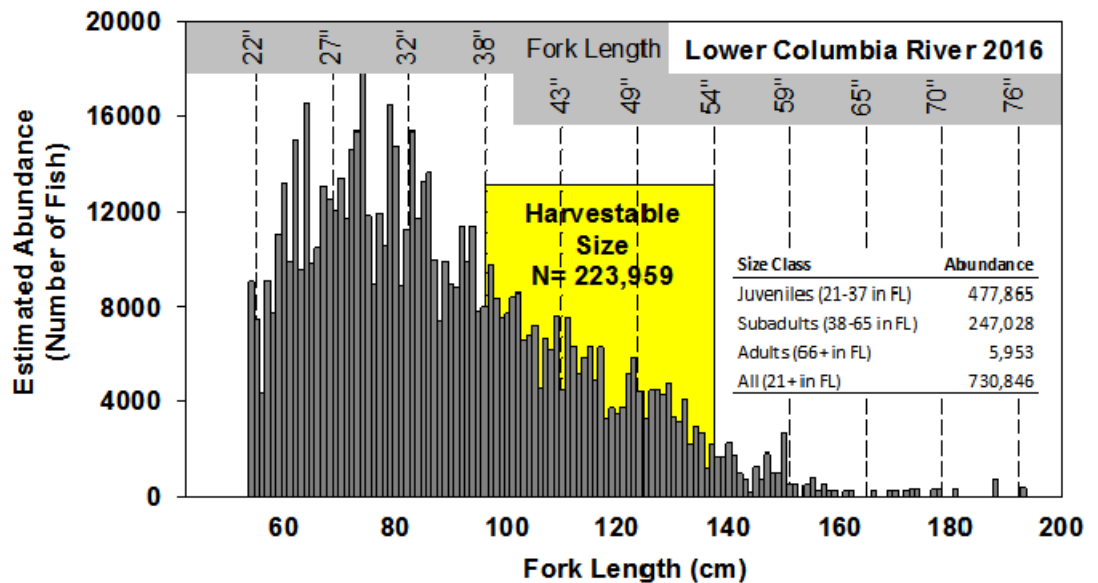
Year	Historic method estimate <sup>1</sup>	Setline method <sup>1</sup>		Harvest guideline
		Estimate	Projection	
2008	101,200	N/A	N/A	40,000
2009	95,000	N/A	N/A	40,000
2010	65,300	100,200	N/A	24,000
2011	72,800	80,500	77,000	17,000
2012	83,400	72,700	65,000	10,400
2013	--	114,200	74,300	10,105
2014	--	130,990	131,700	--
2015	--	143,840	138,200	--
2016	--	223,960	147,100	--
2017	--	--	237,900 <sup>2</sup>	--

<sup>1</sup> 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.

<sup>2</sup> Preliminary.

### Population Structure

The lower Columbia River white sturgeon population cannot be considered truly healthy unless abundance targets are met *and* have a balanced, sustainable stock structured 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 later life stages. The percentage of the population made up of juvenile fish in 2016 was ~65% (Figure 1). This is above the conservation status identified in the Plan (60%), but well below the desired status level (95%) and a decline from 2015 (69%). The reduced relative abundance of juvenile and sub-legal sized fish over time indicates ongoing productivity issues.



**Figure 1.** Distribution by 1 inch size intervals and abundance by life-stage of white

sturgeon captured in the lower Columbia River using research setlines in 2016.

### **Recruitment**

We have indexed the recruitment of 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. The CPUE of YOY sturgeon and proportion of sets capturing at least one YOY sturgeon (Ep) are used as indices to monitor trends in recruitment (Table 3). 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. The Ep level measured in 2016, though still above the conservation level, was the second poorest year ever observed for YOY recruitment in the lower Columbia River. Conversely, YOY recruitment in the Willamette River continued a recent upward trend posting its strongest recruitment year on record. However, there have not been enough years of paired sampling to determine what is driving the diverging trends in YOY recruitment in the lower Columbia River compared to the Willamette River.

**Table 3.** CPUE and proportion of positive sets (Ep) for YOY white sturgeon in the lower Columbia and Willamette rivers from 2004-2016.

Year	Lower Columbia R		Willamette R	
	CPUE	Ep	CPUE	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	0.50	0.28
2011	0.58	0.34	0.06	0.06
2012	0.77	0.35	0.75	0.25
2013 <sup>1</sup>	0.21	0.12	--	--
2014	0.56	0.31	1.38	0.38
2015	0.06	0.05	0.58	0.26
2016 <sup>2</sup>	0.20	0.13	0.75	0.48

<sup>1</sup> *Incomplete sampling year in both LCR and Willamette R.*

<sup>2</sup> *Preliminary assessments based on length frequency examinations.*

### **Fisheries**

Although sturgeon retention fisheries were closed in 2016, catch-and-release was still allowed and fisheries were monitored (Table 4). Angler participation in 2016 was similar to 2014-2015 and down by 87% river-wide and 86% in the estuary when compared to the last year of allowed retention (2013). Despite the reduced effort, participating anglers reported very high catch rates, and staff received many reports of high total catches during the season.

**Table 4.** Number of angler trips for the lower Columbia River, 2013 - 2016. Estuary trips are tallied for only 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
2013	33,094		16,569	
2014	3,120	-91%	1,620	-90%
2015	3,004	-91%	954	-94%
2016	4,372	-87%	2,380	-86%

**Plans for 2017**

Stock assessments in the lower Columbia River are scheduled to commence in mid-May 2017 and to be completed by the end of September 2017. Two complete set-line sampling passes, separated by approximately four weeks, will be made through the lower river. YOY recruitment surveys are scheduled to commence in late-October and to be completed by the first week of December.

**OPTIONS**

1. NA

**STAFF**

1. NA

**RECOMMENDATION**

DRAFT MOTION	NA
	NA
EFFECTIVE DATE	