

**WASHINGTON DEPARTMENT OF FISH AND WILDLIFE**

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**From:** Charlie Snow, Charles Frady, and David Grundy

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

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**Cc:** Distribution list.

**HATCHERY ACTIVITIES**

All 2017 brood spring Chinook at Methow Hatchery (prior to acclimation pond transfers) were reared on a mix of 7% well and 93% surface water during the month of March, including the on-station release group in pond 13. All 2018 brood fish at Methow Hatchery remained on 100% well water. At Wells Hatchery, 2018 brood steelhead were held on a mixed water source of between 37-50% surface water, except the Twisp program steelhead (100% well water). The yearling summer Chinook were held on 90% surface water during March, and all other populations remained on 100% well water during the month.

**2017 Twisp Spring Chinook Salmon**

A total of 29,346 fish were transferred to the Twisp Acclimation Pond on 26 March with 12 additional fish reported as mortalities prior to transfer. These fish had mean fork lengths, by raceway, between 125.3 and 127.9 mm prior to transfer (Table 1) and were approximately 17-18 fish per pound (FPP). The number of fish on-station that apply to Douglas PUD, Chelan PUD, and Grant PUD HCP mitigation obligations are listed in Appendix A.

**2017 Methow Composite Spring Chinook Salmon**

A total of 72,060 fish were transferred to the Chewuch Acclimation Pond 25 March with 38 additional fish reported as mortalities prior to transfer. These fish had mean fork lengths between 126.1 and 129.0 mm, by raceway, prior to transfer (Table 1) and were approximately 17-18 FPP. A total of 29,810 fish were transferred to the Goat Wall Acclimation Pond on 2 April with nine additional fish reported as mortalities prior to transfer. These fish had a mean fork length of 126.7 mm prior to transfer (Table 1) and were approximately 18 FPP. A total of 124,837 fish remained at Methow Hatchery for the on-station release. An additional 29 fish were reported as mortalities from this group. The number of fish on-station that apply to Douglas PUD, Chelan PUD, and Grant PUD HCP mitigation obligations are listed in Appendix A.

### **2018 Twisp Spring Chinook Salmon**

A total of 30,845 fry were on-station at the end of the month with nine additional fry reported as mortalities. The number of fish on-station that apply to Douglas PUD, Chelan PUD, and Grant PUD HCP mitigation obligations are listed in Appendix A.

### **2018 Methow Composite Spring Chinook Salmon**

A total of 204,752 fry were on-station at the end of the month with 22 additional fry reported as mortalities. 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 are listed in Appendix A.

Table 1. 2017 brood spring Chinook salmon length and weight sampling at Methow Hatchery during the month of March. MC = MetComp.

Raceway	BY	Stock-release	Fork length (mm)				FPP
			Mean	<i>N</i>	SD	CV	
1	17	MC-Chewuch	127.5	93	9.9	7.8	18
2	17	MC-Chewuch	126.1	100	10.2	8.1	18
3	17	MC-Chewuch	129.0	100	9.6	7.4	17
4	17	MC-Goat Wall	126.7	100	10.4	8.2	18
5	17	Twisp	127.9	101	9.5	7.4	17
6	17	Twisp	125.3	101	9.9	7.9	18

### **2017 Wells Summer Chinook Salmon**

Wells Hatchery had an estimated 290,612 parr for the yearling program on-station at the end of March. No mortalities were observed for the month (mortalities can be difficult to observe in the large dirt ponds, so the mortality count tends to be a minimum estimate). This population was at approximately 11 FPP. Summer Chinook are being reared to fulfill HCP mitigation obligations (Appendix A).

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

Wells Hatchery had 544,876 subyearling program fry on-station at the end of the month after removing 2,313 mortalities. An estimated 398,353 eggs for the yearling program remained in incubation during March. Summer Chinook are being reared to fulfill HCP mitigation obligations (Appendix A).

### **2018 Summer Steelhead**

Wells Hatchery had 432,070 steelhead progeny on-station at the end of the month. These progeny include 110,194 Methow safety-net, 174,399 Columbia safety-net, 28,879 Twisp Conservation, and 26,920 Methow Conservation program progeny. Okanogan Basin fish on-station included 82,609 HxH progeny from Omak Creek broodstock spawning, and 9,069 WxW progeny from Omak Creek broodstock spawning. An additional 9,137 Omak WxW progeny were transferred to the St. Mary's Acclimation Pond on 25 March. Mortality during the month totaled an additional 10,183 progeny over all programs, most of which was attributed to avian predation of the Columbia safety-net group ( $N = 10,000$ ). Steelhead progeny are being reared to fulfill Douglas PUD and Grant PUD HCP mitigation obligations (Appendix A).

### **2019 Summer Steelhead**

Spawning of the 2019 brood began on 2 January and occurred weekly, as mature females were available, until the last fish from the Wells Dam fish ladder collections in 2018 were spawned on 6 March. Additional broodstock fish were collected in March through tributary hook and line angling, or as swim-ins to the Wells, Winthrop, or Methow hatcheries. As of the end of March, a total of 44 female steelhead had been spawned from all locations, primarily for the Columbia safety-net ( $N = 18$  females) and Okanogan safety-net ( $N = 17$  females) programs. Tributary collection and spawning will continue in April for the Twisp Conservation and Methow safety-net programs. Pre-spawn mortality of collected broodstock has totaled three of the retained hatchery origin fish (4.0%) by the end of the month. Steelhead progeny from these collections are being reared to fulfill Douglas PUD and Grant PUD HCP mitigation obligations.

### **2018 Kamloops Rainbow Trout**

Wells Hatchery had 31,384 Kamloops Rainbow Trout on-station at the end of the month and 27 additional fish were reported as mortalities in March. These fish were between 2.6 and 1.3 FPP depending on release goals to produce catchable- and jumbo-sized trout, respectively. Kamloops rainbow are reared under the Off-License Settlement Agreement (Appendix B).

### **2018 White Sturgeon**

Wells Hatchery had 99 White Sturgeon progeny on-station at the end of the month and no additional fish were reported as mortalities in March. These fish were at approximately two FPP at the end of the month. White Sturgeon progeny were reared at Wells Hatchery under the Aquatic Settlement Agreement (Appendix C).

### **2018 Methow Coho**

The new Douglas PUD Coho mitigation program began with brood year 2018. Wells Hatchery had 48,595 Methow Coho fry on-station at the end of March after removing 53 mortalities during the month. These fish were at approximately 295 FPP and will be reared at Wells Hatchery until transfer to the Twisp Acclimation Pond as pre-smolts in spring 2020.

## 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>

### Spawning Ground Surveys

Spawning ground surveys were initiated 12 March in mainstem Methow reaches. No redds were found during the month. Surveys will continue through the month of April as environmental conditions remain favorable.

### 2019 Smolt Trapping

The Methow River trap was installed on 6 March, and the Twisp River trap first operated on 16 March. Traps at both sites operated through the end of the month with no major interruptions. During the month, subyearling wild Chinook fry and yearling wild Chinook were the primary species captured at the Methow and Twisp trap sites respectively (Table 2). Biological data collected from trapped fish is detailed in Table 3. Methow River discharge for the period operated ranged from 8.7 to 20.4 m<sup>3</sup>s, providing expected trap efficiencies greater than 1.5 percent. Twisp River discharge for the period operated ranged from 1.1 to 4.0 m<sup>3</sup>s, providing expected trap efficiencies greater than 17.3 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2019. SHR = wild steelhead/rainbow.

Species/origin	Methow	Twisp	Basin total
	March	March	
Yearling Chin/wild	30	84	114
Sub Chin/wild/fry	588	2	590
SHR/wild/transitional	0	4	4
SHR/wild/parr	2	12	14
Coho/wild/smolt	4	1	5
Coho/wild/fry	1	1	2
Bull Trout	1	0	1
Sockeye/wild/fry	13	0	13
Total	639	104	743

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

Species/stage	Location	Length (mm)			Weight (g)			Mean K-factor
		Mean	SD	<i>N</i>	Mean	SD	<i>N</i>	
Yearling Chinook/wild	Methow	105.5	9.5	30	12.8	3.4	30	1.1
Yearling Chinook/wild	Twisp	96.3	8.7	84	9.6	2.4	84	1.1
Sub Chinook/wild/fry	Methow	38.7	1.6	322	--	--	--	--
Sub Chinook/wild/fry	Twisp	35.5	0.7	2	--	--	--	--
Steelhead/wild/transitional	Twisp	171.0	29.5	4	50.5	24.2	4	1.0
Steelhead/wild/parr	Methow	102.0	19.8	2	12.3	7.6	2	1.1
Steelhead/wild/parr	Twisp	97.1	27.9	12	10.4	8.7	12	1.0
Coho/wild/smolt	Methow	109.0	9.6	4	14.7	4.0	4	1.1
Coho/wild/smolt	Twisp	104.0	--	1	11.1	--	1	1.0
Coho/wild/fry	Methow	33.0	--	1	--	--	--	--
Coho/wild/fry	Twisp	36.0	--	1	--	--	--	--
Bull Trout	Methow	162.0	--	1	40.0	--	1	0.9
Sockeye/wild/fry	Methow	28.8	1.3	13	--	--	--	--

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	
					Apr '18	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '19	Feb		Mar
2016	Spring Chinook	Yearling smolt	CCPUD NNI	60,516	--	--	--	--	--	--	--	--	--	--	--	--	67,075
				<i>released</i>	67,075	--	--	--	--	--	--	--	--	--	--	--	
2016	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126	--	--	--	--	--	--	--	--	--	--	--	--	148,664
				<i>released</i>	148,664	--	--	--	--	--	--	--	--	--	--	--	
2016	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123	--	--	--	--	--	--	--	--	--	--	--	--	32,280
				<i>released</i>	32,280	--	--	--	--	--	--	--	--	--	--	--	
2017	Spring Chinook	Yearling smolt	CCPUD NNI	60,516	68,178	69,533	69,517	69,509	69,504	69,501	69,496	69,493	69,481	69,456	69,272	69,248	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2017	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126	151,107	154,112	154,077	154,058	154,046	154,039	154,029	154,023	153,995	153,941	153,532	153,480	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2017	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123	32,810	33,463	33,455	33,451	33,448	33,447	33,445	33,443	33,437	33,425	33,337	33,325	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2018	Spring Chinook	Yearling smolt	CCPUD NNI	60,516	--	--	--	--	--	--	64,178	64,178	63,905	63,761	63,724	63,716	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2018	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126	--	--	--	--	--	--	142,243	142,243	141,639	141,317	141,237	141,218	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2018	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123	--	--	--	--	--	--	30,886	30,886	30,754	30,685	30,667	30,663	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	
2016	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000	--	--	--	--	--	--	--	--	--	--	--	--	356,240
				<i>released</i>	356,240	--	--	--	--	--	--	--	--	--	--	--	
2017	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000	419,498	--	--	--	--	--	--	--	--	--	--	--	417,000
				<i>released</i>	--	417,000	--	--	--	--	--	--	--	--	--	--	
2017	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000	332,000	332,000	317,168	315,852	297,425	297,425	297,228	295,363	290,763	290,763	290,612	--	
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--		--
2018	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000	--	--	--	--	--	--	--	--	--	551,505	547,189	544,876	--
				<i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer
					Apr '18	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '19	Feb	Mar	
2018	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	--	--	--	--	--	--	--	398,353	398,353	398,353	--
2017	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	313,429	--	--	--	--	--	--	--	--	--	--	--	313,429
2017	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	8,358	--	--	--	--	--	--	--	--	--	--	--	8,358
2017	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	83,581	--	--	--	--	--	--	--	--	--	--	--	83,581
2017	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	22,225	--	--	--	--	--	--	--	--	--	--	--	33,545
2018	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	--	--	394,887	410,943	409,210	385,464	352,434	349,045	347,112	346,916	334,926	327,063	--
2018	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	--	--	10,530	10,958	10,912	10,279	9,398	9,308	9,256	9,251	8,931	8,722	--
2018	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	--	105,303	109,585	109,123	102,790	93,982	93,079	92,563	92,511	89,314	87,217	--
2018	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	--	42,336	19,018	18,930	18,876	18,859	18,269	18,249	18,189	18,219	9,096	9,173
2018	Methow Coho	Yearling smolt	DCPUD Mitigation	37,000 <i>released</i>	--	--	--	--	--	--	--	--	43,493	43,170	48,648	48,595	--

<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	
					Apr '18	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '19	Feb	Mar		
2016	Rainbow trout	Juv	WDFW sport fish	Number (pounds) released	5,700	1,085	--	--	--	--	--	--	--	--	--	--	--	
					(2,509)	(1,850)	(1,955)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	61,461
				Goal is 20,000 pounds annual combined	30,525	3,875	1,760	--	--	--	--	--	--	--	--	--	--	--
2018	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (pounds) released	24,360	24,360	64,734	63,664	66,408	66,348	42,050	41,663	41,640	31,429	31,411	31,384		
					(115)	(312)	(617)	(984)	(1,794)	(3,606)	(539)	(1,042)	(2,449)	(4,135)	(7,479)	(11,012)	23,920	
				Goal is 20,000 pounds annual combined	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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		
					Apr '18	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '19	Feb	Mar			
2017	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	Up to 325	340	--	--	--	--	--	--	--	--	--	--	--	--		
				Culled	36	--	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	853	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				Wells reservoir	--	338	--	--	--	--	--	--	--	--	--	--	--	--	338
2018	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	Up to 325	--	--	--	969	794	261	103	102	101	101	99	99			
				Culled	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
				Wells reservoir	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--