Columbia River Recreational Advisor Group Meeting

February 11, 2020
4:00p-6:00p
ODFW
17330 SE Evelyn Street
Clackamas, OR 97015

Prepared by: Columbia River Joint Staff

Columbia River Recreational Advisor Group Meeting
Oregon Department of Fish and Wildlife
17330 SE Evelyn St, Clackamas, OR
4:00 p.m. – 6:00 p.m. February 11, 2020

AGENDA

Columbia River Recreational Advisor Group (CRRAG) Meeting	
• Welcome and Introductions o Advisor Group members and Agency staff	(5 minutes)
• Spring Chinook Management o 2019 returns and 2020 forecasts o Summary of management guidelines o 2020 preseason management guidelines o CKL (handout) o 2019 fisheries review (for reference) o Spring Chinook run timing review (handout)	(60 minutes)
• Summer Chinook Management o 2019 fisheries o 2020 preliminary outlook o Upper CR summer Chinook spawning escapement (handout)	(30 minutes)
• Future Meetings o February 19 –Compact/Joint State Hearing (recreational spring Chinook, treaty winter gillnet) o March 17 – Columbia River North of Falcon public meeting o April 1 – Columbia River North of Falcon public meeting	(5 minutes)
• General discussion	(20 minutes)

Columbia River Adult Salmon Returns: Actual and Forecasted				
		2019	**2019**	**2020**
		Forecast	**Return**	**Forecast**
Spring Chinook	**Upriver Total ***	**99,300**	**73,101**	**81,700**
	Upper Columbia	11,200	14,651	13,600
	Upper Columbia natural-origin	*2,100*	*1,668*	*2,300*
	Snake River Spring/Summer **	48,100	43,077	56,400
	Snake River natural-origin **	*8,200*	*7,480*	*9,600*
	Lower River Total	**58,200**	**36,707**	**54,100**
	Total Spring Chinook	**157,500**	**109,808**	**135,800**
	Area-specific detail			
	Willamette River	40,200	27,292	40,800
	Sandy River	5,500	3,260	5,200
	Select Areas***	8,200	2,548	4,300
	Cowlitz River	1,300	1,563	1,400
	Kalama River	1,400	997	1,000
	Lewis River	1,600	1,047	1,400
	Wind River***	2,800	1,598	2,000
	Drano Lake/Little White Salmon River***	5,600	3,571	4,600
	Hood River***	2,300	1,207	2,300
	Klickitat River***	1,100	404	1,800
	Deschutes River***	1,455	863	--
	John Day River***	--	2,170	2,800
	Umatilla River***	2,400	522	900
	Yakima River***	3,000	1,756	2,800
Summer Chinook	**Upper Columbia**	**36,340**	**34,619**	**38,300**
Sockeye	**Total Sockeye**	**94,400**	**63,222**	**246,300**
	Wenatchee	18,300	7,900	39,400
	Okanogan	74,500	54,300	201,800
	Yakima	1,300	600	2,500
	Deschutes	100	200	300
	Snake River	200	342	2,300
Winter Steelhead	**Wild**	**14,400**	**9,440**	**10,100**

* Upriver totals are developed by TAC for use in management of *U.S. v. OR* fisheries. Wild components are included in the stock total. Area-specific estimates for upriver tributaries detailed here are provided by other agencies/entities and may not sum to TAC's upriver abundance estimates.

** 2019 return is based on standard TAC run reconstruction methodology.

*** Return to tributary mouth.

2/3/2020

Spring Chinook

Spring Chinook Management Guidelines

Upriver Chinook Stocks

- The 2018-2027 *U.S. v Oregon* Management Agreement (MA) provides the treaty Indian and non-treaty fishery harvest frameworks and harvest rate schedules for salmon and steelhead stocks destined for areas upstream of Bonneville Dam.
- Fisheries are also managed to meet the catch balance provision in the MA for upriver spring Chinook which requires mortalities in non-treaty fisheries not exceed the total allowable catch available for treaty Indian fisheries. The following table is derived from the harvest schedule within the MA and reflects the allowable catch and associated ESA impacts for treaty Indian and non-treaty fisheries.

Spring Management Period Harvest Rate Schedule

Total Upriver Run Size	Snake River Natural Run Size	Treaty Indian Harvest Rate	Treaty Indian Catch Guideline	Non-Treaty Harvest Rate	Non-Treaty Mortality Guideline	Total Harvest Rate
44,000	4,400	6.0%	2,640	1.0%	2,640	7.0%
55,000	5,500	7.0%	3,850	1.5%	3,850	8.5%
82,000	8,200	7.4%	6,068	1.6%	6,068	9.0%
109,000	10,900	8.3%	9,047	1.7%	9,047	10.0%
141,000	14,100	9.1%	12,831	1.9%	12,831	11.0%
217,000	21,700	10.0%	21,700	2.0%	21,700	12.0%
271,000	27,100	10.8%	29,268	2.2%	29,268	13.0%
326,000	32,600	11.7%	38,142	2.3%	38,142	14.0%
380,000	38,000	12.5%	47,500	2.5%	47,500	15.0%
434,000	43,400	13.4%	58,156	2.6%	58,156	16.0%
488,000	48,800	14.3%	69,784	2.7%	69,784	17.0%

- The MA also specifies non-treaty and treaty fisheries occurring prior to a run size update be managed for a run size that is at least 30% less than the predicted upriver spring Chinook run size. Buffering the 2020 preseason forecast of 81,700 fish results in an abundance of 57,190 fish for determining pre-update allocations.

Lower Columbia Chinook Stocks (spring run)

- ESA authorization for fisheries impacting listed lower Columbia River Chinook requires specific hatchery escapement goals be met.
- From NMFS Guidance letter to the Pacific Fishery Management Council in 2019: "The Cowlitz Salmon Hatchery and Lewis River Salmon Hatchery are being used … for reintroduction of LCR spring-run Chinook salmon into the upper basins above the existing dams. The hatchery programs are critical to the overall recovery effort. Given the circumstances, maintaining the hatchery brood stocks for the Cowlitz and Lewis River Hatcheries is essential for implementation of specified recovery actions."
- The 2020 forecasts for the Cowlitz and Lewis rivers both are less than needed to meet the hatchery rack return escapement goals of total adults.
- Mainstem fisheries harvesting Cowlitz and Lewis spring Chinook would reduce the expected returns to the tributaries.

Willamette Spring Chinook

- The Willamette River Fisheries Management Evaluation Plan (FMEP) limits freshwater fishery impacts on wild Willamette River spring Chinook to ≤15%.
- The Willamette River FMEP includes a sliding scale for escapement goals based on abundance of hatchery fish which determines the allocation of surplus hatchery spring Chinook to recreational and commercial fisheries downstream of Willamette Falls. The escapement goals are also intended to allow for full recreational fisheries in the upper Willamette River.
- The forecasted hatchery fish surplus is 10,000 fish and is not expected to be a fishery constraint.

2020 Mainstem Recreational - preseason management guidelines

- Based on the MA and the preseason forecast of 81,700 upriver spring Chinook, ESA impacts for 2020 fisheries are limited to 8.5%, with 1.5% for non-treaty fisheries and 7.0% for treaty Indian fisheries.
- To allow for uncertainty in the preseason forecast, the MA requires a 30% reduction from the forecast (i.e. a run-size buffer) to start the season, which equates to 57,190 upriver spring Chinook. At this run size, the MA allows for a non-treaty ESA limit of 1.5%, or an allowable harvest (kept plus release mortalities) of 4,003 fish prior to a run size update, of which 3,747 are allocated to recreational fisheries (assuming an 80% recreational share of non-treaty impacts).
- The 2020 allocation policies differ between OR and WA, have not yet been finalized through the Director delegation conversations, and are subject to change. All modeling in this document assumes sharing as occurred in 2017-2019 (80% sport and 20% commercial). Staff will modify the modeling results described below and adjust the staff recommendation if necessary for the Joint State Hearing on February 19, 2020.
- Hook regulations (barb vs barbless) are also currently non-concurrent between the two states. On-going Director delegation is expected to address the concurrency issue so that appropriate action may be taken at the upcoming Joint State Hearing for spring seasons.

2020 Spring Chinook Preseason Management Guidelines			
	2019 postseason	**2020 preseason**	**Difference**
Upriver CHS abundance (adults)	73,101	81,700	+8,599
ESA impact rate	1.50%	1.50%	0
Willamette CHS abundance (adults)	27,292	40,800	+13,508

Commission Guidance (ESA impact allocation)	**2019**	**2020**	**Difference**
Sport allocation*	80%	80%	0
Commercial allocation	20%	20%	0
***U.S. v OR* Catch Balance**	**2019 preseason**	**2020 preseason**	
30% Buffered Run	69,510	57,190	-12,320
ESA Impact rate	1.50%	1.50%	0
Catch Balance Available Pre-update	**4,866**	**4,003**	**-863**

Sport Fisheries (LCR, Z6, Snake)	4,548	3,747	-801
Lower Columbia (below Bonneville)	3,689	2,947	-742
Bonneville to OR/WA border	492	393	-99
Snake River (WA waters)	357	407	+50
Commercial Mainstem	TBD	TBD	
Commercial Select Area	≤318	≤245	-73

**Assumes recent Commission guidance which further sub-divides the sport impact allocation 75% to fisheries <Bonneville, 10% to fisheries between Bonn-OR/WA border, and 15% to Snake River sport and Wanapum tribal fisheries.*

2020 LCR Spring recreational season - preliminary considerations

- Weekly mainstem test fishing is expected to begin March 16 (8 days total, March 16-May 4).
  - Provides stock composition, catch rates and bycatch information, and continues long-term data set; test fishing is helpful in setting potential future commercial fisheries.
  - Hatchery fish are sold at fair market value to off-set test fishing operational costs.
  - All information can be found at: https://wdfw.wa.gov/fishing/commercial/columbia-river-test.
- A total of 2,947 total upriver spring Chinook mortalities are available prior to an inseason run update (assuming an 80% recreational share of non-treaty impacts).
- Lower Columbia Chinook are a management concern this year. Both the Cowlitz and Lewis returns are forecasted to be below the escapement goals.
- Any harvest of these stocks in the mainstem or tributaries will further reduce returns to the lower river hatcheries, and therefore not be in compliance with NMFS guidance.
- See supplemental tributary handout regarding expected returns and broodstock needs.
- Recent conversations with NMFS staff confirmed that fisheries must be managed to address the issue of LCR Chinook hatchery escapement.
- Given this situation, staff did not model out multiple season scenarios for 2020.
- Based on an analysis of the 2019 fishery results, assuming better water conditions in March and April than occurred last year, adjusting for expected difference in abundance, and assuming a seven-day per week fishery, staff will likely recommend the fishery close after April 10.
- Staff estimates this season structure could result in 3,026 fish handled (2,536 kept), including 2,220 upriver CHS mortalities (75% of assumed pre-update guideline). Adding the weekend of April 11-12 is expected to add 738 upriver morts (an additional 25% of guideline).
- As always, actual fishery results will be monitored in-season and recommended adjustments to the season will be made as necessary.

2020 BON-S/L Spring recreational season - preliminary considerations

- Assuming an 80% recreational share of non-treaty impacts manage for 393 total mortalities pre run update (492 in 2019).

- Run update typically not available until early/mid-May, but wasn't possible until late May the past three years.
- 2019 fishery was open April 1 through May 5, and a re-opener from May 11-12.
- Permanent regulations allow steelhead open through March 31, and closed thereafter except when spring Chinook is open. Scenario #3 or #4 would result in a multi-week block where steelhead fishing would be closed.

Season scenarios for the BON-S/L (Zone 6) recreational spring Chinook fishery, 2020

Scenario	Dates	Total Days	May Weekend days	Kept	Morts	% of Catch Balance
1	Mar 16 - May 5	51	2	341	349	89%
2	April 1-May 5	35	2	340	348	89%
3*	April 16-May 5	20	2	326	334	85%
4**	May 1-8	8	2	341	350	89%

** Assumed 95% of catch occurs in last half of April.*

*** Assumed 15% in May due to condensed fishery/effort and anticipated LCR effort shift.*

2020 Snake River Spring recreational season preliminary considerations

- Assuming an 80% recreational share of non-treaty impacts, manage for 407 total mortalities pre run update (357 in 2019). This total mortality allocation is dependent on the forecasted mark rate; the actual allocation will change if the observed fishery mark rate differs from forecasted.
- Snake River fishery managers to determine season.
- Fishery typically opens in late April on a days-per-week basis in up to four areas.

2019 Mainstem Recreational Season

Downstream from Bonneville Dam

Season: Permanent regulations were in effect January 1 through February 28 which allow Chinook retention from Buoy 10 to the I-5 Bridge. On February 20, the states adopted a March 1–April 10 season for the lower Columbia River between the Warrior Rock line and Beacon Rock, plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam, and closed the Columbia River from Buoy 10 upstream to the Warrior Rock line to all salmon, steelhead and shad angling effective March 1. The Warrior Rock line, defined as a line from the Warrior Rock light through red buoy #4 to a dolphin at the lower end of Bachelor Island, is located just upstream from the mouth of the Lewis River in Washington. The two-fish daily bag limit was modified to one adult spring Chinook between the Warrior Rock line and Bonneville Dam effective March 1.

Water temperatures were less than 40°F until March 21 making for challenging fishing conditions for much of the month. Spring Chinook catches remained very low until the last few days of the month. Angling for spring Chinook improved during April 1-7, with boat anglers averaging about one fish per every three boats during that period. Catch rates were highest in the area from just

upstream of the Warrior Rock line at the lower end of Bachelor Island upstream to Davis Bar. The weather during the first week of April was cool and wet and some of the lower river tributaries became high and muddy as a result. In addition, heavy rains and high freezing levels on the east side of the state produced early snowmelt and heavy runoff, and the Columbia started rising at Bonneville Dam by April 7. Given catches to date and expected river conditions, the states projected the fishery would be just over 45% of the upriver spring Chinook mortality guideline by April 10. As a result of the rising river and increasing turbidity, catch rates dropped to about one fish per every five boats during April 8-10, and the overall catch remained below expectations. On April 10, the states met and adopted a two-day fishery extension for the coming weekend, April 13 and April 14. Angling conditions were poor during April 13-14, as the Columbia crested just under flood stage at Vancouver with two feet of visibility and lots of debris. Effort was light and anglers caught 25 adult spring Chinook over the two-day fishery, which brought the cumulative catch to 1,551 adult spring Chinook kept and 1,366 upriver mortalities, or 37% of the guideline. The states met two more times during the month of April to consider this fishery and ultimately adopted additional extensions for the final two weekends of April. River conditions remained quite challenging for these extensions and catches were poor as a result. The final catch during April was 1,356 adult Chinook kept and 240 released from 19,961 angler trips, and the cumulative upriver impact was 1,471 mortalities, or 40% of the guideline. Given the low passage at Bonneville Dam, the states chose not to consider any additional fishing time for the recreational fishery below Bonneville Dam until after the run size update.

Chinook passage at Bonneville Dam increased markedly during early May, but the cumulative passage was below expectations. On May 20, TAC provided the first in-season upriver run size expectation of 75,000 adults, which created a significant balance of upriver spring Chinook impacts on the guideline for the recreational fishery below Bonneville Dam; however, returns of adult spring Chinook to Carson, Leavenworth, and Clearwater hatcheries were very low and appeared unlikely to meet escapement goals. As a result, the states did not consider any additional time for the recreational fishery below Bonneville Dam.

Harvest/Angler Effort: The approximately 39,400 angler trips in 2019 was 38% of the recent 5-year average and produced a total catch of 2,157 adult spring Chinook (1,677 kept and 480 released) and 766 steelhead (594 kept and 172 released). The kept catch rate averaged one adult spring Chinook kept for every 23 angler trips.

Bonneville Dam upstream to Oregon/Washington Border

Season: The 2019 fishery opened under mark-selective regulations on April 1 and was initially scheduled to continue through May 5 with a daily bag limit of two fish/one Chinook. A total of 492 upriver spring Chinook (kept + release mortalities) were allocated prior to a run size update. The fishery was tracking behind expectations in early May due to the late timing of passage at Bonneville Dam, low overall abundance, and poor water conditions. Given the low harvest in this fishery, the states added one weekend of retention (May 11-12) in-season.

Harvest/Angler Effort: The season total catch estimate for adult spring Chinook in the area from Bonneville Dam upstream to the Oregon/Washington border was 279 kept and 83 released from

approximately 2,500 angler trips, resulting in one Chinook kept for every nine angler trips. The estimated kept catch was 17% of the recent 5-year average.

Snake River upstream to Washington/Idaho Border

Season: The fishery was initially open in two sections of the Snake River in Washington waters. Each section was open two days per week with an initial adult daily limit of one hatchery Chinook. In 2019, prior to a run size update, 357 Chinook mortalities (kept plus release mortalities) were set aside for this fishery. On May 11 the area downstream of Little Goose Dam and the area near Clarkston, Washington opened to hatchery Chinook retention. On May 18, WDFW closed fishing at Clarkston because of low returns of fish headed to the Clearwater River in Idaho and closure of seasons in the Clearwater basin. Fishing at Little Goose continued for the next weekend period and one additional day on May 27. Fisheries were closed as harvest levels of natural origin fish were being approached.

Harvest/Angler Effort: Season total catch estimates for adult Chinook included 326 kept and 49 released fish. The kept catch represents 30% of the recent 5-year average.

POST Season ALLOWED Catch Balance for Adult Upriver Spring Chinook in Non-Treaty Fisheries[1,2]						
	2014	**2015**	**2016**	**2017**	**2018**	**2019**
Mainstem salmon Winter/Spring	4,547	5,942	3,046	0	0	0
SAFE Commercial Winter/Spring	364	433	282	≤347	391	219
Commercial Total	4,911	6,375	3,328	347	391	
Lower Columbia Rec (below Bonn)	15,682	19,316	10,792	6,334	7,264	3,899
Bonneville to McNary Rec	2,091	2,615	1,439	845	968	520
Snake River Sport/Wanapum Tribal	1,574	2,904	1,533	582	928	479
Recreational Total	19,347	24,835	13,764	7,761	9,160	4,898
Total allowed	**24,258**	**31,210**	**17,091**	**8,108**	**9,550**	**5,117**

POST Season ACTUAL Catch Balance for Adult Upriver Spring Chinook in Non-Treaty Fisheries[1,2]						
	2014	**2015**	**2016**	**2017**	**2018**	**2019**
Mainstem salmon Winter/Spring	3,364	5,724	2,954	0	0	0
SAF Commercial Winter/Spring	257	804	331	463	311	203
Commercial Total	**3,621**	**6,528**	**3,285**	**463**	**311**	**203**
Lower Columbia Rec (below Bonn)	13,572	15,689	10,167	7,198	5,868	1,478
Bonneville to McNary Rec	2,231	1,696	1,480	18	623	288
Snake River Sport/Wanapum Tribal	1,546	1,996	1,397	101	773	342

Recreational Total	**17,349**	**19,381**	**13,043**	**7,316**	**7,263**	**2,108**
Total take	**20,970**	**25,909**	**16,328**	**7,779**	**7,574**	**2,311**

1. Includes Release mortalities

2. All data subject to change, recent year data preliminary

Summer Chinook

2019 Mainstem Recreational Season

Downstream from Bonneville Dam

Based on the low summer Chinook forecast and expected harvest in non-treaty PFMC ocean fisheries, there was insufficient harvestable surplus to allow any directed harvest in Columbia River non-treaty fisheries other than Colville and Wanapum tribal fisheries. A portion of the above Priest Rapids Dam allocation was redirected to fisheries downstream of Priest Rapids to cover catch and release mortalities of summer Chinook handled in summer steelhead fisheries during June and July. The states prohibited the retention of summer Chinook jacks in the recreational summer steelhead fishery for the first time since 1999. Sockeye retention was also prohibited in the recreational fishery based on the forecast for 94,000 fish.

During June 16–July 31, summer steelhead anglers made 19,756 trips and caught 4,329 summer steelhead (2,228 kept and 2,101 released) and released 492 adult summer Chinook, 64 summer Chinook jacks, and 159 sockeye.

Bonneville Dam upstream to Priest Rapids Dam

Summer season recreational Chinook fisheries were closed from Bonneville Dam upstream to Priest Rapids Dam due to the low run size. Harvest estimates total 6 adult summer Chinook release mortalities and <1 sockeye release mortality from 837 angler trips.

Upstream of Priest Rapids Dam

The recreational summer fishery upstream of Priest Rapids Dam was primarily mark selective for Chinook; catch estimates (including tributaries) includes 5,791 Chinook kept with 1,563 released from 13,353 angler trips; additionally, 1,236 sockeye were released (0 kept). This fishery was closed under permanent rule and opened in-season under temporary rule.

2020 Summer recreational season - preliminary considerations

- Guidance regarding allocation of ESA impacts for 2020 commercial and recreational fisheries, has not yet been finalized.
- Similar to 2019, the low forecast of 38,300 adult summer Chinook to the Columbia River mouth may not provide for any harvestable summer Chinook downstream of Priest Rapids Dam, given potential ocean harvest and obligations to upriver fisheries.
- The first run update is typically not available until around July 1.
- Discussions regarding 2020 summer Chinook will continue at the North of Falcon meetings. Ocean fishery regulations are set through the Pacific Fishery Management Council process.

2020 in-river upper Columbia summer Chinook scenarios								
			allowable NT harvest		<BON			
Ocean PFMC-area NT harvest	CR mouth runsize forecast	Abundance to calculate allowable harvest	Ocean + in-river	In-river	commercial	recreational	recreational BON-PRD	>PRD
2,000	38,300	40,300	5,650	3,650	73	248	44	3,285
3,000	38,300	41,300	6,150	3,150	63	214	38	2,835
4,000	38,300	42,300	6,650	2,650	53	180	32	2,385
5,000	38,300	43,300	7,150	2,150	43	146	26	1,935
6,000	38,300	44,300	7,650	1,650	33	112	20	1,485
7,000	38,300	45,300	8,150	1,150	23	78	14	1,035
8,000	38,300	46,300	8,650	650	13	44	8	585
9,000	38,300	47,300	9,150	150	3	10	2	135
9,300	38,300	47,600	9,300	0				
*In-river allocations assume recreational/commercial sharing as occurred in 2017-19 (80% recreational and 20% commercial)								

2019 Recreational Fishery Summaries (Preliminary)

2019 Lower Columbia River Recreational Fisheries Summary.

Time Period	Area	Species Allowed	Days for Chinook	Salmonid Anglers	Adult Chin. Kept	Adult Chin. Rel'd	Jack Chin. Kept	Jack Chin. Rel.	Sthd Kept	Sthd Rel'd	Sockeye Kept	Sockeye Rel'd	Adult Coho Kept	Adult Coho Rel'd	Jack Coho Kept	Jack Coho Rel.
Feb	Buoy 10 to I-5	ChS, StW		2,374	4	1	0	0	0	0	Closed	0	Closed	0	Closed	0
March	WR-BO	ChS, StW	31	10,626	317	76	0	3	0	18	Closed	0	Closed	0	Closed	0
April 1-10, 13-14, 20-21, 27-28	WR-BO	ChS, StW	16	19,691	1,356	240	0	12	4	4	Closed	0	Closed	0	Closed	0
May 16-31	TP-Bonn.	StS, ChS jacks	0	3,500	0	61	16	0	166	24	Closed	0	Closed	0	Closed	0
June 1-15	TP-Bonn.	StS, ChS jacks	0	3,218	0	102	16	6	424	126	Closed	91	Closed	0	Closed	0
ChS Totals	**(February 1-June 15) 1/**		**47**	**39,409**	**1,677**	**480**	**32**	**21**	**594**	**172**	**0**	**91**	**0**	**0**	**0**	**0**
June 16-21	Astoria Br-Bo	StS	0	5,271	0	281	0	14	834	239	Closed	80	Closed	0	Closed	0
July 1-31	Astoria Br-Bo	StS	0	14,485	0	211	0	50	1,394	1,862	Closed	79	Closed	0	Closed	0
ChR Totals	**(June 16-July 31) 2/**		**0**	**19,756**	**0**	**492**	**0**	**64**	**2,228**	**2,101**	**0**	**159**	**0**	**0**	**0**	**0**
Spring/Summer Totals				**59,165**	**1,677**	**972**	**32**	**85**	**2,822**	**2,273**	**0**	**250**	**0**	**0**	**0**	**0**
Aug	TP-BO	ChF, Co	31	35,554	4,616	198	392	86	Closed	335	Closed	0	85	74	17	10
Sep	TP-BO	ChF, Co	5	21,236	2,549	5,975	195	151	Closed	31	Closed	0	649	904	78	46
Oct	TP-BO	Co	0	1,865	0	564	0	11	Closed	0	Closed	0	312	97	13	10
ChF Totals	**(August 1-October 31) 3/**		**36**	**58,655**	**7,165**	**6,737**	**587**	**248**	**0**	**366**	**0**	**0**	**1,046**	**1,075**	**108**	**66**
LCR Spring Summer and Fall			**83**	**117,820**	**8,842**	**7,709**	**619**	**333**	**2,822**	**2,639**	**0**	**250**	**1,046**	**1,075**	**108**	**66**
OR Buoy 10	B10-TP	ChF, Co, StS	20	54,497	8,636	12,655	0	0	0	56	0	0	16,736	18,393	0	0
WN Buoy 10	B10-TP	ChF, Co, StS	20	22,480	2,638	2,621	0	0	0	0	0	0	6,039	5,960	0	0
Buoy 10 Total	**(August 1- October 31) 4/**		**20**	**76,977**	**11,274**	**15,276**	**0**	**0**	**0**	**56**	**0**	**0**	**22,775**	**24,353**	**0**	**0**
B10 and Mainstem Fall Totals				**135,632**	**18,439**	**22,013**	**587**	**248**	**0**	**422**	**0**	**0**	**23,821**	**25,428**	**108**	**66**
LCR and B10 Grand Totals				**194,797**	**20,116**	**22,985**	**619**	**333**	**2,822**	**2,695**	**0**	**250**	**23,821**	**25,428**	**108**	**66**

2019 Zone 6 (Bonneville-McNary Dam) Spring and Summer Fisheries Summary.

Area	Time Period	Species Allowed	Salmonid Anglers	Adult Chin. Kept	Adult Chin. Rel'd	Jack Chin. Kept	Total Sthd Kept	Total Sthd Rel'd	Adult Coho Kept	Adult Coho Rel.	Jack Coho Kept	Sockeye Kept	Sockeye Rel'd
Bonneville			426	40	4	18	4	0	0	0	0	0	0
The Dalles		ChS, Sth	1,319	147	63	43	0	0	0	0	0	0	0
John Day			713	87	14	10	0	0	0	0	0	0	0
ChS Totals	**(April 1 - June 15) 1/**		**2,458**	**274**	**81**	**71**	**4**	**0**	**0**	**0**	**0**	**0**	**0**
Bonneville			744	0	35	0	40	20	0	0	0	0	3
The Dalles		StS	93	0	0	0	0	0	0	0	0	0	0
John Day			0	0	3	0	0	0	0	0	0	0	0
ChR Totals	**(June 16-July 31) 2/**		**837**	**0**	**38**	**0**	**40**	**20**	**0**	**0**	**0**	**0**	**3**
Spring/Summer Totals			**3,295**	**274**	**119**	**71**	**44**	**20**	**0**	**0**	**0**	**0**	**3**

Ground Rules

1. Focus on the task at hand – *Stick to the agenda*
2. One person at a time to speak – *Stand name tag upright, or raise hand*
3. Allow for a balance of speaking time – *respect time limits*
4. Be respectful of others
   - Be tough on issues and questions, not on people and organizations
   - No personal attacks
   - Listen
5. Keep side conversations to a minimum
6. Mute phone
7. Be a conduit – *share information*

Cowlitz, Kalama, and Lewis River
Spring Chinook Fact Sheet
February 2020

2020 Spring Chinook Forecasts to Columbia River Mouth

- Cowlitz River= 1,440 adult spring Chinook.
- Kalama River= 1,030 adult spring Chinook.
- Lewis River= 1,370 adult spring Chinook.
- Spring Chinook forecasts are based on average brood year relationships, where:
  - age-3 fish (jacks) predict age-4 fish
  - age-4 fish predict age-5 fish
- Brood year relationships are currently used for nearly all forecasts in the Columbia River basin.
- 2020 forecasts for other spring Chinook stocks in the Columbia River basin are generally below average.

Hatchery Releases

- Spring Chinook hatchery releases from Cowlitz, Kalama and Lewis hatchery facilities for 2010-2019 are shown in Table 1.
- Returning jacks and adults (age 3-6) in 2020 are from releases in 2016-2019.
- Cowlitz release goals increased in 2013-2014 alongside a transition to a change in release size strategies.
- Cowlitz and Kalama releases in 2014-2019 have been near or above goal.
- Cowlitz 2019 releases included an additional 118,000 subyearlings in June as a result of surplus production.

Table 1. Spring Chinook hatchery releases from Cowlitz, Kalama and Lewis facilities in 2010-2019. Adult and jack spring Chinook (age 3-6) returning in 2020 are from juvenile releases in 2016-2019 (highlighted below).

	COWLITZ			KALAMA			LEWIS		
Release Year	Goal	Plant	% of goal	Goal	Plant	% of goal	Goal	Plant	% of goal
2010	1,262,539	1,280,347	101%	500,000	352,924	71%	1,050,000	1,110,755	106%
2011	1,260,226	1,076,945	85%	500,000	501,556	100%	1,050,000	1,057,833	101%
2012	942,369	881,337	94%	500,000	559,575	112%	1,350,000	1,410,270	104%
2013	1,464,849	1,601,472	109%	500,000	521,462	104%	1,250,000	1,286,170	103%
2014	1,797,115	2,051,598	114%	500,000	515,038	103%	1,675,000	1,516,940	91%
2015	1,793,529	1,958,471	109%	500,000	549,558	110%	1,925,000	1,814,469	94%
2016	1,793,529	1,874,482	105%	500,000	481,624	96%	1,250,000	717,742	57%
2017	1,741,899	1,852,960	106%	500,000	533,954	107%	1,250,000	402,224	32%
2018	1,741,899	1,844,162	106%	500,000	509,425	102%	1,250,000	710,708	57%
2019	1,741,899	2,011,018	115%	500,000	509,909	102%	1,350,000	2,294,425	170%

- Lewis releases in 2014-2019 have been below goal due to a combination of reduced in-hatchery survival and subsequent low adult returns for use as hatchery broodstock.

- A change in release size and timing strategies has been made at Lewis Hatchery to address the challenges with in-hatchery survival that have occurred in recent years; a program has been implemented to evaluate this change including subyearling releases in summer and fall. Goal and release numbers in Table 1 include all strategies.
- Lewis Hatchery releases in 2019 included an additional 900,000 subyearlings released in June as part of Southern Resident Killer Whale forage supplementation.

Hatchery Escapement Goals

- Hatchery escapement needs for Cowlitz, Kalama and Lewis rivers are shown in Table 2.
- The on-station escapement need at the hatchery in Table 2 is the average number of adults needed to meet broodstock needs for the in-basin hatchery release goals and/or reintroduction programs.
    - On-station hatchery escapement needs for the Cowlitz and Lewis are defined in the Columbia River Biological Opinion (BIOP) issued by NOAA Fisheries. Available at: https://www.fisheries.noaa.gov/webdam/download/95517198.
- Based on preseason forecasts for 2020, the Cowlitz and Lewis River hatcheries are not expected to meet their escapement goals. Projections indicate the Cowlitz and Lewis River hatcheries will be roughly 10% and 16% short of broodstock goals, respectively. There are not enough spring Chinook predicted to return to either tributary to support a directed fishery.

Table 2. Cowlitz, Kalama, and Lewis River spring Chinook run-size forecasts for 2020 and hatchery escapement needs. Actual annual hatchery escapement needs may vary slightly to account for changes in fecundity, sex ratios, pre-spawn loss, etc.

2020 Expectations			
	Cowlitz	Kalama	Lewis
Forecasted return to Tributary Mouth	1,393	1,002	1,333
Avg. % wild return 2014-2018	1.6%	3.7%	1.6%
Natural-origin fish return	22	37	22
Hatchery fish return	1,371	965	1,311
Escapement need at Hatchery			
On-station (from BiOp)	1,337	400*	1,380
Upstream**	if available	NA	if available
SRKW prey enhancement	if available	if available	if available
Deep River Net Pen off-channel program		200	
Total Escapement Need	1,337	600	1,380
Escapement Need at River Mouth***	1,526	693	1,563
Harvestable surplus	(136)	236	(222)
*Kalama broodstock goal is greater than BiOp goal			
**Fish are trucked and released above dams for population recovery			
***Includes fish spawning downriver from hatchery			

- ESA obligations (Biological Opinion) guide hatchery escapement goals so that conservation objectives can be met to continue efforts to re-introduce fish into the upper basins in the Cowlitz and Lewis rivers.
- The Kalama River is projected to have sufficient fish available in excess of broodstock needs to provide for sport fisheries.
- The Cowlitz River hatchery escapement goal of 1,340 adults was not met in 2019; a total of 1,170 adults returned to the hatchery. However, the egg-take goal of 2.2 million was achieved due to better than expected brood survival.
- The Kalama hatchery escapement goal of 600 adults was met in 2019; this includes 400 adults for the on-station program and 200 adults for the Deep River net pen program. A total of 704 hatchery and wild adult spring Chinook returned to Kalama Falls Hatchery.
- The Lewis River hatchery escapement goal of 1,380 fish was not met in 2019; a total of 803 adults returned to the hatchery. The egg-take is expected to be about 87% of the program goal due to higher fecundity and better than expected brood survival.

<u>Ocean Conditions</u>

- Ocean conditions have been identified as a leading contributor to adult salmon returns along the Pacific coast of the U.S. and Canada.
- The development of poor ocean conditions beginning in 2014, commonly called "The Blob", have impacted salmon and steelhead survival in the marine environment across a large geographic area in the north Pacific.
- Figure 1 shows the relationship between ocean conditions as measured by the Pacific Decadal Oscillation (PDO) and adult salmonid returns to the Columbia River basin. The relationship between cooler ocean conditions (negative PDO) and higher returns to the Columbia River is evident.
    - In this figure, the PDO values two years prior to the adult return are shown adjusted to the adult return year, highlighting that warm ocean conditions experienced by juveniles entering the ocean in 2014 and 2015 affected subsequent adult returns in 2016 and 2017.
- Table 3 presents NOAA's Northwest Fisheries Science Center "stoplight" chart for ocean indicators identified to correlate with salmon survival.
    - Ecosystem indicators deteriorated in 2014, with the 2015-2019 overall rankings in the "bad" category.
    - 2016 was the 2nd worst score on record, which impacted 2018 spring chinook returns and likely impacted 2019 returns as well.
    - Adult Spring Chinook returns are primarily composed of 4 and 5-year-old fish that encountered ocean conditions during 2017 through 2019. While ocean conditions during these years weren't the worst in the current period of record, they tend to rank fairly low.

SUMMARY – Ocean conditions from 2014 through 2019 have generally been poor for salmonids, with four of the last five years falling in the bottom third of ranked years. This has likely had a negative influence on marine survival for many Columbia River salmonid stocks. Additionally, there are numerous other factors that affect post-release survival for hatchery fish. Some of the more prominent factors may include predation by seals/sea lions, birds,

and/or other fish, as well as streamflow and temperature conditions which can cause disease after the fish are released. Effects of these other factors are not well quantified for Cowlitz, Kalama and Lewis hatchery programs, but all contribute to overall survival.

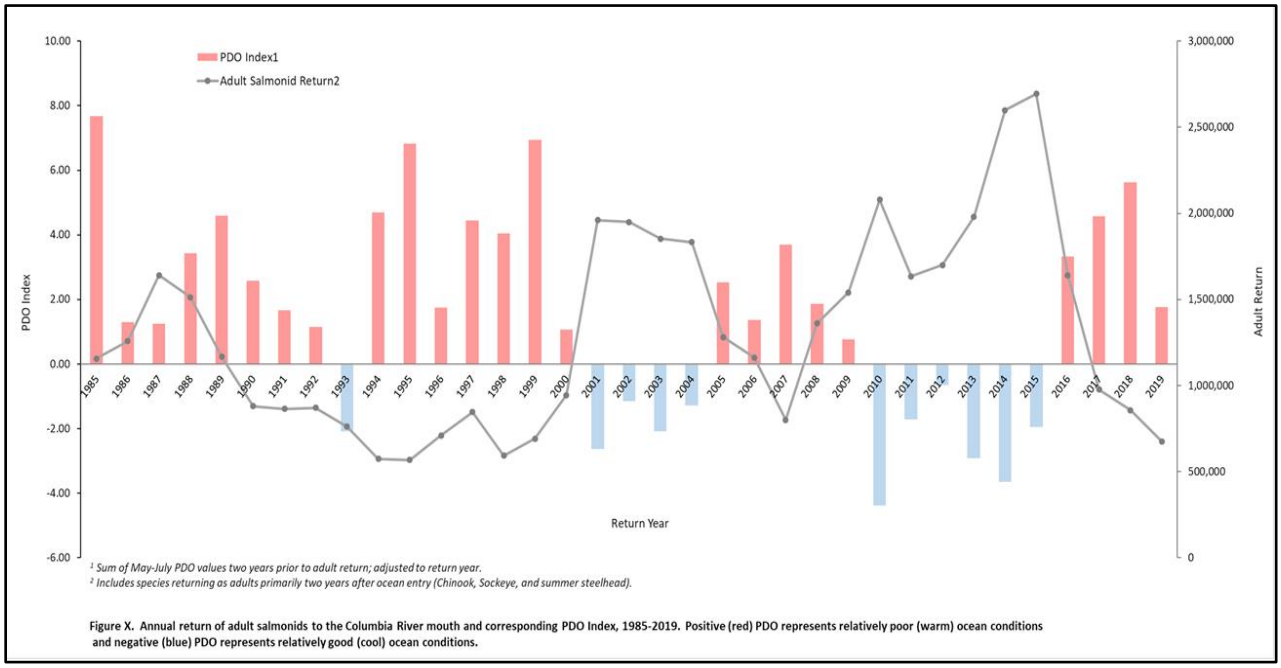

Figure 1. Total annual return of adult salmonids to the Columbia River mouth and corresponding PDO index, 1985-2018. Positive (red) PDO represents relatively poor (warm) ocean conditions and negative (blue) PDO represents relatively good (cool) ocean conditions.

<u>Spring Chinook Adult Returns for Cowlitz, Kalama and Lewis</u>

- Spring Chinook adult returns (2000-2019) for the Cowlitz, Kalama and Lewis rivers are shown in Figure 3.
- Cowlitz and Kalama River spring Chinook returns closely reflect changes in the PDO cycle and ocean indicators.
- Lewis River returns have shown a lack of response to favorable ocean conditions over the last decade. This is likely due to hatchery rearing challenges (i.e. river temperatures, disease issues, and release timing).
- Improved returns in 2017 and 2018 (despite poor ocean conditions) may be a positive sign that recent hatchery rearing changes are resulting in increased survival.

Table 3. NOAA Fisheries – Northwest Fisheries Science Center Ecosystem Indicator "Stoplight" chart https://www.nwfsc.noaa.gov/research/divisions/fe/estuarine/oeip/figures2019/Table_SF-03.JPG

Ecosystem Indicators	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
PDO (Sum Dec-March)	19	6	3	13	7	21	12	17	14	9	5	1	16	4	2	8	10	22	20	18	11	15
PDO (Sum May-Sept)	10	4	6	5	11	17	16	18	12	14	2	9	7	3	1	8	20	22	21	15	13	19
ONI (Average Jan-June)	21	1	1	7	14	16	15	17	9	12	3	11	18	4	6	8	10	19	22	13	5	20
SST NDBC buoys (°C; May-Sept)	17	6	8	4	5	11	22	12	2	14	1	10	3	7	9	16	20	19	18	13	15	21
Upper 20 m T (°C; Nov-Mar)	21	11	8	10	6	15	16	13	12	5	1	9	18	4	3	7	2	22	20	19	14	17
Upper 20 m T (°C; May-Sept)	16	11	13	4	1	3	22	19	8	10	2	5	17	7	6	18	20	9	14	12	15	21
Deep temperature (°C; May-Sept)	22	6	8	4	1	10	12	16	11	5	2	7	14	9	3	15	21	19	13	18	20	17
Deep salinity (May-Sept)	21	3	11	4	5	18	19	12	7	1	2	16	20	15	14	13	22	17	9	8	6	10
Copepod richness anom. (no. species; May-Sept)	20	2	1	7	6	15	14	19	16	10	8	9	18	4	5	3	11	21	22	17	13	12
N. copepod biomass anom. (mg C m^{-3}; May-Sept)	20	15	11	12	4	17	14	21	16	13	7	10	9	1	3	5	6	18	22	19	8	2
S. copepod biomass anom. (mg C m^{-3}; May-Sept)	22	2	5	4	3	15	16	21	14	10	1	7	17	9	8	6	11	19	20	18	13	12
Biological transition (day of year)	19	11	6	7	8	15	12	20	14	3	1	2	17	4	9	5	10	21	21	18	13	15
Nearshore Ichthyoplankton Log(mg C 1,000 m^{-3}; Jan-Mar)	17	4	11	6	1	21	22	16	8	18	3	13	2	7	5	10	19	14	15	12	9	20
Nearshore & offshore Ichthyoplankton community index (PCO axis 1 scores; Jan-Mar)	11	6	5	9	8	13	16	20	1	14	3	12	15	4	2	7	10	18	21	22	17	19
Chinook salmon juvenile catches (no. km^{-1}; June)	20	4	5	17	8	12	18	21	13	11	1	6	7	16	2	3	10	14	19	22	15	9
Coho salmon juvenile catches (no. km^{-1}; June)	20	8	14	6	7	3	17	21	18	4	5	10	11	16	19	1	13	9	15	22	2	12
Mean of ranks	18.5	6.3	7.3	7.4	5.9	13.9	16.4	17.7	10.9	9.6	2.9	8.6	13.1	7.1	6.1	8.3	13.4	17.7	18.3	16.6	11.8	15.1
Rank of the mean rank	22	4	6	7	2	15	17	19	11	10	1	9	13	5	3	8	14	19	21	18	12	16
Ecosystem Indicators not included in the mean of ranks or statistical analyses																						
Physical Spring Trans. UI based (day of year)	3	7	21	18	4	13	16	22	13	1	6	2	8	11	19	9	20	10	5	17	11	13
Physical Spring Trans. Hydrographic (day of year)	21	3	13	8	5	12	15	22	6	9	1	9	19	3	11	2	17	7	18	20	15	14
Upwelling Anomaly (April-May)	11	3	18	7	10	15	14	22	11	5	8	9	16	18	16	13	20	1	2	21	6	4
Length of Upwelling Season UI based (days)	6	2	20	13	1	15	11	22	5	3	9	3	17	19	17	16	21	12	8	14	7	10
Copepod Community Index (MDS axis 1 scores; May-Sept)	21	3	5	8	2	16	14	20	17	10	1	7	13	9	6	4	11	19	22	18	12	15

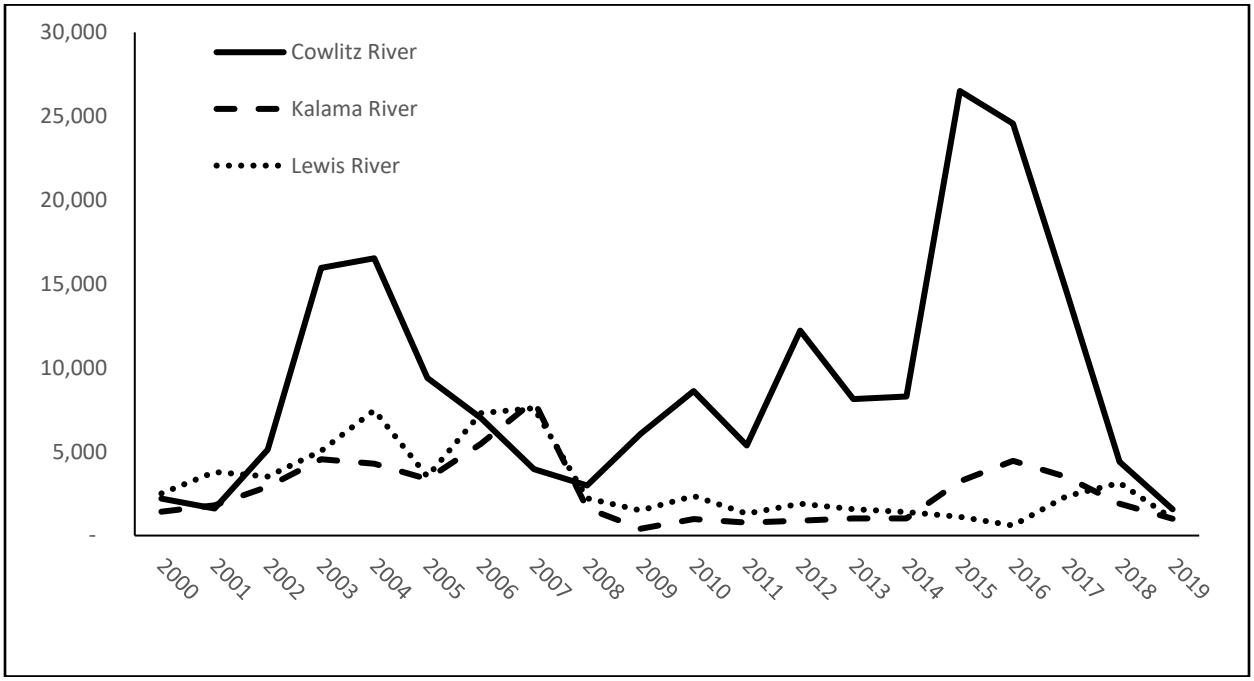

Figure 3. Adult Spring Chinook Returns to the Cowlitz, Lewis , and Kalama Rivers.

Analysis of Variables Potentially Affecting Run Timing of Upriver Spring Chinook

Main points:

- Since 1990, average water temperature in the Columbia River (as measured at the Bonneville Dam scroll case) during March 1 – April 30 has been declining, and may be associated with earlier timing of snowmelt and peak runoff from changes in climate within the Columbia River Basin (Figure 1). This decrease in average temperature coincides with an increasingly later 50% passage date for upriver spring Chinook at Bonneville Dam during the same timeframe (Figure 2).
- A simple linear regression of average March-April water temperature and 50% passage timing (day # of the year) showed a moderately strong negative relationship between river temperatures and passage timing between 1990 and 2019 ($R^2 = 0.41$; Figure 3).
- As river flow (represented by outflow discharge at Bonneville Dam) and water temperature are often (but not always) inversely associated during the spring, average March-April river flow and passage timing were positively related during 1990-2019; however, the relationship was not as strong as it was for temperature ($R^2 = 0.26$).
- A multiple regression of average March-April river temperature and flow vs. 50% passage timing resulted in an R^2 of 0.49, indicating that almost half of the variation in run timing in the last 30 years can be explained by these two environmental variables.
- Predation by pinnipeds below Bonneville Dam has increased since the early 2000s. Both levels of pinniped predation (% of the spring salmonid run lost to pinnipeds) and 50% passage day number have increased at a similar rate since 2002; however, because of high variability in salmonid predation levels between 2002 and 2018 (possibly due to changes in sea lion species composition and diet), the relationship between predation alone and passage timing is relatively weak ($R^2 = 0.08$).
- A simple linear regression of upriver spring Chinook run size vs. 50% passage day during 2000-2019 resulted in an R^2 of 0.52, with passage timing becoming progressively earlier as run size increased. This makes intuitive sense in that larger run sizes tend to have more protracted run timing and this may push up the date of 50% passage. However, a similar regression for a longer time series (1980-2019) showed no relationship between the variables, suggesting that the higher R^2 for the 2000-2019 period may be the result of effects from more recent conditions, or may be confounded by other variables.
- Nevertheless, when all four variables (river temperature, flow, pinniped predation, and run size) were incorporated into a multiple regression vs. 50% passage timing for 2002-2018 (years when data for all variables are available), the resulting R^2 was 0.65, suggesting that almost 2/3 of the variation in run timing in recent years can be explained by these four variables.
- Harvest rates of upriver spring Chinook in the Lower Columbia River recreational fishery showed a slightly decreasing trend between 2001 (when mark-selective fisheries were established) and 2019. Harvest rates in the fishery did not correspond with changes in passage timing during the same timeframe (Figure 4), and a simple linear regression indicated no relationship between these variables ($R^2 = 0.0002$).
- It is likely that changes in river conditions have been affecting the run timing of upriver spring Chinook for many years. In more recent years, it is possible that other factors such as pinniped predation and smaller run sizes, may also contribute to later run timing.

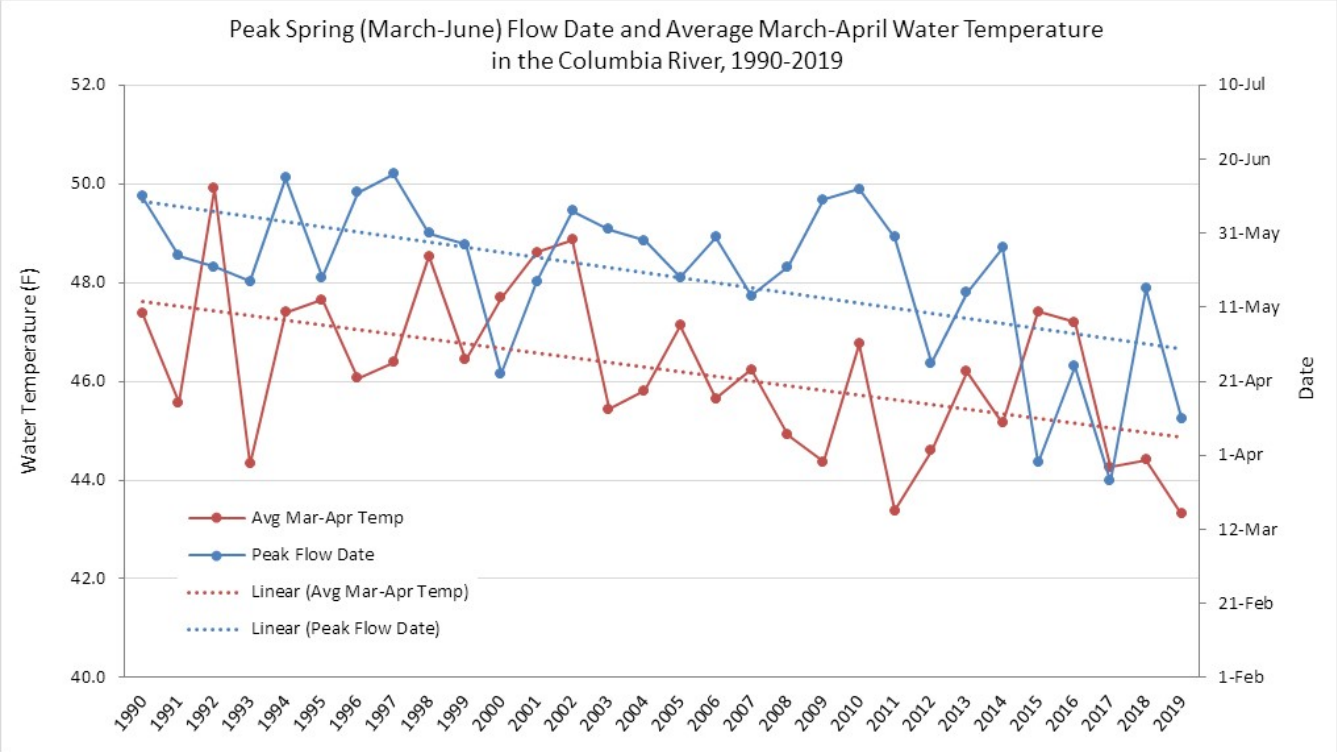

Figure 1.

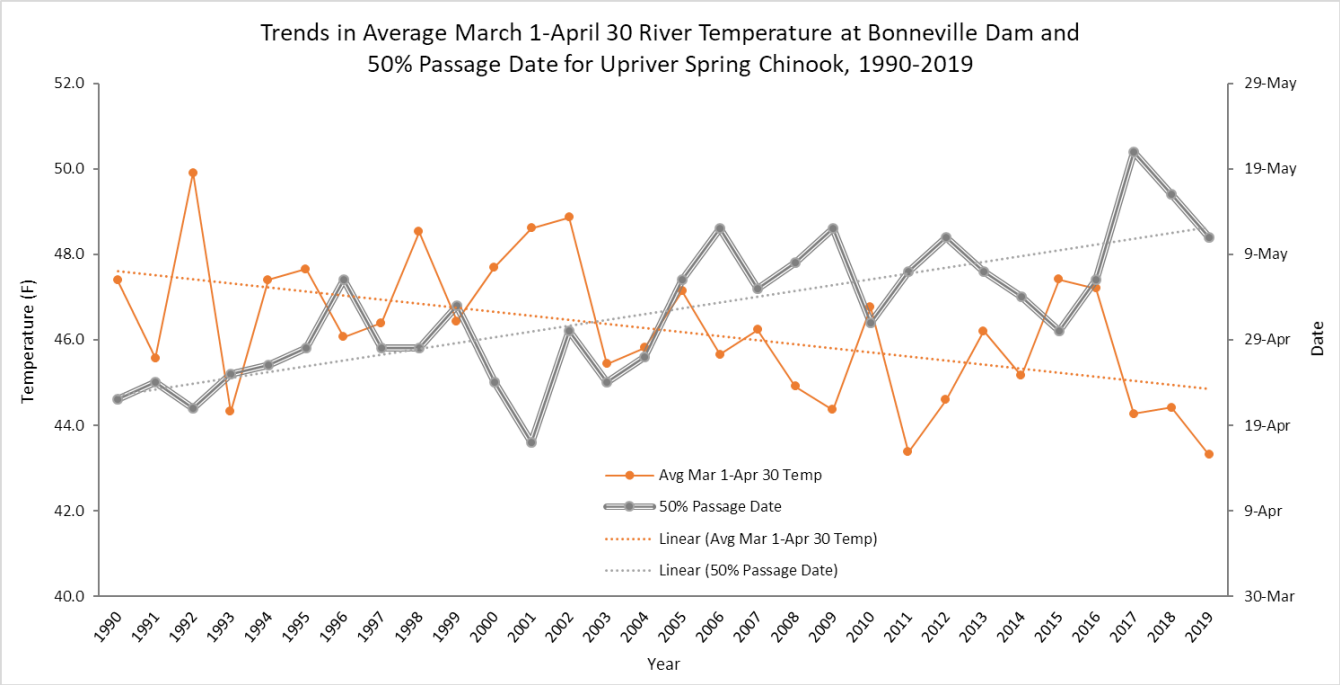

Figure 2.

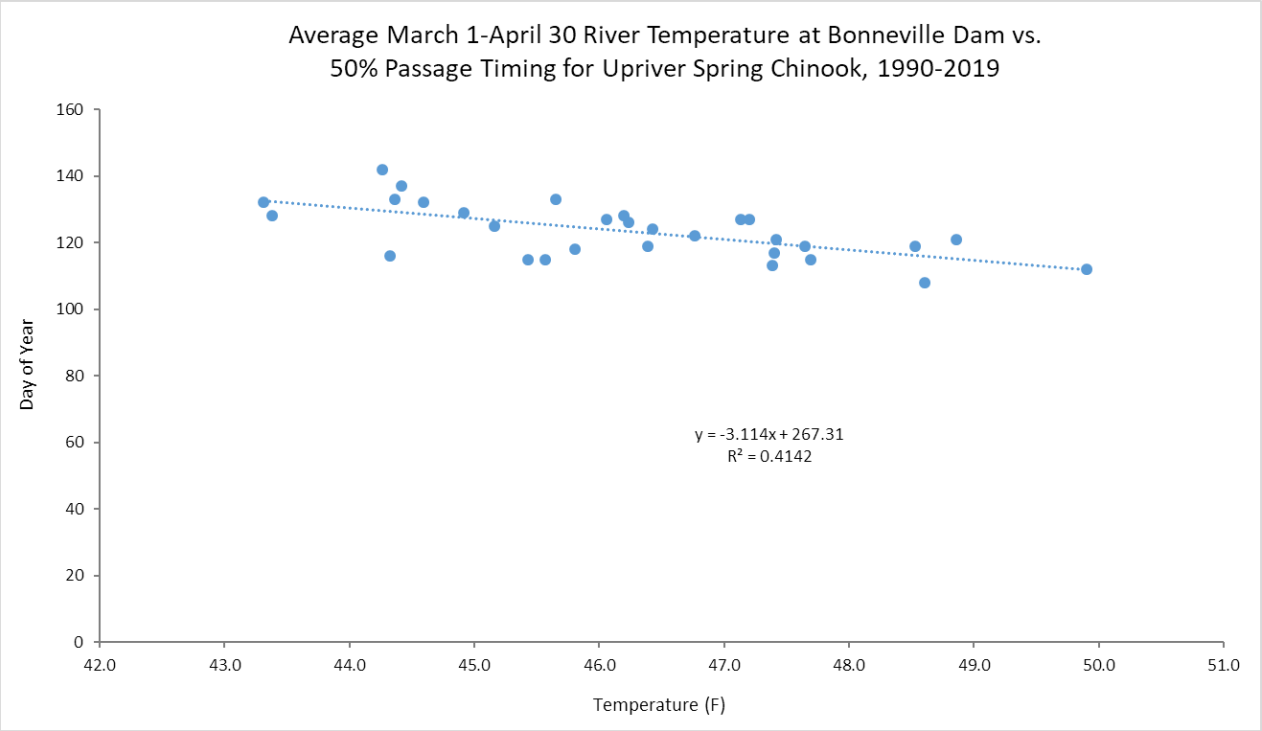

Figure 3.

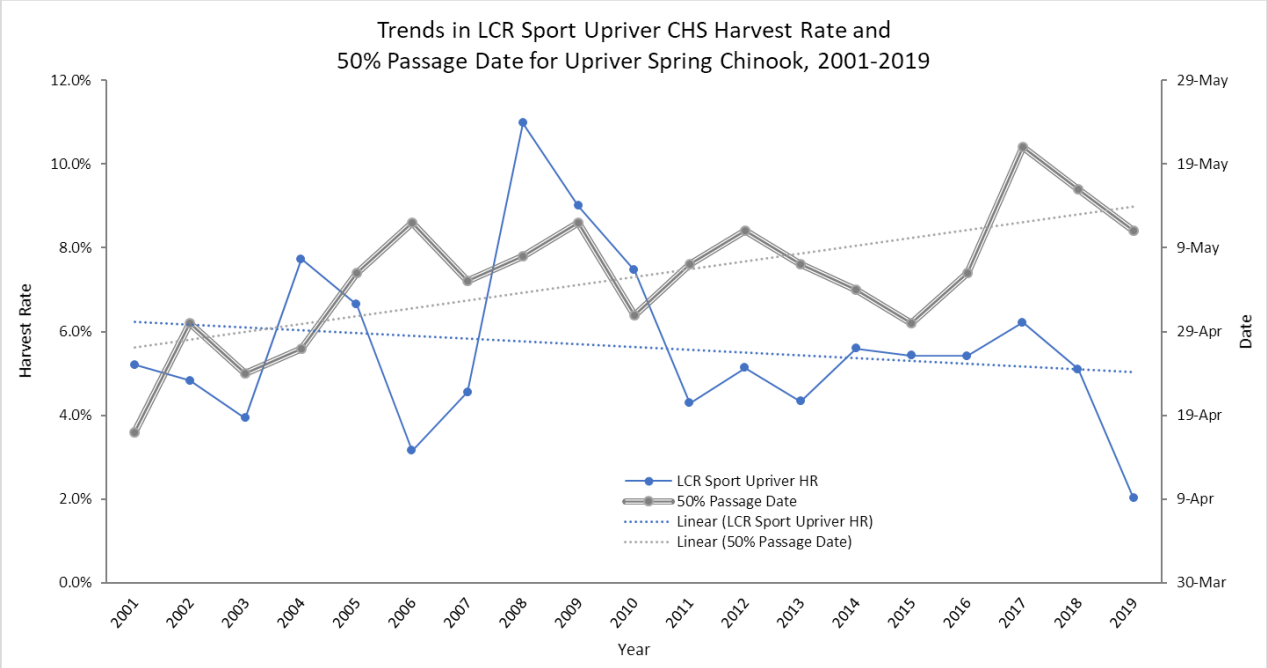

Figure 4.

Upper Columbia Summer Chinook Spawning Escapement Estimates.

Table 1. Wild summer/fall Chinook spawning escapements in the Upper Columbia River tributaries for the 2002-2018 return years with escapement goals. Red indicates problem years (escapement target not acheived).

																				5-year		10-year	
	Wild Escapement Target	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	Average	Geomean	Average	Geomean
Wenatchee		11,892	10,025	9,220	6,862	16,060	3,173	4,794	7,113	5,879	8,155	7,327	7,449	9,607	4,070	5,321	6,534	2,744	1,132	3,960	3,378	5,822	5,062
Entiat	13,500 [1]	349	531	296	278	345	142	238	203	319	570	1,063	843	594	269	613	349	161	114	301	254	489	399
Chelan		146	84	237	215	269	62	258	25	481	563	262	606	583	719	396	378	454	764	542	518	521	498
Subtotal	13,500	12,387	10,640	9,753	7,355	16,674	3,377	5,290	7,341	6,679	9,288	8,651	8,898	10,784	5,058	6,330	7,261	3,359	2,010	4,803	4,357	6,832	6,177
Methow	1,500	2,732	2,240	1,642	1,690	1,667	614	1,227	1,020	1,271	1,459	1,680	1,720	1,463	3,162	1,457	1,028	684	846	1,435	1,223	1,477	1,359
Okanogan	2,000	4,296	1,436	5,444	6,400	6,623	2,739	2,930	4,149	3,155	4,453	4,688	5,818	10,583	10,706	9,014	5,451	3,305	1,870	6,069	5,040	5,904	5,152
Total	17,000	19,414	14,316	16,839	15,445	24,964	6,729	9,446	12,510	11,104	15,200	15,019	16,436	22,829	18,926	16,801	13,740	7,348	4,726	12,308	10,620	14,213	12,688

1 Goal is an aggregate allocation to include the Wenatchee and Entiat basins, with lower Chelan River

Provisional Data

Table 2. Total Summer Chinook spawning escapement (wild and hatchery) in Upper Columbia tributaries for the 2002-2018 run years. Proportion of hatchery fish on spawning grounds is expressed as pHOS. Red indicates problem years (pHOS ≥ 0.33).

																				5-year		10-year	
	Wild Escapement Target	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	Average	Geomean	Average	Geomean
Wenatchee		15,723	11,800	10,479	8,703	17,792	4,590	6,496	8,327	7,468	9,850	8,539	10,209	10,443	4,330	5,902	7,425	3,473	1,742	4,574	4,092	6,938	6,146
pHOS		0.24	0.15	0.12	0.21	0.10	0.31	0.26	0.15	0.21	0.17	0.14	0.27	0.08	0.06	0.10	0.12	0.21	0.35	0.17	0.14	0.17	0.15
Entiat	13,500	499	672	361	381	456	225	309	254	415	627	1,275	995	701	363	766	591	486	228	487	449	645	579
pHOS		0.30	0.21	0.18	0.27	0.24	0.37	0.23	0.20	0.23	0.09	0.17	0.15	0.15	0.26	0.20	0.41	0.67	0.50	0.41	0.37	0.28	0.24
Chelan		582	419	416	524	420	189	497	625	1,118	1,280	1,308	1,684	1,100	1,438	900	859	966	1,018	1,036	1,018	1,167	1,143
pHOS		0.75	0.80	0.43	0.59	0.36	0.67	0.48	0.96	0.57	0.56	0.80	0.64	0.47	0.50	0.56	0.56	0.53	0.75	0.58	0.57	0.59	0.59
Methow	1,500	4,630	3,930	2,189	2,561	2,733	1,364	1,947	1,758	2,492	2,917	2,947	3,583	1,625	3,952	2,241	1,408	1,367	2,820	2,358	2,170	2,535	2,387
pHOS		0.41	0.43	0.25	0.34	0.39	0.55	0.37	0.42	0.49	0.50	0.43	0.52	0.10	0.20	0.35	0.27	0.50	0.70	0.40	0.37	0.41	0.36
Okanogan	2,000	13,857	3,420	6,721	8,889	8,601	4,417	6,975	7,544	5,952	9,681	8,225	8,194	12,164	13,726	10,605	6,568	4,860	3,596	7,871	6,992	8,357	7,758
pHOS		0.69	0.58	0.19	0.28	0.23	0.38	0.58	0.45	0.47	0.54	0.43	0.29	0.13	0.22	0.15	0.17	0.32	0.48	0.27	0.24	0.32	0.29
Total		34,792	19,569	19,805	20,677	30,002	10,785	16,224	18,508	17,445	24,355	22,294	24,665	26,033	23,809	20,414	16,851	11,152	9,404	16,326	14,721	19,642	18,011

1 Goal is an aggregate allocation to include the Wenatchee and Entiat basins, with lower Chelan River

Provisional Data from Redd Counts and Carcass Recoveries.

McLain modeled this estimate, Casey Baldwin will provided precision estimate soon.