

**WASHINGTON DEPARTMENT OF FISH AND WILDLIFE**

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**Subj:** October Hatchery and Natural Production Report

**Date:** 8 November 2019

**Cc:** Distribution list.

**HATCHERY ACTIVITIES**

All populations at the Wells and Methow hatcheries were reared on 100% well water during the month of October.

**2018 Twisp Spring Chinook Salmon**

A total of 31,001 fish were on-station at the end of the month with four additional fish reported as mortalities. These fish had a mean fork length of 105.7 mm (Table 1) and were approximately 30 fish per pound (FPP). The number of fish on-station that apply to Douglas PUD, Chelan PUD, and Grant PUD HCP mitigation obligations is listed in Appendix A.

**2018 Methow Composite Spring Chinook Salmon**

A total of 207,245 fish were on-station at the end of the month with 14 additional fish reported as mortalities. These fish had mean fork lengths, by raceway, between 105.0 and 107.3 mm (Table 1) and were approximately 30-32 FPP. These fish will support releases from the Chewuch Acclimation Pond (CAP; release target = 61,000), Goat Wall Acclimation Pond (GWAP; release target = 25,000), and from Methow Hatchery (release target = 107,765). The number of fish on-station that apply to Douglas PUD, Chelan PUD, and Grant PUD HCP mitigation obligations is listed in Appendix A.

**2019 Brood Spring Chinook Salmon**

By 10 October, eggs from the last spawn were shocked and picked. Fecundities were calculated resulting in an estimated total of 38,332 Twisp and 221,515 MetComp eggs (Table 2). Initial loss was 0.9% for Twisp program and 2.9% for MetComp program. A total of 8,668 eyed eggs from four hatchery-origin MetComp females were culled during the month of October. The number of fish on-station that apply to Douglas PUD, Chelan PUD, and Grant PUD HCP mitigation obligations is listed in Appendix A.

Table 1. 2018 brood spring Chinook salmon length and weight sampling at Methow Hatchery during the month of October. MC = MetComp.

Raceway	Stock-release	Fork length (mm)				FPP
		Mean	N	SD	CV	
1	MC-Chewuch	107.3	103	9.3	8.7	30
3	MC-Chewuch	105.0	105	7.8	7.4	32
5	Twisp	105.7	100	8.6	8.1	30
11	MC-On-Station	107.3	101	10.1	9.4	31

Table 2. 2019 Methow Hatchery spring Chinook salmon broodstock spawning summary. Fish totals do not include one spawned-out female (W), two female and one male pond morts (wild females, hatchery male), and one euthanized hatchery male.

Date	Males		Females		Crosses (females)		Egg take			
	H	W	H	W	MetComp	Twisp	MetComp		Twisp	
							Estimated	Actual	Estimated	Actual
6-Aug	1	3	4	0	2	2	7,394	7,106	8,076	8,046
13-Aug	0	11	3	8	9	2	37,163	37,873	10,586	10,569
20-Aug	0	15	4	13	16	1	63,839	62,221	3,663	3,470
27-Aug	1	24	5	24	25	4	103,513	101,805	16,422	16,247
4-Sep	0	0 <sup>a</sup>	3	2	5	0	13,134	12,510	0	0
Total	2	53 <sup>b</sup>	19	47	57	9	225,043	221,515	38,747	38,332

<sup>a</sup> Males used 9/4 were previously used.

<sup>b</sup> Seven Twisp males and 45 MetComp males were released between 8/27 and 9/4.

### **2018 Wells Summer Chinook Salmon**

Wells Hatchery had a total of 357,089 yearling-program fry on-station at the end of the month after subtracting 146 mortalities. These fish were at approximately 45 FPP by the end of the month. Summer Chinook are being reared to fulfill HCP mitigation obligations (Appendix A).

### **2019 Summer Chinook**

Broodstock collection for the 2019 brood summer Chinook programs occurred primarily through the Wells Hatchery volunteer ladder between June and August. Spawning was initiated and completed in October with a total of 988 fish spawned to support multiple programs (Table 3). Pre-spawn mortality ( $N = 10$ ) totaled 0.91% of the 1,097 fish retained for broodstock. Spawning produced an estimated 521,360 eggs for the yearling program, and 1,651,463 eggs for the subyearling program, which includes extra production to supplement Orca food sources in the marine environment (500,000 subyearling program for Orca recovery funded by the State of Washington). A study on egg treatment chemicals is being conducted on approximately 171,000 eggs from the subyearling egg take, but independent from the production fish. Surplus eggs for the study will be available for other programs after shocking and picking.

Table 3. Spawning of the 2019 brood Wells Hatchery summer Chinook by date, sex, and origin.

Spawn date	Wild		Hatchery		Grand total
	Male	Female	Male	Female	
10/2/2019	11	5	85	103	204
10/3/2019	6	0	43	53	102
10/9/2019	17	16	105	164	302
10/10/2019	6	3	46	74	129
10/16/2019	9	22	93	127	251
Total	49	46	372	521	988
Brood mortality	2	1	0	7	10
Non viable (green)	1	0	1	0	2
Released back to river	3	11	0	0	14
Surplus (10/22/19)	0	2	12	69	83
Grand total	55	60	385	597	1,097

### **2019 Summer Steelhead**

Wells Hatchery had 471,109 steelhead progeny on-station at the end of the month, including 173,954 Columbia River safety-net progeny, 110,127 Methow safety-net progeny, 112,268 Okanogan safety-net progeny, and 19,747 Omak Creek conservation program progeny. Additionally, the hatchery had 26,825 Methow conservation and 28,188 Twisp conservation program parr on-station at the end of October. Mortality during the month totaled an additional 697 fish across all programs, primarily from the Methow safety-net ( $N = 192$ ) and Twisp conservation ( $N = 185$ ) programs. During the month of October, the Methow safety-net and Omak conservation programs were reduced by 11,584 and 1,000 progeny, respectively, due to routing population inventories conducted during the month, and 47,037 additional safety-net fish from the Columbia and Methow release groups were considered excess to production needs and released into Spectacle Lake. Steelhead progeny are being reared to fulfill Douglas PUD and Grant PUD HCP mitigation obligations.

### **2019 Kamloops Rainbow Trout**

Wells Hatchery planted 21,520 juvenile Kamloops Rainbow Trout into Conconully Lake ( $N = 10,768$ ), and Conconully reservoir ( $N = 10,752$ ) during October, after decreasing the overall population by 3,194 fish due to routine inventory assessments at planting. These fish were at approximately 6 FPP at release. The hatchery had 40,818 trout fry remaining on-station at about 710 FPP to support fry plants in 2020. Kamloops Rainbow Trout are reared under the Off-License Settlement Agreement (Appendix B).

### **2018 Methow Coho**

The Douglas PUD Coho mitigation program began with brood year 2018. Wells Hatchery had 43,302 Methow Coho fry on-station at the end of October after removing 70 mortalities during

the month (Appendix A). These fish were at approximately 45 FPP and will be reared at Wells Hatchery until transfer to the Twisp Acclimation Pond as pre-smolts in spring 2020.

### **2019 White Sturgeon**

Wells Hatchery had 580 White Sturgeon progeny on-station at the end of the month after removing 39 mortalities. These fish were between 15 – 40 FPP at the end of the month, and an additional 365 fish were transferred to the Colville Tribe in October. White Sturgeon progeny are reared at Wells Hatchery under the Aquatic Settlement Agreement (Appendix C).

## **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>

### **2019 Smolt Trapping**

River conditions were favorable for trapping at both the Methow and Twisp sites during the majority of October. Woody debris and heavy leaf accumulations caused the Twisp trap to stop briefly on four occasions, but the Methow trap operated every night of the month without interruptions. During the month, subyearling wild Chinook parr were the primary species captured at both the Methow and Twisp trap sites (Table 4). Biological data collected from trapped fish is detailed in Table 5. Methow River discharge for the period operated ranged from 14.4 to 25.9 m<sup>3</sup>s, providing expected trap efficiencies greater than 1.5 percent. Twisp River discharge for the period operated ranged from 1.8 to 7.9 m<sup>3</sup>s, providing expected trap efficiencies between 3.2 and 11.4 percent.

Table 4. Monthly salmonid captures at Methow Basin smolt traps in 2019. SHR = wild steelhead/rainbow.

Species/origin	Methow			Twisp			Basin total
	Mar-Aug	Sept	Oct	Mar-Aug	Sept	Oct	
Precocial Chin/wild	0	0	4	3	2	0	9
Precocial Chin/hatch	0	0	0	3	10	0	13
Yearling Chin/wild	188	0	0	359	0	0	547
Yearling Chin/hatch	19,041	0	0	3,512	0	0	22,553
Sub Chin/wild-parr	1,722	4	69	144	196	805	2,940
Sub Chin/wild-fry	3,133	0	0	175	0	0	3,308
SHR/wild-transitional	345	0	0	431	0	0	776
SHR/wild-parr	38	2	10	270	169	142	631
SHR/wild-fry	64	0	0	72	5	0	141
Steelhead/hatchery	3,501	0	0	3,520	0	7	7,028
Coho/wild-smolt	104	0	0	25	0	0	129
Coho/wild-parr	39	0	4	33	23	35	134
Coho/wild-fry	24	0	0	38	0	0	62
Coho/hatchery	11,873	0	0	5,974	0	0	17,847
Bull Trout	3	0	0	16	2	17	38
Cutthroat Trout	2	0	2	12	1	1	18
Sockeye/wild-fry	30	0	0	0	0	0	30
Total	40,107	6	89	14,587	408	1,007	56,204

Table 5. Biological sampling of juvenile salmonids captured at Methow Basin smolt traps during October.

Species/stage	Location	Length (mm)			Weight (g)			Mean K-factor
		Mean	SD	N	Mean	SD	N	
Precocial Chinook/wild	Methow	131.5	10.7	4	25.1	5.9	4	1.1
Sub Chinook/wild/parr	Methow	94.5	9.2	69	9.3	2.7	69	1.1
Sub Chinook/wild/parr	Twisp	90.0	7.3	804	8.1	2.0	804	1.1
Steelhead/wild/parr	Methow	136.8	56.1	10	38.8	43.5	10	1.0
Steelhead/wild/parr	Twisp	122.4	40.1	142	24.3	19.8	142	1.0
Steelhead/hatchery	Twisp	244.9	40.2	7	163.1	84.2	7	1.0
Coho/wild/parr	Methow	102.0	4.5	4	12.7	2.3	4	1.2
Coho/wild/parr	Twisp	91.6	11.2	35	9.1	3.4	35	1.1
Bull Trout	Twisp	221.6	26.4	16	109.7	47.1	16	1.0
Cutthroat Trout	Methow	233.5	34.6	2	128.0	45.7	2	1.0
Cutthroat Trout	Twisp	291.0	--	1	266.9	--	1	1.1

Appendix A. Number of fish reared at Wells and Methow hatcheries to meet Douglas County PUD 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
					Nov	Dec	Jan '19	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
2017	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	69,493	69,481	69,456	69,272	69,248	--	--	--	--	--	--	--	69,136
2017	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	154,023	153,995	153,941	153,532	153,480	--	--	--	--	--	--	--	153,232
2017	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	33,443	33,437	33,425	33,337	33,325	--	--	--	--	--	--	--	33,271
2018	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	64,178	63,905	63,761	63,724	63,716	63,710	64,466	64,460	64,449	64,444	64,437	64,432	--
2018	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	142,243	141,639	141,317	141,237	141,218	141,206	142,881	142,867	142,844	142,833	142,817	142,806	--
2018	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	30,886	30,754	30,685	30,667	30,663	30,660	31,024	31,021	31,016	31,014	31,010	31,008	--
2019	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	65,335	--
2019	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	144,807	--
2019	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	31,442	--
2017	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	295,363	290,763	290,763	290,763	290,612	--	--	--	--	--	--	--	289,159
2018	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	551,505	547,189	544,876	544,149	--	--	--	--	--	--	531,921
2018	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	398,353	398,353	398,353	398,353	331,534	330,179	330,077	328,984	357,235	357,089	--
2018	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	349,045	347,112	346,916	334,926	327,063	--	--	--	--	--	--	--	304,610

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer
					Nov	Dec	Jan '19	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
2018	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	9,308	9,256	9,251	8,931	8,722	--	--	--	--	--	--	--	8,123
2018	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	93,079	92,563	92,511	89,314	87,217	--	--	--	--	--	--	--	81,229
2018	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	18,269	18,249	18,189	18,219	9,096	--	--	--	--	--	--	--	18,240
2019	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	--	--	--	--	--	--	--	413,950	398,116	397,024	395,767	348,991	--
2019	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	--	--	--	--	--	--	--	11,039	10,616	10,587	10,554	9,306	--
2019	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	--	--	--	--	--	--	110,387	106,164	105,873	105,538	93,064	--
2019	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	--	--	--	--	--	--	21,211	20,864	20,824	20,795	19,747	--
2018	Methow Coho	Yearling smolt	DCPUD Mitigation	37,000 <i>released</i>	--	43,493	43,170	48,648	48,595	48,581	45,505	45,671	43,516	43,437	43,372	43,302	--

<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 or Methow hatcheries under the Off-License Settlement Agreement.

Brood year	Species	Life stage	Program	Target (pounds) disposition	Month												Total released /transfer
					Nov	Dec	Jan '19	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
2018	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (pounds) released	41,663 (1,042)	41,640 (2,449)	31,429 (4,135)	31,411 (7,479)	31,384 (11,012)	4,983 (3,322)	974 (487)	-- (487)	-- (--)	-- (--)	-- (--)	-- (--)	59,364 (27,214)
				Goal is 20,000 pounds annual combined	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	25,602 (7)	24,802 (29)	24,725 (96)	24,808 (349)	68,449 (1,695)	66,307 (4,349)	40,818 (57)	21,520 (3,587)

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

Brood year	Species	Life stage	Program	Target disposition	Month												Total released/culled /transferred
					Nov	Dec	Jan '19	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
2018	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 325</i>	102	101	101	99	99	99	--	--	--	--	--	--	
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Wells reservoir</i>	--	--	--	--	--	--	99	--	--	--	--	--	99
2019	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 325</i>	--	--	--	--	--	--	--	--	1,504	1,214	1,066	580	
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	365	365
				<i>Wells reservoir</i>	--	--	--	--	--	--	--	--	--	--	--	--	--