

Cowlitz River Basin Knowledge: What we know and don't know about our fish



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Recap of the day's presentations

- **Hydro Ops: Winter storms/High flows/first spill in 5 years**
 - 2020: Met refill, supported instream flows and maintained opportunity for recreation and generation.
 - 5 year view: Variability in seasonal and overall conditions/constraints related to reservoir capacity.
- **Hatcheries**
 - 2020: Met targets for all programs except for fall Chinook and summer-run steelhead, and slightly short of goal for coho.
 - 5 year view: Trout hatchery has been close to its targets since 2017, spring Chinook and coho have been on target or slightly over, and fall Chinook have been consistently low.
- **Habitat:**
 - 2020: LWD placement continues, set plans to have granting rounds for HAP and HAB projects of the CRR, and there is a plan to complete gravel augmentation in 2021.
 - 5 year view: Initial CRR project was funded, a hydrologic model for parts of the upper Cowlitz Basin was developed and gravel augmentation efforts continue.
- **Fish Passage:**
 - 2020: Good numbers of coho and steelhead, but a drop in Chinook (Low adult Chinook returns).
 - 5 year view: Operations are getting better and the CFFF is one of the most adaptable fish collectors built.

Recap of the day's presentations

- **Harvest:**
 - 2020: Data not available yet.
 - 5 year view: More harvest in the Lower Cowlitz than upper basin areas, relatively high harvest rates for each species – summers: 69.2%, winters: 68.7%, falls: 34%, springers: 41%, and coho: 16%.
- **SAR:**
 - 2020: Analytical study spanning multiple years.
 - 5 year view: Bigger is better to a point, release timing matters, brood year is important, the model accounts for the majority of variability in survival, and will be useful for other species.
- **Lower Cowlitz Adult Estimates:**
 - 2020: Falls >5,000 fish (mostly NORs), tributary coho >8,000 (biggest since 2014), and winter steelhead still <500 adults.
 - 5 year view: Falls have been stable between 4-5,000 fish with NORs doing better than HORs, tributary coho have been between 4-8,000 fish dominated by NORs, combined NOR/HOR abundance for steelhead has not exceeded 1,000 fish in the past five years.
- **Returns to the Separator:**
 - 2020: Falls: 2,455 HOR & 2,562 NOR, springers: 473 HOR & 370 NOR, coho: 26,825 HOR & 12,222 NOR, winters: 4,010 HOR & 840 NOR, summers: 4,680 HOR & 3 NOR, and huge cutthroat return 6,772.
 - 5 year view: Falls: ~2,000 Avg, springers: declining, coho: Avg HOR return ~20,000 & Avg NOR return ~7,000, winters: NORs stable ~500 fish & HORs between 1,500-4,700, summers: run size rebounded to >4,500 after three years of less than 2,500 fish, cutthroat: generally less than 500 fish.

Topics we have an idea about...

- Adult abundance/transportation
- Age structure/sex ratios/fecundity/stock composition(origin)/jack rates
- Harvest/encounter rates
- Juvenile abundance
- Smolt release numbers
- Numbers of fish at collection facilities
- Habitat conditions
- Barriers in upper basin tributaries

APR Status Data: Upper Basin Spring Chinook

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	14,730	200	2,186	30	1,601		4,125	5.25		11,023	0
2017	8,635	149	486	14	1,698	1,854,787	56,345	46.17	51	6,134	0
2018	2464	154	81	8	1,475	2,049,584	27,070	64.30	70	1,352	0
2019	1,071	196	62	26	1,210	2,031,666	62,885	70.75	78	TBD	TBD
2020	473	370	561	61	378	1,909,176	7,315	49.37	54	TBD	TBD
5 Year	5,475	214	675	28	1,272	1,961,303	31,548	47.17	63	6,170	0

APR Status Data: Lower Cowlitz Fall Chinook

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	1,010	2,875	35	101	1,704	3,416,089	NA	NA	NA	2398	0
2017	716	2,924	13	52	1,566	1,883,639	NA	NA	NA	778	0
2018	501	2,728	50	274	507	1,870,744	NA	NA	NA	820	0
2019	516	4,391	15	126	851	1,782,813	NA	NA	NA	TBD	TBD
2020	389	4,474	18	205	1,536	2,311,145	NA	NA	NA	TBD	TBD
5 Year	626	3,478	26	152	1,232	1,818,453	NA	NA	NA	1,332	0

APR Status Data: Tilton River Fall Chinook

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	889	3,068	101	159	NA		13,662	NA	NA	312	0
2017	59	1,478	16	68	NA	1,011,289	97,000	NA	NA	102	0
2018	52	516	68	142	NA	1,403,887	23,555	NA	NA	84	0
2019	1	646	3	26	NA	1,652,475	34,307	NA	NA	TBD	TBD
2020	282	1,985	3	73	NA	2,311,145	7,658	NA	NA	TBD	TBD
5 Year	257	1,539	85	94	NA	1,594,699	35,236	NA	NA	166	0

APR Status Data: Upper Basin Steelhead

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	372	187	0	0	102		6,091	76.40		8	0
2017	122	304	2	1	82	127,000	4,860	55.90	57	4	0
2018	239	206	0	0	83	103,000	14,450	72.78	75	4	0
2019	69	170	0	0	73	112,528	11,892	81.03	83	TBD	TBD
2020	301	614	0	0	108	104,064	8,287	63.00	65	TBD	TBD
5 Year	221	296	0	0	90	111,648	9,323	71.53		5	0

APR Status Data: Tilton River Steelhead

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	150	418	0	0	85		6,659	NA	NA	41	0
2017	39	183	0	3	52	45,000	5,666	NA	NA	4	0
2018	63	206	0	0	60	54,000	7,720	NA	NA	0	0
2019	52	260	2	2	61	48,886	5,910	NA	NA	TBD	TBD
2020	108	208	0	0	43	57,274	5,881	NA	NA	TBD	TBD
5 Year	82	255	0	1	60	51,290	6,367	NA	NA	15	0

APR Status Data: Lower Cowlitz River Steelhead

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	260	719	0	0	220	438,268	NA	NA	NA	13,787	0
2017	379	283	0	0	231	519,000	NA	NA	NA	5,567	0
2018	167	362	0	0	330	469,000	NA	NA	NA	2,550	0
2019	97	236	0	0	268	371,733	NA	NA	NA	TBD	TBD
2020	136	318	0	0	251	460,266	NA	NA	NA	TBD	TBD
5 Year	208	384	0	0	260	451,653	NA	NA	NA	7,301	0

APR Status Data: Upper Basin Coho

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	9,757	1,647	3,058	137	526		153,843	87.70		1,986	0
2017	8,177	6,025	1,976	116	579	1,201,922	26,196	50.30	52	1,353	0
2018	6,622	1,025	10,013	162	671	1,127,160	161,529	80.54	82	560	0
2019	6,648	3,883	818	133	566	1,055,449	184,713	90.36	93	TBD	TBD
2020	13,333	9,798	11,313	595	650	1,003,205	127,544	69.22	72	TBD	TBD
5 Year	8,907	4,476	5,436	229	598	1,061,938	130,765	75.57	75	1,300	0

APR Status Data: Tilton River Coho

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	5,995	2,529	1,996	313	NA	NA	20,808	NA	NA	1,961	0
2017	6,058	5,235	1,335	256	NA	NA	36,792	NA	NA	887	0
2018	3,570	1,601	9,128	242	NA	NA	38,431	NA	NA	812	0
2019	6,676	1,466	798	93	NA	NA	40,872	NA	NA	TBD	TBD
2020	12,358	2,421	7,324	355	NA	NA	36,374	NA	NA	TBD	TBD
5 Year	6,931	2,650	4,116	252	NA	NA	34,655	NA	NA	1,220	0

APR Status Data: Lower Cowlitz River Coho

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	467	4,050	NA	NA	1,097		NA	NA	NA	589	0
2017	912	3,008	NA	NA	1,189	1,193,715	NA	NA	NA	3,658	0
2018	837	3,031	NA	NA	824	1,246,317	NA	NA	NA	2,908	0
2019	264	5,275	NA	NA	1,237	1,280,316	NA	NA	NA	TBD	TBD
2020	379	8,429	NA	NA	987	1,103,442	NA	NA	NA	TBD	TBD
5 Year	572	4,759	NA	NA	1,067	1,205,948	NA	NA	NA	2,385	0

Big Table (BT) & Condensed Big Table (CBT)

- Tool to help everyone share an understanding of current state.
- CBT helps guide what basic information is collected.
- BT is a more detailed version, lists metrics or data that could prove useful to management, but not necessarily collected.

Table 10-1: The following is a draft example of the values that could be included in a Condensed Big Table. This table would summarize data used to create decisions tools and life cycle models.

Metric	Current	FHMP	Long-term
	(5-year Mean)	Goal	(Recovery Plan)
	HOR/NOR	HOR/NOR	HOR/NOR
Total Adult Abundance	61,519	#	#
Hatchery-origin	46,281	#	#
Natural-origin	15,238	#	#
Total Adults to Mouth of Cowlitz River	28,360	#	#
Hatchery-origin	16,721	#	#
Natural-origin	11,639	#	#
Hatchery Broodstock (spawned; all ages)	829	#	#
Hatchery-origin	274	# (not %)	# (not %)
Natural-origin	556	# (not %)	# (not %)
pNOB (Effective = spawned; all ages)	0.695	>0.5	1
Adult Spawners in Nature	10,641	# (not %)	# (not %)
Hatchery-origin	8,131	# (not %)	# (not %)
Natural-origin	2,510	# (not %)	# (not %)
pHOS (Effective = spawners in nature)	0.761	<0.4	<0.2
PNI (Effective)	0.448	>0.55	>0.8
Smolt Abundance	1,087,693	#	#
HOR (Smolts Released)	958,815	#	#
NOR (Released into lower Cowlitz River)	128,878	#	#
Smolt Collection Efficiency	76%	%	%
Smolt Passage Survival (FPS)			
Smolt-to-Adult Survival			
Hatchery-origin	?	%	%
NOR (if unavailable, presumed higher than HORs)	?	%	%
Mean Age			
Hatchery-origin	?	#	#
Natural-origin	?	#	#
Precocious Maturation Rate			
Hatchery-origin	?	%	%
Natural-origin	?	%	%
Natural-origin Productivity			
Smolts / spawner	18.8	>1	No decrease?
Adults + Jacks / spawner	?		Density dependence?
Total Harvest (from all fisheries)	27,987	#	#
Hatchery-origin	25,687	#	#
Natural-origin	2,299	#	#
Harvest (% of total adult return)	64%	%	%
Hatchery-origin	75%	%	%
Natural-origin	19%	%	%

Things that we are lacking information on:

- Population differentiation
- CPUE/instantaneous creel results
- Precision of our fall Chinook adult abundance estimates
- Capacity estimates by basin
- Life history diversity and adult return success
- Hatchery program survivals across all stages
- Population productivities

Where we are placing efforts this coming year

- Continuing baseline efforts and improving techniques where possible.
- Analytics meeting in July to further assess current techniques and if there are other approaches that should be considered for monitoring efforts.
- Development of a Monitoring Plan as a supplement to the Fisheries and Hatchery Management Plan.

Sharing with the Public and Stakeholders

- APR/AOP/FHMP Annual Status Update Report/Cowlitz Fish Report.
- Working with WDFW to further data sharing.
- Dashboards and applications as potential avenues.



Tacoma Power Cowlitz River Salmonid Runtime Tracker

[Distribution Map](#)[Spring Chinook](#)[Fall Chinook](#)[Summer Steelhead](#)[Winter Steelhead](#)[Coho](#)[Cutthroat](#)[Broodstock](#)[Destination Data](#)

Select origin

Hatchery ▼

Download Table

Season	HOR to Date	HOR Season	HOR Percent
2021	482	1476 *	33 *
2020	47	473	9.94
2019	396	1071	36.97
2018	667	2464	27.07
2017	3185	8635	36.88
2016	9236	14730	62.7
2015	10904	17409	62.63
2014	1134	4511	25.14

Questions?

Topics for next year?

Areas/topics that were missed or should be re-examined before next year?