

# WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

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**To:** Andrew Gingerich and Tom Kahler

**From:** Charlie Snow and Ben Goodman

**Subject:** April Hatchery and Natural Production Report

**Date:** 8 May 2023

**Cc:** Distribution list.

### **HATCHERY ACTIVITIES**

At Methow Hatchery, on-station release spring Chinook were held on a mixed water source containing 78% surface water prior to release. All 2022 brood progeny were reared on 100% well water during April. At Wells Hatchery, the 2022 brood Methow safety-net steelhead were reared on 100% surface water during the month and the 2022 Riverence rainbow were reared on a mixed water source containing 33% surface water. All other populations were held on 100% well water.

#### **2021 Twisp Spring Chinook Salmon**

A total of 28,827 fish were transferred to the Twisp Acclimation Pond on 13 April and 28,767 were released from the pond on 26 April after subtracting 60 mortalities during the month. Mortalities include 21 released fish that re-entered the pond during flooding and perished when the water intake at the pond became inoperable due to heavy debris. This population had a mean fork length of 135.8 mm and were at 15.5 FPP at release (Table 1). The number of fish on-station that apply to Douglas PUD HCP and Grant PUD SSSA mitigation obligations is listed in Appendix A.

#### **2021 Methow Composite Spring Chinook Salmon**

Methow Hatchery released a total of 145,595 fish into the Methow River on 12 April. This population experienced 313 mortalities during the month including 300 fish that were sacrificed to evaluate precocity. This population had a mean fork length of 139.4 mm and was at 14.9 FPP at release (Table 1). Precocity sampling indicated that the population was 46.6% male, of which about 3.6% appeared to be precocial. Additionally, Chelan PUD staff released 65,718 fish from the Chewuch Acclimation Pond beginning on 15 April. This population had a mean fork length of 133.9 mm and were at 15.2 FPP at release (Table 1). 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.

## **2022 Twisp Spring Chinook Salmon**

A total of 24,850 Twisp fry from the 2022 brood were on-station at Methow Hatchery at the end of the month after subtracting 5 mortalities. 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 199,402 Methow Composite fry from the 2022 brood on-station at the end of the month after removing 51 mortalities. This population includes an estimated 63,449 fry for release from the Chewuch Acclimation Pond, and 135,953 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.

Table 1. Spring Chinook Salmon length and weight sampling at Methow Hatchery during the month of April. MC = MetComp, TAP = Twisp Acclimation Pond, CAP = Chewuch Acclimation Pond, FPP = fish per pound.

Raceway	Brood year	Stock-release	Fork length (mm)				FPP
			Mean	<i>N</i>	SD	CV	
TAP	2021	Twisp	135.8	200	9.3	6.8	15.5
13	2021	MC-Methow	139.4	300	7.5	5.4	14.9
CAP <sup>1</sup>	2021	Chewuch	133.9	200	10.3	7.7	15.2
9	2022	MC-Methow	69.9	105	3.3	4.8	117.5
10	2022	MC-Methow	71.0	103	2.9	4.1	106.0
11	2022	MC-Chewuch	69.9	102	3.2	4.6	119.2
12a	2022	Twisp	69.5	107	3.2	4.6	111.3
12b	2022	MC-Methow	70.6	101	3.0	4.3	104.6

<sup>1</sup> Data provided by S. Hopkins, Chelan County PUD.

## **2021 Summer Chinook**

Wells Hatchery released 350,893 smolts for the HCP Inundation yearling program on 27 April after subtracting 380 additional mortalities during April. These fish had a mean length of 163.1 mm and were at approximately 9.6 FPP at release (Table 2). Summer Chinook are being reared to fulfill Wells HCP mitigation obligations (Appendix A).

## **2022 Summer Chinook**

Wells Hatchery had an estimated 356,568 parr for the yearling program, 1,525,744 parr for subyearling programs, and 41,264 parr for the Methow conservation (MEOK) program on-station. The subyearling programs experienced monthly losses of 2,849 parr during April. 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 production contract with WDFW (Appendix B).

In addition to these populations, the hatchery had 176,950 summer Chinook progeny from the Entiat National Fish Hatchery on-station at the end of April that will be used to support reintroduction of summer Chinook into the Columbia River upstream of Chief Joseph Dam.

### **2022 Summer Steelhead**

Wells Hatchery completed most steelhead releases during April including an estimated 165,595 fish for the Columbia safety-net program (CSN), 80,643 fish for the Okanogan safety-net program (OSN), and 12,643 fish for the Omak Creek conservation (OCC) program. An estimated 102,766 fish remained on-station for the Methow safety-net program (MSN) at the end of April. Steelhead populations had mean fork lengths between 160-194 mm and were between 6.3-8.2 FPP during the month (Table 2). These programs experienced losses during the month of 1 MSN fish, 23 CSN fish, 24 OSN fish, and 5 OCC fish.

In addition to these populations, Wells Hatchery also released 20,432 Twisp and 19,209 Methow conservation program progeny during April after removing 33 and 119 mortalities, respectively. Steelhead are being reared to fulfill Douglas PUD Wells HCP mitigation obligations and to fulfill Grant PUD SSSA mitigation obligations (Appendix A).

### **2023 Summer Steelhead**

Spawning of the 2023 brood steelhead was completed at Wells Hatchery during April. A total of 78 females were spawned for all programs producing an estimated 316,002 eggs for safety-net programs (MSN and CSN), 98,894 eggs for the Okanogan SN program, and 21,779 eggs for the Omak conservation program. Pre-spawn mortality for the season totaled two fish (1.1%).

Trapping at the Twisp River weir was on-going through the month of April, with a total of 98 steelhead sampled. Of these, 10 wild fish (5m, 5f) were transferred to the Winthrop National Fish Hatchery for spawning, and 64 wild fish and 24 hatchery fish were released upstream of the weir for natural spawning.

### **2022 Riverence Rainbow Trout**

Wells Hatchery had 2,579 trout on-station at the end of April after removing 16 mortalities and adjusting the population down by 1,097 fish due to routine population assessments. The hatchery staff also planted 18,178 trout into area lakes during the month, including the Conconully system ( $N = 10,000$ ), Pearrygin Lake ( $N = 1,875$ ), the Twin Lakes ( $N = 1,575$ ), Alta Lake ( $N = 1,000$ ), and Leader Lake ( $N = 1,000$ ) among others. These fish were at approximately 1.3 FPP at release. Riverence Rainbow Trout are reared under the Off-License Settlement Agreement between Douglas PUD and WDFW (Appendix C).

### **2021 Methow Coho**

A total of 89,525 Coho Salmon were released from the Twisp Acclimation Pond beginning on 26 April. These fish had a mean fork length of 131.6 mm during the month and were at approximately 18.4 FPP. This population experienced 3,048 mortalities during April, including 3,013 released fish that re-entered the pond during flooding and perished when the water intake

at the pond became inoperable due to heavy debris. Of the 89,525 coho released, 24,788 were reared to meet Wells HCP mitigation obligations (Appendix A).

### **2022 Methow Coho**

Wells Hatchery had 26,511 Methow Coho fry from the 2022 brood on-station at the end of April and 316 additional fish were identified as mortalities during the month. These fish are reared to meet Wells HCP mitigation obligations (Appendix A).

### **2022 White Sturgeon**

Wells Hatchery had 2,404 White Sturgeon on-station after subtracting 8 mortalities during the month of April. White Sturgeon are reared at Wells Hatchery under the Wells Aquatic Settlement Agreement and under agreement with Chelan PUD (Appendix D).

Table 2. Summer Chinook Salmon and steelhead length and weight sampling at Wells Hatchery during the month of April. Cons = conservation program, SN = safety-net. FPP = fish per pound.

Raceway	Brood year	Stock-release	Fork length (mm)				FPP
			Mean	N	SD	CV	
DP-3a	2021	Yearling summer Chin.	163.1	200	12.4	7.6	9.6
DP-4a	2022	Columbia SN steel	190.5	219	23.1	12.1	6.5
DP-4b	2022	Methow SN steel	194.5	204	24.8	12.7	6.3
Circulars 1-2	2022	Twisp cons. steel	174.3	200	24.6	14.1	6.7
Circulars 3-4	2022	Methow cons. steel	173.6	200	29.2	16.8	6.8
Circulars 5-10	2022	Okanogan SN steel	166.9	200	23.0	13.7	7.8
Circular 11	2022	Omak cons. steel	160.2	100	28.3	17.6	8.2

## **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 Steelhead Redd Surveys**

Steelhead redd surveys were conducted in the mainstem Methow River beginning in early March and continuing through April as river conditions allowed. By the end of April, a total of 105 redds were identified in mainstem Methow River index areas. These redd counts will be used to inform PIT-based escapement modelling after spawning has been completed. An additional 37 redds were identified in the Twisp River.

## **2023 Smolt Trapping**

River conditions were favorable for trapping at both the Methow and Twisp sites during the month of April, and traps at both locations operated for the entire month with no interruptions. With increasing river discharge, the 2.4m cone was moved into the upper fishing position at the Methow site on 28 April, which operated in tandem with the 1.5m cone for the last three days of the month. During the month, subyearling wild Chinook fry and hatchery Coho smolts were the primary species captured at the Methow and Twisp trap sites, respectively (Table 3). Biological data collected from trapped fish is detailed in Table 4. Methow River discharge for the period operated ranged from 14.2 to 138.8 m<sup>3</sup>s, providing expected trap efficiencies between 1.1 and 1.5 percent for the nights in which the 1.5m cone was operating in the low position, and between 1.6 and 3.3 percent for the period in which both cones were operating in the upper position. Twisp river discharge for the period operated ranged from 2.5 to 34.8 m<sup>3</sup>s, providing expected trap efficiencies between 5.0 and 20.1 percent.

Table 3. Monthly salmonid captures at Methow Basin smolt traps in 2023. SHR = wild steelhead/rainbow.

Species/origin	Methow		Twisp		Basin total
	March	April	March	April	
Yearling Chinook/wild	20	86	42	868	1,016
Yearling Chinook/hatchery	1	1,855	0	4,196	6,052
Sub Chin/wild-parr	0	113	0	0	113
Sub Chinook/wild-fry	888	2,703	26	245	3,862
SHR/wild-transitional	0	124	6	442	572
SHR/wild-parr	0	13	7	169	189
Steelhead/hatchery	0	574	0	1,915	2,489
Coho/wild-smolt	1	75	42	236	354
Coho/wild-parr	0	5	0	0	5
Coho/wild-fry	0	21	0	0	21
Coho/hatchery	0	1,103	0	6,762	7,865
Bull Trout	1	0	2	5	8
Cutthroat Trout	0	0	0	1	1
Brook Trout	0	0	0	1	1
Sockeye/wild-fry	44	1	0	0	45
<b>Total</b>	<b>955</b>	<b>6,673</b>	<b>125</b>	<b>14,840</b>	<b>22,593</b>

Table 4. Biological sampling of juvenile salmonids captured at Methow Basin smolt traps during April.

Species/stage	Location	Length (mm)			Weight (g)			Mean K-factor
		Mean	SD	<i>N</i>	Mean	SD	<i>N</i>	
Yearling Chinook/wild	Methow	100.9	9.2	86	11.0	3.0	86	1.05
Yearling Chinook/wild	Twisp	96.3	8.0	868	9.6	2.5	868	1.06
Yearling Chinook/hatch	Methow	136.1	10.4	1,228	28.7	7.1	1,228	1.12
Sub Chinook/wild/parr	Methow	52.5	2.8	71	1.5	0.3	71	1.02
Sub Chinook/wild/fry	Methow	39.9	3.3	833	--	--	--	--
Sub Chinook/wild/fry	Twisp	36.6	1.7	110	--	--	--	--
Steelhead/wild/transitional	Methow	175.9	22.5	124	52.8	19.6	124	0.93
Steelhead/wild/transitional	Twisp	166.5	15.7	442	43.7	12.7	442	0.92
Steelhead/wild/parr	Methow	99.9	18.7	13	11.4	6.7	13	1.02
Steelhead/wild/parr	Twisp	83.9	11.6	169	6.3	2.8	169	1.02
Steelhead/hatchery	Methow	199.5	16.1	154	82.5	21.0	154	1.02
Steelhead/hatchery	Twisp	192.9	12.5	1,112	74.6	15.3	1,112	1.02
Coho/wild/smolt	Methow	107.4	10.6	74	13.4	3.6	74	1.06
Coho/wild/smolt	Twisp	97.2	12.5	236	10.1	3.8	236	1.05
Coho/wild/parr	Methow	57.0	10.4	3	1.6	0.1	3	0.95
Coho/wild/fry	Methow	36.4	4.4	16	--	--	--	--
Coho/hatchery	Methow	137.5	11.4	50	29.3	7.8	50	1.10
Coho/hatchery	Twisp	126.2	7.1	6	22.0	4.5	6	1.08
Bull Trout	Twisp	175.0	16.4	5	47.1	13.0	5	0.87
Cutthroat Trout	Twisp	194	--	1	63.2	--	1	0.87
Brook Trout	Twisp	152	--	1	30.2	--	1	0.86
Sockeye/wild/fry	Methow	32.0	--	1	--	--	--	--

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
					May '22	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	
2020	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	63,734
2020	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	141,259
2020	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	30,672
2021	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	65,297	65,291	65,284	65,271	65,237	65,213	65,199	65,187	65,166	65,109	65,057	--	64,928
2021	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	144,724	144,710	144,694	144,664	144,589	144,537	144,506	144,479	144,432	144,306	144,191	--	143,905
2021	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	31,242	31,421	31,418	31,411	31,395	31,383	31,377	31,371	31,361	31,333	31,308	--	31,246
2022	Spring Chinook	Yearling smolt	CCPUD NNI	61,000 <i>released</i>	--	--	--	--	--	--	--	61,268	62,373	62,315	60,663	60,648	--
2022	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,000 <i>released</i>	--	--	--	--	--	--	--	134,588	137,016	136,889	134,452	134,418	--
2022	Spring Chinook	Yearling smolt	DCPUD Wells NNI	24,728 <i>released</i>	--	--	--	--	--	--	--	24,836	25,285	25,261	29,194	29,186	--
2021	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	501,100
2021	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	371,729	371,034	364,773	351,469	351,469	351,469	351,469	351,469	351,421	351,378	351,273	--	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	--

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer
					May '22	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	
2022	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	--	--	--	--	--	360,000	356,568	356,568	356,568	356,568	--
2022	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	--	304,685	296,296	294,347	295,858	298,042	301,150	300,862	300,784	300,725	300,650	79,458	221,040
2022	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	--	8,125	7,901	7,849	7,890	7,948	8,031	8,023	8,021	8,020	8,018	2,119	5,895
2022	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	81,249	79,013	78,493	78,896	79,478	80,307	80,307	80,209	80,194	80,174	21,189	58,944
2022	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	19,191	18,698	18,684	18,664	25,399	25,374	25,355	25,345	25,338	12,648	--	12,643
2021	Methow Coho	Yearling smolt	DCPUD Mitigation	27,720 <i>released</i>	25,940	25,882	25,859	25,612	25,591	25,570	25,557	25,550	25,539	25,539	25,525	--	24,788
2022	Methow Coho	Yearling smolt	DCPUD Mitigation	27,909 <i>released</i>	--	--	--	--	--	--	--	27,426	26,927	26,827	26,827	26,511	--

<sup>1</sup>40,000 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
					May '22	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr	
2021	Summer Chinook	Sub-yearling	Orca/PST	1,000,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	1,035,331
2022	Summer Chinook	Sub-yearling	Orca/PST	1,000,000 <i>released</i>	--	--	--	--	--	--	--	1,160,567	1,129,678	1,082,364	1,066,822	1,028,129	--



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	
					May '22	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr		
2021	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (Pounds) released	2,657	1,630	1,628	1,627	1,625	--	--	--	--	--	--	--	--	50,779
				Goal is 20,000 pounds annual combined	(2,657)	(1,630)	(2,171)	(2,905)	(3,250)	(4,266)	--	--	--	--	--	--	--	
2022	Riverence Rainbow trout	Juv.	WDFW sport fish	Number (Pounds) released	26,785	26,059	26,469	65,447	64,463	22,083	22,065	22,051	22,005	21,910	21,870	2,579	56,281	
				Goal is 20,000 pounds annual combined	(21)	(63)	(212)	(699)	(1,678)	(2,453)	(3,678)	(4,410)	(6,568)	(11,532)	(16,823)	(3,352)		(3,352)

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	
					May '22	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '23	Feb	Mar	Apr		
2021	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	Up to 325	239	--	--	--	--	--	--	--	--	--	--	--	--	3
				Culled	3	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	--	--	--	--	--	--	--	--	--	--	--	--	--	
				Wells reservoir	332	--	--	--	--	--	--	--	--	--	--	--	--	
2021	White Sturgeon	Juvenile rearing	Chelan White Sturgeon Supplementation	Up to 2,000	1,417	--	--	--	--	--	--	--	--	--	--	--	--	17
				Culled	17	--	--	--	--	--	--	--	--	--	--	--		
				Transferred	--	1,346	--	--	--	--	--	--	--	--	--	--		
				Chelan PUD	--	--	--	--	--	--	--	--	--	--	--	--		
2022	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	Up to 325	--	--	901	607	421	403	367	358	354	343	337	336	301	
				Culled	--	--	--	--	--	--	--	--	--	--	--	--		
				Transferred	--	--	--	--	301	--	--	--	--	--	--	--		
				Wells reservoir	--	--	--	--	--	--	--	--	--	--	--	--		
2022	White Sturgeon	Juvenile rearing	Chelan White Sturgeon Supplementation	Up to 2,000	--	--	5,544	5,397	2,594	2,481	2,260	2,201	2,178	2,110	2,075	2,068	1,851	
				Culled	--	--	--	--	--	--	--	--	--	--	--	--		
				Transferred	--	--	--	--	1,851	--	--	--	--	--	--	--		
				Chelan PUD	--	--	--	--	--	--	--	--	--	--	--	--		