

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

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To: Andrew Gingerich and John Rohrback

From: Charlie Snow and Ben Goodman

Subject: August Hatchery and Natural Production Report

Date: 7 September 2023

Cc: Distribution list.

HATCHERY ACTIVITIES

At Methow Hatchery, all 2022 brood progeny, and all 2023 broodstock were reared on 100% well water during August. At Wells Hatchery, all populations on-station at the end of the month were reared on 100% well water.

2022 Twisp Spring Chinook Salmon

A total of 25,396 Twisp fry from the 2022 brood were on-station at Methow Hatchery at the end of the month and two additional mortalities were identified. The number of fish on-station that apply to Douglas PUD HCP and Grant PUD SSSA mitigation obligations is listed in Appendix A.

2022 Methow Composite Spring Chinook Salmon

Methow Hatchery had a total of 200,465 Methow Composite fry from the 2022 brood on-station at the end of the month after accounting for 118 mortalities during August. This population includes an estimated 64,034 fry for release from the Chewuch Acclimation Pond, and 136,431 fry for release from Methow Hatchery. The number of fish on-station that apply to Douglas PUD HCP, Chelan PUD HCP, and Grant PUD SSSA mitigation obligations is listed in Appendix A.

2023 Spring Chinook Broodstock Collection

Collection of spring Chinook broodstock at Wells Dam began on 8 May and continued weekly through the month of June. By the end of June, a total of 59 wild female and 60 wild male spring Chinook had been transferred to Methow Hatchery for broodstock for the Methow Composite program. In addition, one wild female was collected at Wells Dam for the Twisp program. The Twisp weir has been operating since mid-June, and through 24 July, six additional female Chinook (3 wild, 3 hatchery) and two wild male Chinook were retained. However, because of a lack of sufficient fish for the Twisp River program, all fish retained from the Twisp River weir were returned to the Twisp River at Buttermilk Bridge on 25 July. The reduced

production from the lack of a Twisp River program will be replaced with extra production of Methow Composite fish for the 2023 brood.

Broodstock spawning began on 8 August and continued weekly through 5 September (Table 1). All wild males were live-spawned for broodstock and were released after the last spawn day (5 September) in the Methow River at Weeman Bridge ($N = 28$), or in the Chewuch River ($N = 27$). Some live-spawned males were used on more than one spawn day, thus the greater number of wild males shown in Table 1.

Table 1. Weekly summary of broodstock spawning and mortalities of hatchery- (H) and natural-origin (W) broodstock by sex. Excess hatchery-origin fish (H surplus) were euthanized as excess to program requirements.

Date	Female				Male			
	W	H	Mort	H surplus	W	H	Mort	H surplus
8/8/2023	3	0	0	0	3	0	0	0
8/15/2023	14	6	0	0	19	0	0	0
8/22/2023	18	3	0	0	21	0	0	0
8/29/2023	16	6	1	3	22	0	0	19
9/5/2023	4	6	0	2	11	0	0	16
Total	55	21	1	5	76	0	0	35

2022 Summer Chinook

Wells Hatchery had an estimated 306,649 parr for the yearling program, and 37,982 for the Methow conservation (MEOK) program on-station at the end of August. These programs experienced monthly losses of 1,007 and 51 fish, respectively, in addition to a population adjustment of -22,469 fish for the yearling program after routine inventory assessments at tagging. The hatchery also had 169,150 summer Chinook progeny from the Entiat National Fish Hatchery on-station at the end of August that will be used to support reintroduction of summer Chinook into the Columbia River upstream of Chief Joseph Dam. This population experienced 191 mortalities during the month and was reduced by 279 fish after tagging-related population adjustments. Summer Chinook are being reared to fulfill Wells HCP mitigation obligations (yearling and MEOK programs; Appendix A) and the Southern Resident Killer Whale and Pacific Salmon Treaty subyearling production contract with WDFW (Appendix B).

2023 Summer Steelhead

Wells Hatchery had 88,395 Methow safety-net (MSN), 206,348 Columbia safety-net (CSN), and 93,540 Okanogan safety-net (OSN) progeny on-station at the end of the month. These populations experienced 104 additional MSN mortalities, 261 CSN mortalities, and 141 OSN mortalities during the month of August. The hatchery also had 21,018 fry for the Omak conservation program on-station at the end of August after subtracting 38 mortalities during the month.

Wells Hatchery also had a total of 21,007 Methow conservation program progeny and 22,790 Twisp conservation program progeny on-station at the end of August. These populations experienced mortalities of 1,804 and 515 fish, respectively.

2023 Riverence Rainbow Trout

Wells Hatchery had 22,962 Riverence Rainbow Trout on-station at the end of August after removing 68 mortalities during the month, and reducing the population by 2,225 fish due to routine inventory assessments. These fish will be used for 2024 spring plants and are reared under the Off-License Settlement Agreement between Douglas PUD and WDFW (Appendix C).

2022 Methow Coho

Wells Hatchery had 26,598 Methow Coho fry from the 2022 brood on-station at the end of August and 19 additional fish were identified as mortalities during the month. These fish are reared to meet Wells HCP mitigation obligations (Appendix A).

2023 White Sturgeon

Wells Hatchery had 3,345 White Sturgeon progeny from the 2023 brood on-station after removing 2,024 additional mortalities during the month of August. Higher-than-average losses persisted throughout the month of August. A fish health examination revealed that this mortality was not assignable to a particular cause or condition (nonspecific) and is likely due to chronic stress from an indeterminate source. No infectious agents or pathogens were appreciated during necropsy. This population will continue to be monitored. White Sturgeon are reared at Wells Hatchery under the Wells Aquatic Settlement Agreement and under agreement with Chelan PUD (Appendix D).

NATURAL PRODUCTION ACTIVITIES

PIT Tag Antenna Arrays

Data collected at all Methow basin PIT tag interrogation sites operated under this program, including Twisp (TWR), lower Methow (LMR), Lower Chewuch (CRW), Gold Creek (GLC), Libby Creek (LBC), and Wolf Creek (WFC) are uploaded to the PTAGIS database regularly, and can be viewed at the following website: <http://www.ptagis.org/data/quick-reports/small-scale-site-detections>

2023 Spring Chinook Salmon Spawning Ground Surveys

Spring Chinook Salmon spawning ground surveys began the first week of August and continued throughout the month. To-date, a total of 158 redds have been identified, of which, most were found in the Methow River and tributaries ($N = 110$), Chewuch River ($N = 26$), and Twisp River ($N = 22$). Redd totals do not include mainstem Methow River sections surveyed by USFWS personnel, or the Winthrop National Fish Hatchery outfall. Few carcasses have been recovered to-date ($N = 17$), but spawning is still active and carcass recoveries should increase during September.

2023 Smolt Trapping

River conditions were favorable for trapping at the Methow site during the month of August, and that trap operated for the entire month with no interruptions. The Twisp trap did not operate due to low river discharge between 16 and 29 August. The Twisp trap did operate without

interruptions for the first half of the month and again for the final two days of August because of a rain event. During the month, subyearling wild Chinook parr were the primary species captured at both the Methow and Twisp trap sites (Table 2). Biological data collected from trapped fish is detailed in Table 3. Methow River discharge for the period operated ranged from 8.2 to 12.7 m³s, providing expected trap efficiencies greater than 1.5 percent. Twisp River discharge for the period operated ranged from 0.7 to 1.1 m³s, providing expected trap efficiencies greater than 20.5 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2023. SHR = wild steelhead/rainbow.

Species/origin	Methow			Twisp			Basin total
	Mar-June	July	Aug	Mar-June	July	Aug	
Precocial Chin/wild	0	0	1	0	0	0	1
Yearling Chin/wild	109	0	0	969	0	0	1,078
Yearling Chin/hatch	1,861	0	0	4,197	0	0	6,058
Sub Chin/wild-parr	634	291	63	211	96	49	1,344
Sub Chin/wild-fry	5,191	0	0	891	1	0	6,083
SHR/wild-transitional	142	0	0	490	0	0	632
SHR/wild-parr	19	2	28	326	29	17	421
SHR/wild-fry	74	7	1	1	19	2	104
Steelhead/hatchery	643	2	0	2,112	4	0	2,761
Coho/wild-smolt	211	0	0	538	0	0	749
Coho/wild-parr	8	4	0	2	0	1	15
Coho/wild-fry	34	0	0	4	0	0	38
Coho/hatchery	1,355	0	0	6,928	0	0	8,283
Bull Trout	1	1	0	12	0	0	14
Cutthroat Trout	1	0	7	9	3	1	21
Brook Trout	0	0	0	1	0	0	1
Sockeye/wild-fry	45	0	0	0	0	0	45
Total	10,328	307	100	16,691	152	70	27,648

Table 3. Biological sampling of juvenile salmonids captured at Methow Basin smolt traps during August.

Species/stage	Location	Length (mm)			Weight (g)			Mean K-factor
		Mean	SD	<i>N</i>	Mean	SD	<i>N</i>	
Precocial Chinook/wild	Methow	132.0	--	1	28.9	--	1	1.26
Sub Chinook/wild/parr	Methow	93.7	6.9	63	9.5	2.2	63	1.14
Sub Chinook/wild/parr	Twisp	81.8	7.1	49	6.6	1.9	49	1.18
Steelhead/wild/parr	Methow	179.9	27.7	28	65.7	23.1	28	1.06
Steelhead/wild/parr	Twisp	130.3	46.5	16	31.0	24.0	16	1.06
Steelhead/wild/fry	Methow	30.0	--	1	--	--	--	--
Steelhead/wild/fry	Twisp	29.0	0.0	2	--	--	--	--
Coho/wild/parr	Twisp	82.0	--	1	6.7	--	1	1.22
Cutthroat Trout	Methow	205.6	27.5	7	87.7	36.5	7	0.96
Cutthroat Trout	Twisp	220.0	--	1	109.3	--	1	1.03

Appendix A. Number of fish reared at Wells and Methow hatcheries to meet Douglas County PUD’s Wells Habitat Conservation Plan mitigation objectives and other hatchery rearing agreements. Values are derived by applying fixed mitigation levels to the entire population on-station, and do not necessarily reflect separate rearing or release strategies.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer		
					Sep '22	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	May	Jun	Jul	Aug			
2021	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	65,237	65,213	65,199	65,187	65,166	65,109	65,057	--	--	--	--	--	64,928	64,928	
2021	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	144,589	144,537	144,506	144,479	144,432	144,306	144,191	--	--	--	--	--	143,905	143,905	
2021	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	31,395	31,383	31,377	31,371	31,361	31,333	31,308	--	--	--	--	--	31,246	31,246	
2022	Spring Chinook	Yearling smolt	CCPUD NNI	61,000 <i>released</i>	--	--	--	61,268	62,373	62,315	62,271	62,256	62,760	62,750	62,736	62,703	--	--	
2022	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,000 <i>released</i>	--	--	--	134,588	137,016	136,889	136,793	136,759	137,866	137,845	137,813	137,740	--	--	
2022	Spring Chinook	Yearling smolt	DCPUD Wells NNI	24,728 <i>released</i>	--	--	--	24,836	25,285	25,261	25,243	22,237	25,441	25,438	25,432	25,418	--	--	
2021	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	351,469	351,469	351,469	351,469	351,421	351,378	351,273	--	--	--	--	--	350,893	350,893	
2022	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	561,715	546,764	523,864	516,342	497,615	--	--	--	--	490,926	490,926	
2022	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	--	360,000	356,568	356,568	356,568	356,568	332,541	331,050	330,125	306,649	--	--	
2022	Summer Chinook	Yearling smolt	DCPUD Wells NNI (Methow release)	35,437 <i>released</i>	--	--	--	--	41,264	41,264	41,264	41,264	39,136	38,990	38,033	37,982	--	--	
2022	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	300,000 <i>released</i>	295,858	298,042	301,150	300,862	300,784	300,725	300,650	79,458	--	--	--	--	221,040	79,458	300,498
2022	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	8,000 <i>released</i>	7,890	7,948	8,031	8,023	8,021	8,020	8,018	2,119	--	--	--	--	5,895	2,119	8,014
2022	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	78,896	79,478	80,307	80,307	80,209	80,194	80,174	21,189	--	--	--	--	58,944	21,189	80,133

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer
					Sep '22	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	May	Jun	Jul	Aug	
2022	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000	18,664	25,399	25,374	25,355	25,345	25,338	12,648	--	--	--	--	--	25,329
				<i>transferred</i>	--	--	--	--	--	--	12,686	12,643	--	--	--	--	
2023	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	300,000	--	--	--	--	--	--	--	--	--	338,682	336,267	334,083	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2023	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	8,000	--	--	--	--	--	--	--	--	--	9,032	8,967	8,909	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2023	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000	--	--	--	--	--	--	--	--	--	90,315	89,671	89,089	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2023	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000	--	--	--	--	--	--	--	--	--	21,078	21,056	21,018	--
				<i>transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2021	Methow Coho	Yearling smolt	DCPUD Mitigation	27,720	25,591	25,570	25,557	25,550	25,539	25,539	25,525	--	--	--	--	--	24,788
				<i>released</i>	--	--	--	--	--	--	--	--	24,788	--	--	--	
2022	Methow Coho	Yearling smolt	DCPUD Mitigation	27,909	--	--	--	27,426	26,927	26,827	26,827	26,511	26,488	26,409	26,617	26,598	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	

¹40,000 Inundation steelhead to be released in the Twisp or Methow with 8,000 NNI fish to total 48,000. 100,000 inundation steelhead to be released in the Methow as a safety net program. 160,000 inundation steelhead to be released directly to the Columbia.

Appendix B. Fish reared at Wells Hatchery pursuant to the Southern Resident Killer Whale and Pacific Salmon Treaty production contract with WFDW.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer
					Sep '22	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	May	Jun	Jul	Aug	
2022	Summer Chinook	Sub-yearling	Orca/PST	1,000,000	--	--	--	1,160,567	1,129,678	1,082,364	1,066,822	1,028,129	--	--	--	--	1,021,947
				<i>released</i>	--	--	--	--	--	--	--	--	--	1,021,947	--	--	

Appendix C. Fish reared at Wells or Methow hatcheries under the Off-License Settlement Agreement.

Brood year	Species	Life stage	Program	Target (pounds) disposition	Month											Total released /transfer	
					Sep '22	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	May	Jun	Jul		Aug
2021	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (Pounds) released	1,625	--	--	--	--	--	--	--	--	--	--	--	--
					(3,250)	(4,266)	--	--	--	--	--	--	--	--	--	--	50,779
					--	1,621	--	--	--	--	--	--	--	--	--	--	--
2022	Riverence Rainbow trout	Juv.	WDFW sport fish	Goal is 20,000 pounds annual combined	64,463	22,083	22,065	22,051	22,005	21,910	21,870	2,579	469	--	--	--	--
					(1,678)	(2,453)	(3,678)	(4,410)	(6,568)	(11,532)	(16,823)	(3,352)	(610)	--	--	--	58,859
					--	38,103	--	--	--	--	--	18,178	2,109	469	--	--	--
2023	Riverence Rainbow trout	Juv.	WDFW sport fish	Goal is 20,000 pounds annual combined	--	--	--	--	--	--	--	--	25,536	25,271	25,255	22,962	
					--	--	--	--	--	--	--	--	(16)	(16)	(90)	(81)	--
					--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix D. Fish reared at Wells Hatchery pursuant to the Wells Aquatic Settlement Agreement – White Sturgeon Management Plan.

Brood year	Species	Life stage	Program	Target disposition	Month											Total released/culled /transferred			
					Sep '22	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	May	Jun	Jul		Aug		
2022	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 325</i>	421	403	367	358	354	343	337	336	287	--	--	--	--		
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	301	--	--	--	--	--	--	--	--	--	--	3	--	--	304
				<i>Wells reservoir</i>	--	--	--	--	--	--	--	--	--	--	328	--	--	--	328
2022	White Sturgeon	Juvenile rearing	Chelan White Sturgeon Supplementation	<i>Up to 2,000</i>	2,594	2,481	2,260	2,201	2,178	2,110	2,075	2,068	1,764	--	--	--	--		
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	1,851	--	--	--	--	--	--	--	--	--	--	2,048	--	--	3,899
				<i>Chelan PUD</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 325</i>	--	--	--	--	--	--	--	--	--	477	750	468	--		
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				<i>Wells reservoir</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	White Sturgeon	Juvenile rearing	Chelan White Sturgeon Supplementation	<i>Up to 2,000</i>	--	--	--	--	--	--	--	--	--	2,937	4,618	2,877	--		
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				<i>Chelan PUD</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--