

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

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Subj: April 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, and Okanogan-release 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 40,351 fish were released from the Twisp Acclimation Pond between 17 and 20 April. Five additional fish were reported as mortalities. Prior to release, these fish had a mean fork length of 131 mm and were 17 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 65,621 fish were released from the Chewuch Acclimation Pond between 17 and 19 April. Twenty five additional fish were reported as mortalities. Prior to release, these fish had a mean fork length of 131 mm and were 16 FPP (Table 1). A total of 25,923 fish were released from Goat Wall Acclimation Pond (Yakama Nation pond) between 17 and 26 April. Fifty five additional fish were reported as mortalities. Prior to release, these fish had a mean fork length of 136 mm and were 17 FPP (Table 1). A total of 59,260 fish were released from Methow Hatchery between 17 and 21 April. No additional fish were reported as mortalities. Prior to release, these fish had a mean fork length of 133 mm during the month and were 16 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 during the month. 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. Results of pre-release length and weight sampling conducted on Wells Hatchery Complex fish stocks in April. Pre-release sample size was 200 fish for each release group except for the on-station Methow Hatchery spring Chinook ($N = 300$). Data from the Goat Wall Acclimation Pond was provided by Yakama Nation Fisheries personnel.

Species	Brood	CWT (63...)	Number released	Location	Fork (mm)		Weight (g)			K-factor
					Mean	CV	Mean	SD	FPP	
Sp. Chin	2015	6903	65,621	Chewuch AP	131	9.8	29.1	10.5	15.6	1.28
Sp. Chin	2015	6984	25,923	Goat Wall	136	8.2	27.3	8.4	16.6	1.08
Sp. Chin	2015	7015, 7016	59,260	Methow H.	133	7.8	28.0	8.5	16.2	1.19
Sp. Chin	2015	6996	40,351	Twisp AP	131	8.4	27.2	8.4	16.7	1.21
Su. Chin	2015	6964	329,809	Wells DP-1	153	7.1	37.9	7.9	12.0	1.07
Su. Chin	2015	6948	177,762	Carlton AP	134	8.4	29.4	6.1	15.4	1.22
Steel	2016	6768	48,013	Wells (Twisp)	155	15.0	46.0	20.2	9.9	1.23

2015 Wells Summer Chinook Salmon

Wells Hatchery released 329,809 yearling summer Chinook Salmon progeny into the Columbia River between 25 and 30 April. At release these fish were at approximately 12 FPP (see Table 1) and had a mean fork length of 153 mm. An additional 3,653 fish were reported as mortality during the month. These fish were reared to fulfill HCP mitigation obligations (Appendix A).

2016 Wells Summer Chinook Salmon

Wells Hatchery had an estimated 470,247 parr on-station for the subyearling program and 362,301 fry on-station for the yearling program. An additional 492 subyearling program progeny and 4,189 yearling program progeny were listed as mortalities during the month of

April. Subyearling program fish were marked (ad-clip) and tagged (coded-wire tag) during the month, and the population estimate was adjusted upwards by 27,622 fish after marking and tagging was completed. These progeny are being reared to fulfill HCP mitigation obligations (Appendix A).

2016 Summer Steelhead

Wells Hatchery had a total of 424,269 steelhead progeny on-station at the beginning of April. During the month, the hatchery planted 48,013 Twisp WxW progeny into the Twisp River (see Table 1), 26,054 Omak WxW progeny into Omak Creek, and 69,265 Okanogan HxH progeny into other Okanogan Basin tributaries including the Similkameen River (29,267) and Salmon Creek (39,998). In addition to these releases, the Winthrop National Fish Hatchery (WNFH) released 11,214 Methow conservation program progeny into the Twisp River between 21 and 25 April. An estimated 112,196 Methow safety-net and 168,741 Columbia River safety-net fish remain on-station at Wells Hatchery for release in May. 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 was completed on 17 April with a total of 149 fish spawned for Wells Hatchery programs. For the Twisp River conservation program, 10 wild steelhead (7 female, 3 male) were collected at the Twisp River Weir in April and transferred to the WNFH for assimilation with the Methow conservation program at that facility. At the eyed-egg stage, a representative portion of the Methow conservation program will be transferred to Wells Complex facilities for rearing to the smolt stage and released into the Twisp River.

2015 Spokane Rainbow

Wells Hatchery had 20,308 rainbow trout on-station at the end of the month after subtracting 72 mortalities. About 1,635 of these fish are larger (jumbo) sized fish at about 1 FPP, with the remaining fish (catchable size) at about 2.5 FPP. The hatchery also planted 850 jumbo-sized and 12,050 catchable-sized trout into Okanogan County lakes during the month of April. These fish are reared to fulfill the Off-License Settlement Agreement (Appendix B).

2016 Spokane Rainbow

Wells Hatchery had 61,927 fry from the 2016 brood on-station at the end of the month after subtracting 452 mortalities. These fish were at 153 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 no mortalities were reported during April. 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 and continued through April. By the second of May, a total of 38 redds were found within mainstem Methow River index reaches between the Winthrop PIT tag array (MRW) and the town of Pateros. Fifteen additional redds were found in the Methow Hatchery outfall. WNFH personnel found a total of 48 redds in the WNFH outfall by the end of the month. 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 hatchery- and natural-origin steelhead.

2017 Smolt Trapping

Traps at both the Methow and Twisp sites operated the entire month of April without interruptions. With increasing river discharge, the 2.4m cone was moved into the upper fishing position at the Methow site on 8 April, and began operating in tandem with the 1.5m cone. During the month, hatchery spring Chinook smolts were the primary species captured at both trapping sites (Table 2). Biological data collected from trapped fish is detailed in Table 3. Methow River discharge for the period operated ranged from 33.4 to 100.8 m³s, providing expected trap efficiencies between 1.2 and 1.4 percent for the period in which the 1.5m cone was operating in the low position, and between 2.2 and 4.3 percent for the period in which both cones were operating in the upper position. Twisp river discharge for the period operated ranged from 4.6 to 16.0 m³s, providing expected trap efficiencies between 5.7 and 17.1 percent.

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

Species/origin	Methow		Twisp		Basin total
	March	April	March	April	
Yearling Chin/wild	47	426	141	621	1,235
Yearling Chin/hatch	0	13,299	0	3,826	17,125
Sub Chin/wild-parr	0	8	0	0	8
Sub Chin/wild-fry	773	1,896	17	143	2,829
SHR/wild-transitional	0	312	0	163	475
SHR/wild-parr	1	31	7	120	159
Steelhead/hatchery	0	1,913	0	2,403	4,316
Coho/wild-smolt	0	4	0	3	7
Coho/hatchery	0	1,715	0	0	1,715
Bull Trout	0	0	1	2	3
Sockeye/wild-fry	187	71	0	0	258
Total	1,008	19,675	166	7,281	28,130

Table 3. 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	103.8	9.8	425	12.5	3.5	392	1.1
Yearling Chinook/wild	Twisp	93.5	6.9	621	8.8	2.0	621	1.1
Yearling Chinook/hatchery	Methow	134.4	10.7	645	28.6	7.5	475	1.1
Yearling Chinook/hatchery	Twisp	132.1	9.5	505	26.9	6.6	505	1.1
Sub Chinook/wild/parr	Methow	53.0	3.7	5	1.6	0.9	3	1.0
Sub Chinook/wild/fry	Methow	39.7	3.3	220	--	--	--	--
Sub Chinook/wild/fry	Twisp	37.3	1.5	90	--	--	--	--
Steelhead/wild/transitional	Methow	177.7	23.2	311	56.9	22.8	300	1.0
Steelhead/wild/transitional	Twisp	166.0	18.4	163	44.0	13.8	163	0.9
Steelhead/wild/parr	Methow	101.1	19.2	31	11.3	6.0	30	1.1
Steelhead/wild/parr	Twisp	84.1	13.4	120	6.8	3.5	120	1.1
Steelhead/hatchery/smolt	Methow	205.3	19.1	224	93.6	24.9	222	1.1
Steelhead/hatchery/smolt	Twisp	174.4	16.8	126	56.4	16.2	126	1.0
Coho/wild/smolt	Methow	121.3	11.3	4	20.0	5.8	4	1.1
Coho/wild/smolt	Twisp	116.0	4.6	3	16.4	1.4	3	1.0
Coho/hatchery/smolt	Methow	136.6	11.0	100	28.5	6.9	98	1.1
Bull Trout	Twisp	141.0	1.4	2	22.6	3.6	2	0.8
Sockeye/wild/fry	Methow	27.7	2.4	15	--	--	--	--

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	
					May '16	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr		
2015	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	65,211	65,701	65,697	65,695	65,692	65,691	65,666	65,638	65,618	65,608	51,720	--	51,697	51,697
2015	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	144,531	145,618	145,610	145,604	145,600	145,595	145,541	145,478	145,435	145,413	114,630	--	114,579	114,579
2015	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	31,382	31,618	31,616	31,615	31,614	31,613	31,602	31,588	31,578	31,574	24,890	--	24,879	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	--	--
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	--	--
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	--	--
2014	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	350,000
2015	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	439,709
2015	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	344,395	344,121	343,198	336,304	336,117	336,117	336,117	336,117	336,117	335,239	333,462	--	329,809	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	--	--
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	--	--
2015	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	300,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	307,697
2015	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	8,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	8,205

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer	
					May '16	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr		
2015	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	82,052
2016	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	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	217,219	90,679	90,679
2016	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	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	5,793	2,418	2,418
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	57,925	24,181	24,181
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	--	26,054	26,054

¹40,000 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	
					May '16	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '17	Feb	Mar	Apr		
2014	Rainbow trout	Juv	WDFW sport fish	Number (pounds) released	3,037	--	--	--	--	--	--	--	--	--	--	--	--	50,717
					(1,380)	(740)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	
					7,162	1,700	--	--	--	--	--	--	--	--	--	--	--	
2015	Rainbow trout	Juv	WDFW sport fish	Goal is 20,000 pounds annual combined	63,352	60,608	36,100	36,052	33,026	32,949	32,897	32,975	33,741	33,652	33,280	20,308		32,900
					(792)	(1,377)	(1,570)	(2,488)	(3,471)	(4,308)	(5,178)	(7,516)	(8,656)	(8,288)	(11,110)	(9,104)		(6,543)
					--	--	20,000	--	--	--	--	--	--	--	--	12,900		
2016	Rainbow trout	Juv	WDFW sport fish		--	--	--	--	--	--	--	72,878	68,293	62,418	62,379	61,927		
					(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(73)	(20)	(65)	(142)	(405)	
					--	--	--	--	--	--	--	--	--	--	--	--	--	--
2016	Lahontan cutthroat	Juv	WDFW sport fish		161,503	156,757	--	--	--	--	--	--	--	--	--	--	--	150,000
					(161)	(156)	--	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)	
					--		150,000	--	--	--	--	--	--	--	--	--	--	(200)

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