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 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 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). Central to these accords and their management strategy was the management of the fisheries in a way that would allow sufficient numbers of fish to escape to 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 always 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 (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 to that maximum exploitation.

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 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 lower Columbia River white sturgeon population segment.

The stock assessments showed a decline in abundance of adult (≥ 66 inch 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 fishing 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. At the same time, a dramatic (~90%) decrease in the number of angler trips was noted as recreational sturgeon fisheries were limited to catch-and-release only.

We first noted an increase in sub-adult and adult white sturgeon abundance in the 2016 stock assessments. Starting 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. Retention fisheries have not been opened in other previously open locations, e.g., coastal estuaries and bays, that lacked formal sub-allocations. In 2020, Oregon fisheries managers experimented with ways to provide limited retention opportunities in the Willamette River using its small sub-allocation.

PUBLIC INVOLVEMENT

- February 6, 2020 — Informational briefing to the Oregon Fish and Wildlife Commission on 2019 Lower Columbia River white sturgeon population status
- December 16, 2020 — Virtual meeting with the Northwest Sportfishing Industry Association
- January 13, 2021 — Virtual meeting with the Columbia River Commercial Fisheries Advisory Group
- January 13, 2021 — Virtual meeting with the Columbia River Recreational Fisheries Advisory Group in Ridgefield, Washington
- January 14, 2021 — Select Area Virtual Public Meeting

ISSUE 1

Update on population status of White Sturgeon in the Columbia River downstream of Bonneville Dam.

ANALYSIS

This past year, COVID-19 pandemic related sampling restrictions and fisheries constraints resulted in greater variability in our abundance estimates than desired and less fishery opportunity than expected. With those caveats, existing white sturgeon status indicators in 2020 remain mixed (Table 1). The estimated abundance of white sturgeon in 2020 greater than 21 inch FL (the size at which white sturgeon recruit to our setline gear) was approximately 588,000, and adult abundance continues the positive trend from previous years; however, the proportion of juvenile fish (< 38 inch FL) in the total population is

currently below the conservation status threshold. Although funding constraints have limited our ability to sample age-0 white sturgeon, there had been an extended period of low young-of-year white sturgeon recruitment in preceding years. Given the variability associated with the 2020 estimates and 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 2020 estimated abundance of white sturgeon in the 38 – 54 inch FL was nearly 200,000 fish, a 19% increase from the 2019 estimate. However, due to the previously mentioned COVID related sampling difficulties, the variability surrounding this estimate is quite large and the confidence intervals are the widest to date (Figure 1). Additionally, other indicators, such as the catch per set (CPUE) in our setline stock assessments are mixed (Figure 2), warranting caution when interpreting this year's abundance estimates. The data from our stock assessments continues to affirm our qualifying statements and measured management approach from previous years. Fisheries managers should continue to view the magnitude of increases or decreases cautiously; however, when considered in a broader time scale, the trend in sub-adult abundance has generally been positive since 2012.

TABLE 1 — Dashboard of key status indicators for lower Columbia River White Sturgeon in 2020. Color indicates status relative to Conservation Plan metrics.

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)	N/A		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.

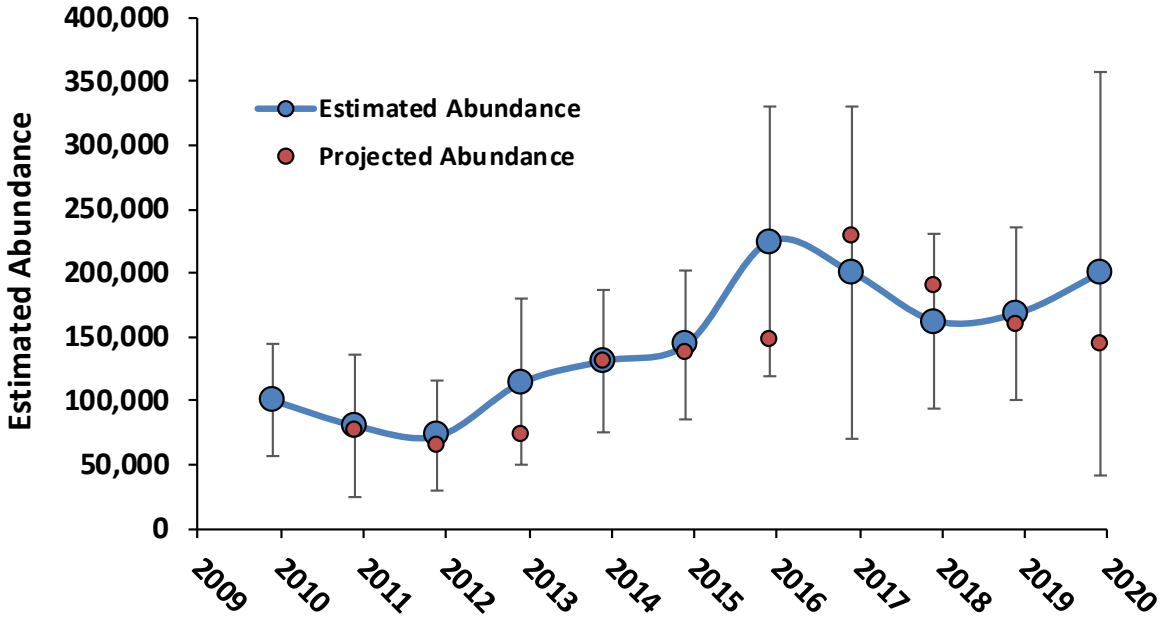

FIGURE 1 — Estimated and projected abundance for 38" - 54" FL white sturgeon from the lower Columbia River, 2010 - 2020. Error bars represent 95% confidence intervals for the estimated abundance.

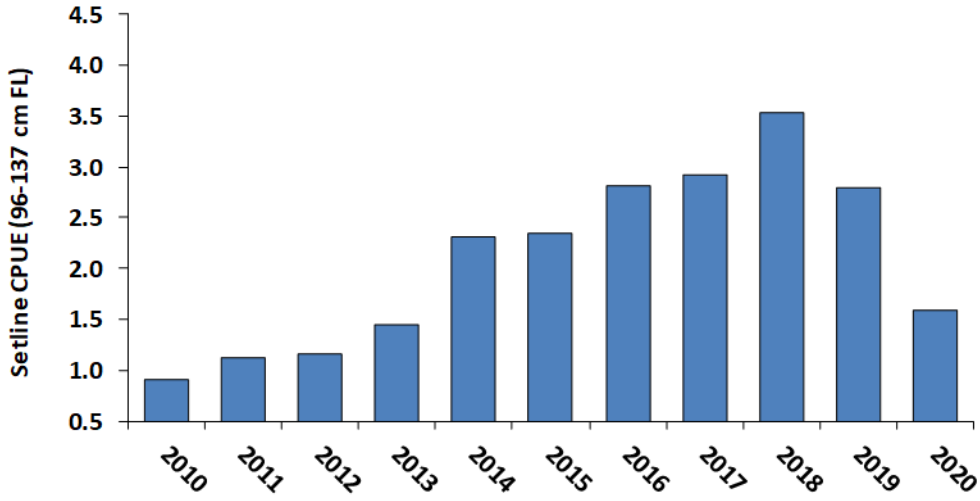

FIGURE 2 — CPUE of 38" - 54" FL white sturgeon caught with setlines in the lower Columbia River, 2010 - 2020.

Adult Metrics—The abundance of adult white sturgeon continues to be above the desired status, i.e., a three-year running average of 9,250 adult fish, identified in the Plan previously adopted by the Commission. Both the point estimate for 2020, about 14,500 fish, and the 2018 – 2020 three-year running average of 10,844 fish are above the desired status level (Figure 3). Although the variability around this estimate is also large, the increasing trend in estimated adult abundance also continues to be supported by CPUE information from our stock assessments in 2020 (Figure 4).

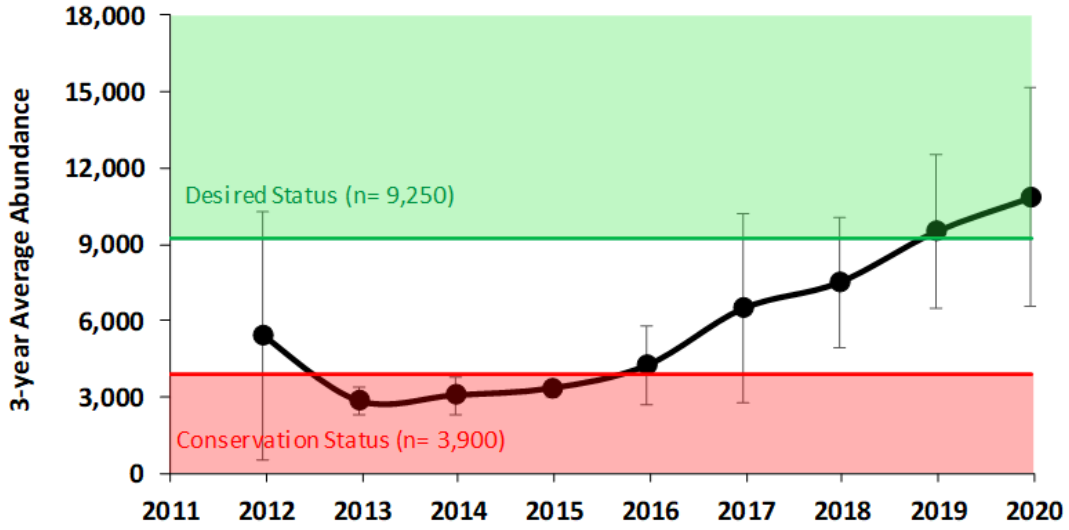

FIGURE 3 — Three-year running average of estimated abundance for adult (≥ 65" FL) white sturgeon from the lower Columbia River, 2012 - 2020. Fewer than three years of data were available for 2011 so no averages were calculated. Error bars are ± 1 standard deviation from the mean abundance estimate.

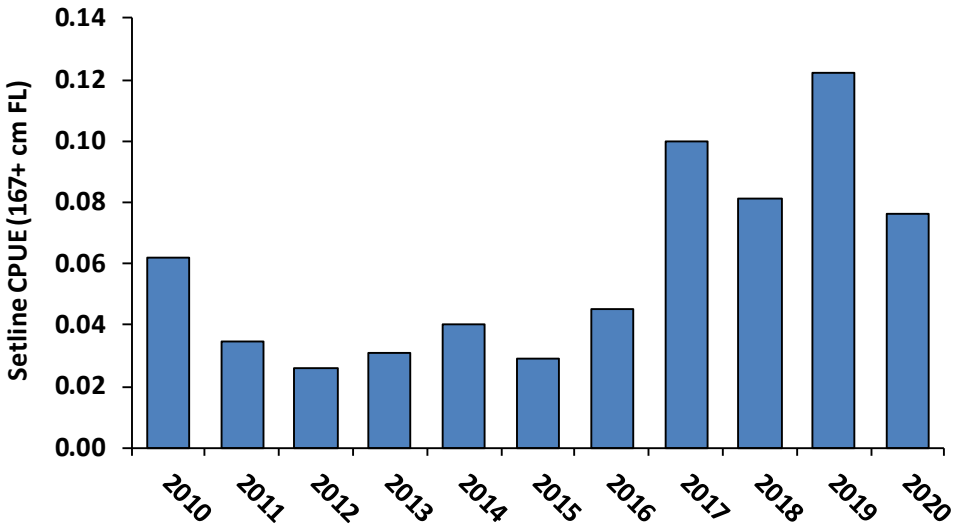

FIGURE 4 — CPUE of adult (≥167 cm FL) white sturgeon caught with setlines in the lower Columbia River, 2010 - 2020.

Productivity

Population Structure—A fully functioning lower Columbia River 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 2020 was ~53%. This is below the conservation status of 60% identified in the Plan, and well below the desired status level (95%) continuing a downward trend (Figure 5). Although the abundance of adult white sturgeon is in the desired status, 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.

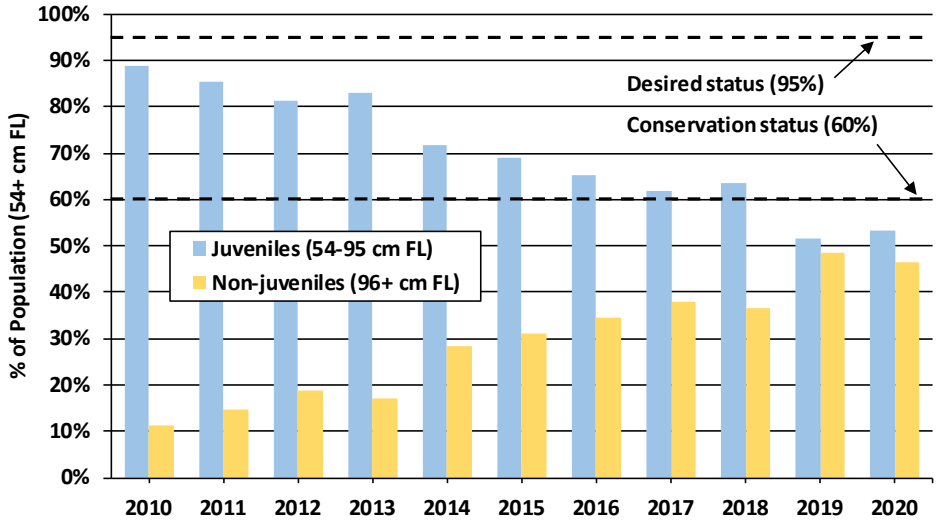

FIGURE 5 — Annual proportion of juvenile and non-juvenile (sub-adults + adults) white sturgeon in the lower Columbia River white sturgeon population segment, 2010-2020. Dashed, horizontal lines represent conservation status and desired status for juvenile white sturgeon.

Recruitment—Prior to 2020 we conducted annual surveys to index the recruitment of age-0 white sturgeon in the lower Columbia River to assess relative spawning success and productivity, and had done so since 2004 (Table 2). The metrics presented in Table 2 reflect the two methodologies we have used to characterize relative densities of age-0 sturgeon; these are not estimates of abundance, nor are Willamette and Columbia values directly comparable with each other. Rather, these metrics reflect relative differences, within river and method, by year, with higher numbers reflecting higher densities and therefore higher reproductive success. Sampling was conducted in the late fall and was 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.

Unfortunately, agency-wide shortfalls in Sportfish Restoration funding, combined with increasing personnel and operating costs, meant ODFW had to eliminate this important component of assessing lower Columbia River white sturgeon population health. We hope to restore this work in the future, but have not identified the funds necessary to do so yet.

Table 2 — Catch per net (CPN) and proportion of positive sets (Ep) for YOY white sturgeon in the lower Columbia and Willamette rivers from 2004 - 2020.

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]	--	--	--	--

[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 in 2014 – 2016, catch-and-release fishing was still allowed and 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 during the retention closure, participating anglers reported high catch rates, and staff received many 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 using a 44 to 50 inch FL slot limit, a slot limit narrower than had historically been used and intended to reduce catch rates and lengthen the season. Similar fishing opportunities were provided in 2018 and 2019, and were planned for 2020, prior to the pandemic. In anticipation of this, separate white sturgeon catch guidelines in the 44 to 50 inch FL slot of 2,750, 1,140, and 690 were adopted for the Columbia River Estuary, Columbia River mainstem above Wauna Powerlines (~RM 40), and lower Willamette River, respectively. Due to pandemic related issues, no seasons were ultimately adopted for the Columbia River Estuary area, and overall angler effort reflected this (Table 3). Angler participation in the Columbia River mainstem fisheries upstream of the estuary and in the Willamette, opened to retention for the first time since 2013, was relatively high with 11,267 angler trips in five open days in the Columbia and 5,091 angler trips in two open days in the Willamette. 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, 2013 - 2020. 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	31,923	-54%	18,735	-37%
2019	37,703	-46%	22,012	-27%
2020	12,099	-83%	832	-97%

Table 4 — White sturgeon recreational catch and catch guidelines by area, 2009-2013 average and 2014-2020.

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

[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 2014-2020.

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

[1] Willamette River harvest guidelines were first introduced in 2010

Commercial Fisheries—Along with recreational retention, commercial harvest of white sturgeon (44 to 50 inch FL) was also reinstated in 2017, and continued in 2020 with 20% of the overall allocation which resulted in a 1,140 fish guideline. The combined off-channel and mainstem commercial fisheries harvested a combined 1,114 of the 1,140 (98%) of the fish available in the commercial guideline (Table 6). Commercial harvest was fairly evenly split between off-channel and mainstem fisheries; mainstem fisheries at this time have been restricted to 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 2014-2020.

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[1]	567	51%	547	49%	1,114	1,140

Plans for 2021

Stock assessments in the lower Columbia River are scheduled to commence in mid-May 2021 and to be completed by the end of September 2021. Fisheries managers plan to continue to employ a conservative approach to fisheries which balances 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