

**WASHINGTON DEPARTMENT OF FISH AND WILDLIFE**

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**To:** Shane Bickford and Greg Mackey

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

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**Cc:** Distribution list.

**HATCHERY ACTIVITIES**

At Methow Hatchery, all 2015 brood fish were held on a mix of 95% surface and 5% well water, and all 2016 brood fish were held on 100% well water during the month. At Wells Hatchery, the 2015 brood yearling Chinook and rainbow trout were held on a mix of well and surface water containing 70% and 80% surface water, respectively. The 2016 brood safety-net steelhead were also held on mixed water containing 85% surface water. All other 2016 brood fish were held on 100% well water during the month.

**2015 Twisp Spring Chinook Salmon**

A total of 40,356 fish were transferred to the Twisp Acclimation Pond on 27 March. The late winter with extended cold weather into the spring and heavy snow and ice loads delayed operation of the pond. Transferred fish had mean fork lengths between 124 and 127 mm during the month and were between 17 and 18 fish per pound (FPP; Table 1). The number of fish on-station that apply to HCP mitigation obligations are listed in Appendix A.

**2015 Methow Composite Spring Chinook Salmon**

A total of 65,646 fish were transferred to the Chewuch Acclimation Pond on 29 March. The late winter with extended cold weather into the spring and heavy snow and ice loads delayed operation of the pond. Transferred fish had mean fork lengths between 124 and 127mm during the month and were between 18 and 19 FPP (Table 1). A total of 25,978 fish were transferred to the Goat Wall Pond on 30 March where Yakama Nation Fisheries personnel will oversee their release. During the month of March, a complete inventory was conducted in Pond 13 to enumerate losses due to bird predation. The total number of fish lost was 51,309. A total of 59,260 fish were on-station at the end of the month with 42 additional fish reported as mortalities. The harsh winter may have exacerbated bird predation in the pond. Hazing was performed to minimize predation once the problem rose to unacceptable levels, and plans are

underway to improve protection measures at the pond from avian predators. On-station fish had mean fork lengths between 126 and 128 mm during the month and were between 19 and 22 FPP. The number of fish on-station that apply to HCP mitigation obligations are listed in Appendix A.

**2016 Twisp Spring Chinook Salmon**

A total of 30,475 fish were on-station at the end of the month with 425 additional fish reported as mortalities. The number of fish on-station that apply to HCP mitigation obligations are listed in Appendix A.

**2016 Methow Composite Spring Chinook Salmon**

A total of 221,082 fish were on-station at the end of the month with 1,653 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. The number of fish on-station that apply to HCP mitigation obligations are listed in Appendix A.

Table 1. 2015 brood spring Chinook salmon length and weight sampling at Methow Hatchery during the month of March. MC = MetComp.

Raceway	Stock-Release	Fork length (mm)				FPP
		Mean	N	SD	CV	
1	MC-Chewuch	124.3	100	9.8	7.9	19
2	MC-Chewuch	124.8	100	9.9	7.9	19
3	MC-Chewuch	125.9	100	9.0	7.1	18
4	MC-Chewuch	126.5	100	12.2	9.7	18
14	Twisp	127.0	100	10.4	8.2	17
15	Twisp	126.2	100	11.3	9.0	17
16	Twisp	124.0	100	10.3	8.3	18

**2015 Wells Summer Chinook Salmon**

Wells Hatchery had 333,462 summer Chinook Salmon progeny for the yearling program on-station at the end of the month and an additional 1,777 fish were reported as mortalities during March. This population had a mean fork length of 163 mm and was at approximately 11 FPP. These fish are being reared to fulfill HCP mitigation obligations (Appendix A).

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

Wells Hatchery had an estimated 443,117 parr on-station for the subyearling program and 366,490 fry on-station for the yearling program. An additional 883 subyearling program progeny and 5,617 yearling program progeny were listed as mortalities during the month of March. These progeny are being reared to fulfill HCP mitigation obligations (Appendix A).

### **2016 Summer Steelhead**

Wells Hatchery had a total of 439,314 steelhead progeny on-station at the end of the month including an estimated 32,868 Omak WxW progeny, 56,420 Twisp progeny, and 350,026 progeny for Okanogan, Columbia, and Methow River releases. Monthly mortality included 593 fish from the Omak WxW group, 44 fish from the Okanogan HxH release group, and 163 fish from the Twisp WxW release group. Steelhead progeny are being reared to fulfill HCP mitigation obligations (Appendix A).

### **2017 Summer Steelhead**

Trapping of 2017 brood summer steelhead began in August and finished during November 2016 with a total of 386 adults trapped from the Wells Dam fish ladders or the Wells Hatchery volunteer channel. A total of 163 of the hatchery-origin fish trapped were retained for broodstock and pre-spawn mortality has totaled five fish by the end of March (3%). Spawning of the broodstock began on 4 January 2017, and a total of 132 fish were spawned by the end of March.

### **2015 Spokane Rainbow**

Wells Hatchery had 33,280 rainbow trout on-station at the end of the month after subtracting 372 mortalities. About 2,500 of these fish are larger sized fish at about 1.4 FPP, with the remaining fish at about 3 FPP. These fish are reared to fulfill the Off-License Settlement Agreement (Appendix B). A fish health check during the month found some fish suffering from bacterial gill disease, and the recommendation was made to initiate a potassium permanganate treatment over three consecutive days.

### **2016 Spokane Rainbow**

Wells Hatchery had 62,379 fry from the 2016 brood on-station at the end of the month after subtracting 39 mortalities. These fish were at 439 FPP and are reared to fulfill the Off-License Settlement Agreement (Appendix B).

## **2016 White Sturgeon**

Wells Hatchery had 6,654 sturgeon progeny on-station at the end of the month and an additional 36 fish were reported as mortalities during March. 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), 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>

### **Steelhead Spawning Ground Surveys**

Steelhead spawning ground surveys were initiated in March. A total of three redds were found within mainstem Methow River index reaches between the Winthrop PIT tag array (MRW) and the town of Pateros. Personnel from the USFWS found a total of 10 redds in the WNFH outfall during March. Detections of PIT-tagged steelhead will be used at multiple sites throughout the Methow basin in conjunction with mainstem redd surveys to estimate overall spawning abundance and distribution of HOR and NOR steelhead.

### **2017 Smolt Trapping**

The Methow River trap was installed on 1 March, and the Twisp River trap first operated on 17 March. Traps at both sites operated through the end of the month with no major interruptions. During the month, sub yearling 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 13.1 to 32.6 m<sup>3</sup>s, providing expected trap efficiencies between 1.4 and 1.7 percent. Twisp River discharge for the period operated ranged from 2.1 to 4.6 m<sup>3</sup>s, providing expected trap efficiencies between 17.4 and 20.3 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2017. SHR = wild steelhead/rainbow.

Species/origin	Methow	Twisp	Basin total
	March	March	
Yearling Chin/wild	47	141	188
Sub Chin/wild-fry	773	17	790
SHR/wild-parr	1	7	8
Bull Trout	0	1	1
Sockeye/wild-fry	187	0	187
Total	1,008	166	1,174

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	102.2	8.2	47	11.7	2.9	47	1.1
Yearling Chinook/wild	Twisp	92.7	6.1	141	8.4	1.7	120	1.0
Sub Chinook/wild/fry	Methow	39.1	1.5	267	--	--	--	--
Sub Chinook/wild/fry	Twisp	36.0	1.1	17	--	--	--	--
Steelhead/wild/parr	Methow	122.0	--	1	20.6	--	1	1.1
Steelhead/wild/parr	Twisp	83.7	14.8	7	6.2	3.3	7	1.0
Bull Trout	Twisp	213.0	--	1	100.4	--	1	1.0
Sockeye/wild/fry	Methow	28.1	1.6	94	--	--	--	--

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 '16	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar		
2014	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	71,812
2014	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	159,161
2014	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	34,559
2015	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	65,259	65,211	65,701	65,697	65,695	65,692	65,691	65,666	65,638	65,618	65,608	51,720	--	--
2015	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	144,638	144,531	145,618	145,610	145,604	145,600	145,595	145,541	145,478	145,435	145,413	114,630	--	--
2015	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	31,405	31,382	31,618	31,616	31,615	31,614	31,613	31,602	31,588	31,578	31,574	24,890	--	--
2016	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	68,677	68,677	68,677	68,677	68,594	68,032	--	--
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	--	--
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	--	--
2014	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	43,953	--	--	--	--	--	--	--	--	--	--	--	--	350,000
2015	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	439,709	--	--	--	--	--	--	--	--	--	--	--	--	439,709
2015	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	345,069	344,395	344,121	343,198	336,304	336,117	336,117	336,117	336,117	336,117	335,239	333,462	--	--
2016	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	--	--	--	--	583,000	583,000	513,238	444,000	443,117	--	--

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer	
					Apr '16	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar		
2016	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	--	--	--	--	--	368,940	372,107	372,107	372,107	366,490	--	
2015	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	134,985 <i>130,363</i>	-- <i>177,334</i>	--	--	--	--	--	--	--	--	--	--	--	307,697
2015	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	3,599 <i>3,476</i>	-- <i>4,729</i>	--	--	--	--	--	--	--	--	--	--	--	8,205
2015	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	35,996 <i>34,764</i>	-- <i>47,289</i>	--	--	--	--	--	--	--	--	--	--	--	82,052
2016	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation <sup>1</sup>	300,000 <i>released</i>	--	--	358,776	371,024	373,452	337,536	331,315	317,688	314,795	314,694	314,555	314,262	--	--
2016	Summer steelhead	Yearling smolt	DCPUD Wells NNI <sup>1</sup>	8,000 <i>released</i>	--	--	9,567	9,893	9,958	9,001	8,835	8,471	8,395	8,392	8,388	8,380	--	--
2016	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	--	95,673	98,939	99,587	90,009	88,350	84,716	83,945	83,918	83,881	83,803	--	--
2016	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	--	34,627	34,010	34,716	34,616	34,616	35,606	34,542	34,542	33,461	32,868	--	--

<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 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 '16	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar	
2014	Rainbow trout	Juv	WDFW sport fish		10,709	3,037	--	--	--	--	--	--	--	--	--	--	50,717
					(4,951)	(1,380)	(740)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)		
					2,180	7,162	1,700	--	--	--	--	--	--	--	--		
2015	Rainbow trout	Juv	WDFW sport fish	Number (pounds) released	63,618	63,352	60,608	36,100	36,052	33,026	32,949	32,897	32,975	33,741	33,652	33,280	20,000 (873)
					(260)	(792)	(1,377)	(1,570)	(2,488)	(3,471)	(4,308)	(5,178)	(7,516)	(8,656)	(8,288)	(11,110)	
					--	--	--	20,000	--	--	--	--	--	--	--	--	
2016	Rainbow trout	Juv	WDFW sport fish	Goal is 20,000 pounds annual combined	--	--	--	--	--	--	--	--	72,878	68,293	62,418	62,379	--
					(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(73)	(20)	(65)	(142)	
					--	--	--	--	--	--	--	--	--	--	--	--	
2016	Lahontan cutthroat	Juv	WDFW sport fish		200,000	161,503	156,757	--	--	--	--	--	--	--	--	150,000 (200)	
					(200)	(161)	(156)	--	(--)	(--)	(--)	(--)	(--)	(--)	(--)		(--)
					--	--	--	150,000	--	--	--	--	--	--	--		--

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 '16	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar	
2015	White sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	Up to 5,000	5,198	5,153	--	--	--	--	--	--	--	--	--	--	1,462 5,000 5,288
				Culled	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	--	--	--	--	--	--	--	--	--	--	--	--	
				Wells reservoir	--	--	5,288	--	--	--	--	--	--	--	--	--	
2016	White sturgeon	Juvenile rearing	Wells White Sturgeon Supplementation	Up to 5,000	--	--	35,845	25,087	17,246	15,235	13,560	10,458	9,343	9,495	6,690	6,654	2,293 --
				Culled	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	--	--	--	--	--	--	--	--	--	2,293	--	--	
				Wells reservoir	--	--	--	--	--	--	--	--	--	--	--	--	