

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

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To: Andrew Gingerich and Greg Mackey
From: Charlie Snow and David Grundy
Subject: April Hatchery and Natural Production Report
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Cc: Distribution list.

HATCHERY ACTIVITIES

The 2020 brood spring Chinook Salmon at Methow Hatchery were held on a mixed water source containing 93% surface water and 7% well water during the month. Fish transferred off-station were held on 100% surface water at acclimation ponds during April. All 2021 brood fish were held on 100% well water during the month. At Wells Hatchery, the yearling summer Chinook were held on a mix of 25% well water and 75% surface water prior to release. The safety-net steelhead and Okanogan Basin steelhead programs were held on a mixed water source of 50% well water and 50% surface water prior to release. All other populations were held on 100% well water during the month.

2020 Twisp Spring Chinook Salmon

The Twisp Acclimation Pond had an estimated total of 23,785 fish in the pond at the beginning of April. Eight mortalities were observed during April. Hatchery staff implemented a volitional release at the site on 25 April, and fish were allowed to emigrate from the pond throughout the remainder of the month. A pre-release length sample conducted on 14 April found the population had a mean fork length of 125.1 mm and were at approximately 18 FPP (Table 1). The number of fish on-station that apply to Douglas PUD HCP, Chelan PUD HCP, and Grant PUD Salmon and Steelhead Settlement Agreement (SSSA) mitigation obligations is listed in Appendix A.

2020 Methow Composite Spring Chinook Salmon

Methow Hatchery had a total of 122,464 fish on-station for Methow River release at the beginning of April, and 386 fish were reported as mortalities during the month. Hatchery staff implemented a volitional release of this population on 25 April, and fish were allowed to emigrate through the end of the month. A pre-release length sample conducted on 13 April found the population had a mean fork length of 136.5 mm and were at approximately 15 FPP (Table 1). Similarly, the Goat Wall Acclimation Pond and Chewuch Acclimation Pond had 24,629 and 65,181 fish at each facility, respectively, and volitional releases were implemented at both facilities on 25 April. 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.

2021 Twisp Spring Chinook Salmon

A total of 28,890 fish were on-station at Methow Hatchery at the end of the month after removing two mortalities. These fish had a mean fork length of 70.7 mm during the month of April (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.

2021 Methow Composite Spring Chinook Salmon

Methow Hatchery had a total of 210,084 fish on-station at the end of the month after removing 19 mortalities. These fish had mean fork lengths between 68 and 70 mm during the month (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.

Table 1. Length and weight sampling of Methow Hatchery spring Chinook programs during the month of April. MC = MetComp.

Location	Brood year	Stock-release	Fork length (mm)				FPP
			Mean	<i>N</i>	SD	CV	
Pond 13	2020	MC-Methow	136.5	300	10.3	7.5	14.7
Twisp Acc. Pond	2020	Twisp	125.1	200	14.5	11.6	18.1
Raceway 9	2021	MC-Methow	68.7	101	3.6	5.2	136.8
Raceway 10	2021	MC-Methow	68.5	103	4.1	6.0	134.4
Raceway 11	2021	MC-Chewuch	69.2	101	4.0	5.8	122.0
Raceway 12A	2021	Twisp	70.7	107	4.8	6.8	117.0
Raceway 12B	2021	MC-Goat Wall	70.7	109	3.9	5.6	110.9

2020 Summer Chinook

Release of Wells Hatchery yearling summer Chinook began on 20 April and a total of 351,766 smolts were released overall into the Columbia River below Wells Dam (Table 2). At release, these fish had a mean fork length of 162.9 mm and were at approximately 9.8 FPP. Summer Chinook are being reared to fulfill Wells HCP Inundation program (Appendix A).

2021 Summer Chinook

Wells Hatchery had an estimated 374,061 eggs for the HCP Inundation yearling program on-station, and 1,557,555 fry for subyearling programs after removing 2,439 mortalities during the month. Subyearling programs include releases for the Douglas PUD inundation compensation program, the State of Washington Orca program, and the Pacific Salmon Treaty program (Appendices A and B).

2021 Summer Steelhead

Wells Hatchery completed releases of 2021 brood steelhead during the month of April, including 173,060 fish for the Columbia safety-net program, 101,841 fish for the Methow safety-net program, 23,654 fish for the Methow conservation program and 27,188 fish for the Twisp conservation program (Table 2). Mortalities prior to release included 1,784 fish from the Columbia safety-net program, 1,029 fish from the Methow safety-net program, and 5 fish from the Methow conservation program. The hatchery also released 77,677 Okanogan safety-net progeny and 12,144 Omak Creek conservation program progeny during April and these populations experienced monthly mortality of 3 and 21 fish respectively. Across all programs, steelhead length at release was between 162 and 184 mm, and the fish were between 6.0 and 8.5 FPP (Table 2). Steelhead progeny are being reared to fulfill Douglas PUD Wells HCP mitigation obligations and to fulfill Grant PUD SSSA mitigation obligations (Appendix A).

Table 2. Number, location, and size at release for yearling summer Chinook and conservation program (Cons) and safety-net program (SN) steelhead released from Wells Hatchery.

Species	Program	Release		Fork length (mm)		Weight (FPP)
		Location	<i>N</i>	Mean	CV	
Sum Chinook	Yearling	Wells Hatchery	351,766	162.9	7.4	9.8
Steelhead	Columbia SN	Wells Hatchery	173,060	177.5	19.9	6.4
Steelhead	Methow SN	Methow River	101,841	184.5	13.1	6.0
Steelhead	Met Cons	Winthrop NFH	23,654	176.2	12.9	6.4
Steelhead	Twisp Cons	Twisp River	27,188	177.4	19.0	6.2
Steelhead	Okanogan SN	Okanogan River	77,677	168.2	12.7	7.8
Steelhead	Omak Cons	Omak Creek	12,144	162.3	12.7	8.5

2022 Summer Steelhead

Spawning of the 2022 brood summer steelhead was initiated on 22 March and continued weekly until spawning was completed on 26 April. An estimated total of 127,478 eggs were collected for the Methow safety-net program, 208,803 eggs for the Columbia safety-net program, 107,303 eggs for the Okanogan safety-net program, and 18,684 eggs for the Omak Creek conservation program. In addition, a total of 45 female and 41 male steelhead were removed from the Wells Volunteer Channel in March and April and transferred to Ringold Hatchery for broodstock.

The Twisp River weir began operating on 8 March with the first steelhead captured on 27 March. Overall steelhead captures were low during March ($N = 9$) and no fish were retained for broodstock until April. By 3 May, six wild female and four wild male steelhead were transferred to the Winthrop National Fish Hatchery for spawning. Trapping at the weir will continue throughout May as necessary to meet Twisp conservation program and on-going steelhead reproductive success study requirements.

2021 Kamloops Rainbow Trout

Wells Hatchery had 2,662 trout on-station at the end of the month. These progeny were at approximately 2 FPP and will be released as catchable trout in 2022. During April, Wells Hatchery planted 27,570 Kamloops Rainbow Trout into Okanogan County Lakes, and three additional fish were reported as mortalities during the month. Kamloops Rainbow Trout are reared under the Off-License Settlement Agreement between Douglas PUD and WDFW (Appendix C).

2021 Methow Coho

Wells Hatchery had 25,969 Methow Coho on-station at the end of the month. This population experienced an additional 113 mortalities during the month of April, and were at approximately 348 FPP. These fish are reared to meet Wells HCP mitigation obligations (Appendix A).

2021 White Sturgeon

Wells Hatchery had 2,055 juvenile White Sturgeon on-station at the end of April. These fish were between 1 and 20 FPP and an additional three fish were reported as mortalities during the month. White Sturgeon progeny 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>

2022 Steelhead Redd Surveys

Steelhead redd surveys were conducted in the mainstem Methow River beginning in early March. To-date, a total of 48 redds have been identified in mainstem Methow River index areas, and 28 redds were identified in the Twisp River downstream of the Twisp River Weir. These redd counts will be used to inform PIT-based escapement modelling after spawning has been completed.

2022 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. During the month, hatchery spring Chinook smolts were the primary species captured at both the Methow and Twisp trap sites (Table 3). Biological data collected from trapped fish is detailed in Table 4. Methow River discharge for the period operated ranged from 32.0 to 52.4 m³s, providing expected trap efficiencies between 1.1 and 1.4 percent. Twisp River discharge for the

period operated ranged from 6.7 to 11.8 m³s, providing expected trap efficiencies between 12.7 and 16.7 percent.

Table 3. Monthly salmonid captures at Methow Basin smolt traps in 2022. SHR = wild steelhead/rainbow.

Species/origin	Methow			Twisp		Basin total
	February	March	April	March	April	
Yearling Chin/wild	4	38	51	103	97	293
Yearling Chin/hatch	0	0	2,621	0	3,196	5,817
Sub Chin/wild-parr	0	0	25	0	0	25
Sub Chin/wild-fry	114	897	1,069	26	75	2,181
SHR/wild-transitional	0	1	16	7	21	45
SHR/wild-parr	0	11	9	34	36	90
SHR/wild-fry	0	0	0	0	1	1
Steelhead/hatchery	0	0	86	0	904	990
Coho/wild-smolt	1	13	18	36	80	148
Coho/wild-parr	0	1	1	0	0	2
Coho/wild-fry	2	13	81	23	9	128
Coho/hatchery	0	0	318	0	254	572
Bull Trout	1	0	0	0	1	2
Cutthroat Trout	0	0	0	0	2	2
Rainbow Trout	0	0	0	0	1	1
Sockeye/wild-fry	0	9	15	0	2	26
Total	122	983	4,310	229	4,679	10,323

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	N	Mean	SD	N	
Yearling Chinook/wild	Methow	102.5	8.4	51	11.8	2.9	51	1.07
Yearling Chinook/wild	Twisp	99.0	7.9	97	10.4	2.6	97	1.05
Yearling Chinook/hatchery	Methow	129.5	11.3	1,060	24.5	6.6	1,060	1.10
Yearling Chinook/hatchery	Twisp	130.8	11.3	680	26.4	7.8	680	1.15
Sub Chinook/wild/parr	Methow	51.7	2.2	25	1.5	0.3	25	1.08
Sub Chinook/wild/fry	Methow	39.4	3.6	788	--	--	--	--
Sub Chinook/wild/fry	Twisp	36.5	1.6	73	--	--	--	--
Steelhead/wild/transitional	Methow	168.6	18.6	16	46.4	14.7	16	0.94
Steelhead/wild/transitional	Twisp	167.7	16.1	21	45.5	12.9	21	0.94
Steelhead/wild/parr	Methow	102.4	15.1	9	12.0	5.1	9	1.06
Steelhead/wild/parr	Twisp	78.9	14.1	36	5.5	3.4	36	1.02
Steelhead/wild/fry	Twisp	49.0	--	1	--	--	--	--
Steelhead/hatchery/smolt	Methow	182.9	21.1	16	64.1	25.1	16	1.00
Steelhead/hatchery/smolt	Twisp	192.4	15.9	209	75.2	21.4	209	1.03
Coho/wild/smolt	Methow	106.6	9.1	18	12.8	3.2	18	1.04
Coho/wild/smolt	Twisp	99.9	12.8	80	10.7	4.1	80	1.03
Coho/wild/parr	Methow	51.0	--	1	1.7	--	1	1.28
Coho/wild/fry	Methow	36.6	4.7	81	--	--	--	--
Coho/wild/fry	Twisp	36.7	3.3	9	--	--	--	--
Coho/hatchery/smolt	Methow	142.3	13.4	9	32.9	8.7	9	1.12
Coho/hatchery/smolt	Twisp	144.2	7.6	9	32.6	5.0	9	1.08
Bull Trout	Twisp	173.0	--	1	47.9	--	1	0.93
Cutthroat Trout	Twisp	189.0	--	1	56.3	--	1	0.83
Rainbow Trout	Twisp	440.0	--	1	--	--	1	--
Sockeye/wild/fry	Methow	25.4	1.3	13	--	--	--	--
Sockeye/wild/fry	Twisp	25.5	0.7	2	--	--	--	--

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 '21	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '22	Feb	Mar	Apr			
2020	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	64,105	64,097	64,081	64,074	64,063	64,050	63,999	63,969	63,908	63,898	63,878	63,814	--		
2020	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	142,082	142,064	142,027	142,011	141,988	141,959	141,845	141,780	141,645	141,622	141,578	141,495	--		
2020	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	30,850	30,847	30,839	30,835	30,830	30,824	30,799	30,785	30,756	30,751	30,741	30,723	--		
2021	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	--	65,233	64,758	64,663	64,635	64,629	--		
2021	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	--	144,580	143,528	143,318	143,255	143,242	--		
2021	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	--	--	--	--	--	--	31,393	31,165	31,119	31,105	31,102	--		
2020	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	372,146	359,214	358,932	355,327	355,327	355,327	355,320	355,320	355,320	355,320	355,320	--	351,766	351,766	
2020	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	436,532	--	--	--	--	--	--	--	--	--	--	--	--	436,532	
2021	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	507,990	--	--	
2021	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	300,000 <i>released</i>	--	328,751	326,403	325,601	328,786	313,463	314,244	314,115	314,058	314,006	313,948	--	311,923	311,923	
2021	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	8,000 <i>released</i>	--	8,767	8,704	8,683	8,768	8,359	8,380	8,376	8,375	8,374	8,372	--	8,381	8,381	
2021	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	87,667	87,041	86,827	87,676	83,590	83,798	83,764	83,749	83,735	83,720	--	83,179	83,179	
2021	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	24,221	23,910	23,898	23,889	24,885	24,876	24,865	24,858	24,847	12,147	--	12,683	12,114	24,827

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer	
					May '21	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '22	Feb	Mar	Apr		
2020	Methow Coho	Yearling smolt	DCPUD Mitigation	25,900	26,881	26,814	26,787	26,047	26,040	26,035	26,027	26,012	26,006	26,002	--	--	25,999	25,999
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--		
2021	Methow Coho	Yearling smolt	DCPUD Mitigation	27,720	--	--	--	--	--	--	--	--	--	--	26,082	25,969	--	--
				<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	
					May '21	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '22	Feb	Mar	Apr		
2020	Summer Chinook	Sub-yearling	Orca/PST	1,000,000	--	--	--	--	--	--	--	--	--	--	--	--	--	965,468
				<i>released</i>	965,468	--	--	--	--	--	--	--	--	--	--	--	--	
2021	Summer Chinook	Sub-yearling	Orca/PST	1,000,000	--	--	--	--	--	--	--	--	--	1,039,478	1,037,048	1,049,565	--	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--		

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 '21	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '22	Feb	Mar	Apr		
2020	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (Pounds) released	62	--	--	--	--	--	--	--	--	--	--	--	--	45,068
					(62)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	
					25,025	62	--	--	--	--	--	--	--	--	--	--	--	
2021	Kamloops Rainbow trout	Juv.	WDFW sport fish	Goal is 20,000 pounds annual combined	25,700	25,719	25,660	25,623	63,037	36,672	36,608	36,437	36,301	33,000	33,000	2,662	48,258	
					(31)	(214)	(467)	(1,601)	(5,131)	(18)	(84)	(499)	(1,911)	(3,300)	(9,428)	(1,331)		
					--	--	--	--	--	20,688	--	--	--	--	--	--		--

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 '21	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '22	Feb	Mar	Apr		
2020	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 325</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	1,083
				<i>Wells reservoir</i>	338	--	--	--	--	--	--	--	--	--	--	--	--	338
2021	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 325</i>	--	--	3,054	2,618	2,117	2,107	2,092	291	290	289	288	287	--	
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				<i>Wells reservoir</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	White Sturgeon	Juvenile rearing	Chelan White Sturgeon Supplementation	<i>Up to 2,000</i>	--	--	--	--	--	--	--	1,790	1,784	1,780	1,770	1,768	--	
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				<i>Chelan PUD</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--