

# WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

## Fish Program/Science Division/Methow Field Office

20268 Hwy 20, Twisp WA, 98856

Phone: (509) 997-0048 and 997-0066

Fax: (509) 997-0072

**To:** Shane Bickford and Greg Mackey  
**From:** Charlie Snow, Charles Frady, and David Grundy  
**Subj:** August Hatchery and Natural Production Report  
**Date:** 8 September 2017  
**Cc:** Distribution list.

### **HATCHERY ACTIVITIES**

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

#### **2016 Twisp Spring Chinook Salmon**

A total of 30,709 fish were on-station at the end of the month with five additional fish reported as mortalities. These fish had a mean fork length of 101 mm during the month and were at approximately 40 fish per pound (FPP). The number of fish on-station that apply to Douglas PUD HCP and Grant PUD mitigation obligations are listed in Appendix A.

#### **2016 Methow Composite Spring Chinook Salmon**

A total of 219,928 fish were on-station at the end of the month with 28 additional fish reported as mortalities. Approximately 67,000 and 29,000 of the WxW MetComp fry on-station are destined for the Chewuch (61,000 release target) and Goat Wall (25,000 release target) acclimation ponds, respectively. These fish had a mean fork length of 101 mm during the month and were at approximately 40 FPP. The number of fish on-station that apply to Douglas PUD and Chelan PUD HCP and Grant PUD mitigation obligations are listed in Appendix A.

#### **2017 Brood Spring Chinook Salmon**

By the end of August, a total of 148 fish were spawned, including 66 wild fish (Table 1). Live-spawning of wild males occurred each spawn day to maximize WxW and HxW crosses. Three remaining MetComp females will be spawned in September. Pre-spawn mortality was higher than normal due to increased fungus and despite a prescribed, pre-spawn holding treatment. Because of this, additional fish were needed to ensure meeting program goals if pre-spawn mortality continued. Since volunteers to the MH trap were scarce in early August, 10 females and 15 males were shipped from WNFH to MH. Some additional fish were collected from the MH trap as volunteers increased late in the month. Pond morts included three wild females, six hatchery females, and 10 hatchery males. One additional hatchery female was non-viable. A

total of 30 hatchery adults and 18 hatchery jacks surplus to broodstock needs were collected from the MH outfall trap during the month and euthanized. A total of 12,000 eggs and milt were collected from six hatchery females and six hatchery males and used in an egg-to-fry study throughout the Methow Basin. Based on the relationship of fecundity to female weight (kg) from females spawned at Methow Hatchery (MH) between 2014 and 2016, estimated egg take for the MetComp and Twisp programs is 281,714 and 29,510 eggs, respectively (Table 1). Eyed eggs from hatchery females (HxW and HxH crosses) in excess of program goals will be culled or transferred to WNFH depending on need.

Table 1. 2017 Methow Hatchery spring Chinook salmon broodstock spawning summary.

Date	Males		Females		Crosses (females)		Estimated egg take	
	H	W	H	W	MetComp	Twisp	MetComp	Twisp
1-Aug	1	1	4	1	5	0	20,139	0
8-Aug	5	1	12	7	16	3	60,836	13,978
15-Aug	14	11	16	15	28	3	109,493	8,671
22-Aug	11	12	5	12	15	2	59,185 <sup>a</sup>	6,861
29-Aug	7	3	7	3	10	0	32,061 <sup>b</sup>	0
Total	38	28	44	38	74	8	281,714	29,510

<sup>a</sup> After removal of 4,500 hatchery-origin eggs for egg-to-fry survival study.

<sup>b</sup> After removal of 7,500 hatchery-origin eggs for egg-to-fry survival study.

### **2016 Wells Summer Chinook Salmon**

Wells Hatchery had 356,340 fry on-station for the yearling program, with an additional 100 yearling program fry counted as mortality during August. Additionally, the population was adjusted upwards by 5,601 fish after routine marking activities were concluded. These progeny are being reared to fulfill HCP mitigation obligations (Appendix A).

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

Wells Hatchery collected 2,024 summer Chinook salmon from the volunteer ladder between 11 July and 31 August. Of these fish, a total of 29 were listed as mortalities (1.4%) and 1,216 were provided to local tribes. As of 31 August, the hatchery had an estimated 779 fish on station for broodstock and tribal surplus purposes. Broodstock spawning will begin in October, and will support the Wells yearling and subyearling releases and the Yakama Nation's Yakima River reintroduction program.

### **2017 Summer Steelhead**

Wells Hatchery had 406,708 steelhead progeny on-station to support releases into the Methow, Columbia, and Okanogan rivers. An additional 31,787 Omak WxW progeny were also at Wells Hatchery, and 51,134 progeny from the Winthrop National Fish Hatchery conservation program, which includes progeny from Twisp River broodstock collections, were on-station at Methow Hatchery at the end of the month. Mortality during the month totaled 1,181 fish from the Wells

program, 145 Omak progeny, and 2,123 Twisp progeny. A negative population adjustment of 4,197 fish was also made to the Wells group during the month. Steelhead progeny are being reared to fulfill Douglas PUD HCP and Grant PUD mitigation obligations (Appendix A).

### **2018 Summer Steelhead**

Trapping of the 2018 brood summer steelhead at Wells Dam began on 1 August, and continued approximately three days per week during the month. At the end of the month, a total of 41 fish had been sampled by evaluation staff, and 23 of those fish were retained for broodstock. An estimated 39% of the sampled fish were of natural (wild) origin, although scale data from sampled fish have not yet been analyzed.

### **2016 Spokane Rainbow**

Wells Hatchery had 57,001 fry from the 2016 brood on-station at the end of the month after subtracting 373 mortalities. These fish were at about 16 FPP and are reared to fulfill the Off-License Settlement Agreement (Appendix B).

### **2017 White Sturgeon**

Wells Hatchery had 1,581 White Sturgeon progeny on-station at the end of the month after subtracting 444 mortalities during August. White sturgeon progeny are reared at Wells Hatchery under the Aquatic Settlement Agreement (Appendix C).

### **2017 Lahontan Cutthroat**

Wells Hatchery had 3,768 Lahontan Cutthroat Trout progeny from broodstock spawned at Lake Lenore (Grant County) on-station at the end of the month, and 32 additional fish were reported as mortalities during the month. Additionally, Wells Hatchery shipped 171,747 fry to Columbia Basin Hatchery on 3 August. These fish averaged 693 FPP at transfer, and the overall population estimate at the hatchery before transfer was increased by 7,226 fish after routine inventories were conducted. These fish are reared to fulfill the Off-License Settlement Agreement (Appendix B).

## **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), Lost River (LOR), Early Winters Creek (EWC), 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**

As of 31 August, a total of 146 spring Chinook Salmon redds were found in the Methow River Basin, including 26 redds counted by USFWS in M8, M7, M6 and WN1. Of the basin-wide redd

count, 80 (54.8%) were found in the upper Methow subbasin, 53 (36.3%) were found in Chewuch subbasin, and 13 (8.9%) were found in the Twisp subbasin. Surveys will continue throughout the month of September.

### **2017 Smolt Trapping**

River conditions were favorable for trapping at both the Methow and Twisp sites during the month and both sites operated without interruption. At the end of August, river discharge at the Twisp site was very low but the trap still operated and captured fish. An unusually high number (54) of precocious yearling Chinook were captured at the Twisp site in August. Not including these precocious fish, subyearling wild Chinook parr were the primary species captured at both the Methow and Twisp trap sites during the month (Table 2). Biological data collected from trapped fish is detailed in Table 3. Methow River discharge for the period operated ranged from 10.8 to 22.0 m<sup>3</sup>s, providing expected trap efficiencies greater than 1.5 percent. Twisp River discharge for the period operated ranged from 1.2 to 3.5 m<sup>3</sup>s, providing expected trap efficiencies greater than 18.5 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2017. SHR = wild steelhead/rainbow. M-M=March through May total.

Species/origin	Methow				Twisp				Basin total
	M-M	June	July	Aug	M-M	June	July	Aug	
Precocial Chin/wild	0	0	0	0	0	0	0	39	39
Precocial Chin/hat.	0	0	0	0	0	0	0	15	15
Yearling Chin/wild	488	2	0	0	796	13	0	0	1,299
Yearling Chin/hatch	13,325	0	0	0	3,827	0	0	0	17,152
Sub Chin/wild-parr	32	212	312	22	0	12	91	35	716
Sub Chin/wild-fry	3,583	241	18	0	176	14	20	0	4,052
SHR/wild-trans.	373	0	0	0	227	9	0	0	609
SHR/wild-parr	37	2	1	0	148	27	18	34	267
SHR/wild-fry	0	0	5	1	0	0	15	7	28
Steelhead/hatchery	2,689	6	3	1	2,597	16	4	6	5,322
Coho/wild-smolt	5	0	0	0	4	0	0	0	9
Coho/wild-parr	0	0	1	0	0	0	1	0	2
Coho/wild-fry	1	1	0	0	0	0	0	0	2
Coho/hatchery	2,221	0	0	0	0	0	0	0	2,221
Bull trout	2	0	0	0	3	2	0	0	7
Cutthroat Trout	0	0	1	0	0	1	4	1	7
Sockeye/wild-fry	258	3	0	0	0	0	2	0	263
<b>Total</b>	<b>23,014</b>	<b>467</b>	<b>341</b>	<b>24</b>	<b>7,778</b>	<b>94</b>	<b>155</b>	<b>137</b>	<b>32,010</b>

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	Twisp	123.7	9.3	39	23.1	4.9	39	1.2
Precocial Chinook/hatch.	Twisp	178.3	9.4	15	65.8	13.4	15	1.1
Sub Chinook/wild/parr	Methow	92.5	8.9	22	9.4	3.0	22	1.1
Sub Chinook/wild/parr	Twisp	87.2	8.0	35	8.0	2.2	35	1.2
Steelhead/wild/parr	Twisp	130.9	39.4	34	29.9	28.5	34	1.1
Steelhead/wild/fry	Methow	47.0	--	1	--	--	--	--
Steelhead/wild/fry	Twisp	37.0	7.0	7	--	--	--	--
Steelhead/hatchery/parr	Methow	232.0	--	1	124.6	--	1	1.0
Steelhead/hatchery/parr	Twisp	192.5	29.5	6	81.0	34.6	6	1.1
Cutthroat Trout	Twisp	163.0	--	1	42.2	--	1	1.0

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	
					Sep '16	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr	May	Jun	Jul	Aug		
2015	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	65,692	65,691	65,666	65,638	65,618	65,608	51,720	--	--	--	--	--	--	51,697
2015	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	--	114,630	--	--	--	--	--	114,579
2015	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	31,614	31,613	31,602	31,588	31,578	31,574	24,890	--	--	--	--	--	--	24,879
2016	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	68,677	68,677	68,677	68,677	68,594	68,032	68,032	67,814	67,806	67,792	67,783	--	--
2016	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	152,213	152,213	152,213	152,213	152,030	150,785	150,785	150,302	150,284	150,253	150,234	--	--
2016	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	33,050	33,050	33,050	33,050	33,011	32,740	32,740	32,635	32,631	32,625	32,620	--	--
2015	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	336,117	336,117	336,117	336,117	336,117	335,239	333,462	--	--	--	--	--	--	329,809
2016	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	583,000	583,000	513,238	444,000	443,117	470,247	234,710	--	--	--	--	234,710
2016	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	368,940	372,107	372,107	372,107	366,490	362,301	361,696	359,464	359,127	356,640	--	--
2016	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	337,536	331,315	317,688	314,795	314,694	314,555	314,262	217,219	--	--	--	--	--	90,679
2016	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	9,001	8,835	8,471	8,395	8,392	8,388	8,380	5,793	--	--	--	--	--	2,418
2016	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	90,009	88,350	84,716	83,945	83,918	83,881	83,803	57,925	--	--	--	--	--	24,181
2016	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	34,616	34,616	35,606	34,542	34,542	33,461	32,868	--	--	--	--	--	--	26,054

<sup>1</sup>40,000 Inundation steelhead to be released in the Twisp 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 A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer	
					Sep '16	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr	May	Jun	Jul	Aug		
2017	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	329,265	324,326	354,002	--
2017	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	8,780	8,649	9,440	--
2017	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	87,840	86,487	94,400	--
2017	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	--	--	--	--	--	--	--	--	--	--	33,977	31,787	--

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
					Sep '16	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr	May	Jun	Jul	Aug	
2015	Rainbow trout	Juv	WDFW sport fish	Number (pounds) released	33,026	32,949	32,897	32,975	33,741	33,652	33,280	20,308	5,398	--	--	--	51,384
					(3,471)	(4,308)	(5,178)	(7,516)	(8,656)	(8,288)	(11,110)	(9,104)	(2,720)	(1,854)	(--)	(--)	
2016	Rainbow trout	Juv	WDFW sport fish	Goal is 20,000 pounds annual combined	--	--	--	72,878	68,293.	62,418	62,379	61,927	61,612	59,120	57,374	57,001	--
					(--)	(--)	(--)	(73)	(20)	(65)	(142)	(405)	(692)	(1,056)	(1,739)	(3,563)	
2017	Lahontan cutthroat	Juv	WDFW sport fish	Goal is 20,000 pounds annual combined	--	--	--	--	--	--	--	--	178,526	169,589	169,589	3,768	171,747
					(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(178)	(169)	(242)	(5)	

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
					Sep '16	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr	May	Jun	Jul	Aug	
2016	White sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 5,000</i>	15,235	13,560	10,458	9,343	9,495	6,690	6,654	6,654	5,090	--	--	--	3,655
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	2,293	--	--	--	1,362	--	--	--	
				<i>Wells reservoir</i>	--	--	--	--	--	--	--	--	--	5,125	--	--	
2017	White sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	<i>Up to 5,000</i>	--	--	--	--	--	--	--	--	--	--	2,053	1,581	-
				<i>Culled</i>	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Transferred</i>	--	--	--	--	--	--	--	--	--	--	--	--	
				<i>Wells reservoir</i>	--	--	--	--	--	--	--	--	--	--	--	--	