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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 Wells Hatchery, the yearling Chinook Salmon, 2019 brood Coho, and safety-net steelhead were held on 100% surface water during March. The Okanogan basin steelhead release groups were held on a mix of 50/50 surface/well water during the month and all other populations were reared on 100% well water. At Methow Hatchery, 2020 brood fish were held on 100% well water while 2019 brood fish were held on 100% surface water during the month

2019 Twisp Spring Chinook Salmon

A fish health exam on 2 March found the 2019 brood Twisp spring Chinook healthy overall and a total of 37,901 fish were transferred to the Twisp Acclimation Pond 16 March with nine additional fish reported as mortalities prior to transfer. Four additional mortalities were reported post-transfer, leaving 37,897 fish in the pond at the end of the month. These fish had mean fork lengths between 132.5 and 133.3 mm (Table 1) and were approximately 16 fish per pound (FPP). The number of fish on-station that apply to Douglas PUD Habitat Conservation Plan (HCP), Chelan PUD HCP, and Grant PUD Salmon and Steelhead Settlement Agreement (SSSA) mitigation obligations is listed in Appendix A.

2019 Methow Composite Spring Chinook Salmon

A fish health exam on 2 March found the 2019 brood Methow Composite spring Chinook healthy overall and a total of 66,257 fish were transferred to the Chewuch Acclimation Pond 17 March with 12 additional fish reported as mortalities prior to transfer. A total of 24,598 fish were transferred to the Goat Wall Acclimation Pond on 23 March with five additional fish reported as mortalities prior to transfer. An estimated 246 fish escaped post-transfer, leaving 24,352 fish in the pond at the end of the month. A total of 109,203 fish remained on-station at the end of the month with 562 additional fish reported as mortalities. These fish had mean fork lengths between 130.8 and 132.7 mm (Table 1) and were approximately 16-17 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). Low-level mortalities in one raceway have been attributed to chronic bacterial kidney disease; the affected fish remain isolated from the main group and are being monitored closely. No therapeutic interventions are recommended at this time due to a lack of effective and safe treatment options. The number of fish on-station that apply to Douglas PUD HCP, Chelan PUD HCP, and Grant PUD SSSA mitigation obligations is listed in Appendix A.

Table 1. 2019 and 2020 brood spring Chinook Salmon length and weight sampling at Methow Hatchery during the month of March. MC = MetComp.

Raceway	Brood year	Stock-release	Fork length (mm)				FPP
			Mean	<i>N</i>	SD	CV	
1	2019	Twisp	132.5	186	13.9	10.5	16.2
2	2019	Twisp	133.3	194	14.8	11.1	15.6
3	2019	MC-Goat Wall	132.5	106	12.4	9.3	16.3
4	2019	MC-Goat Wall	132.7	90	14.2	10.7	16.2
5	2019	MC-Chewuch	131.1	217	13.0	9.9	16.6
6	2019	MC-Chewuch	131.8	171	11.6	8.8	16.4
7	2019	MC-Chewuch	130.8	223	13.3	10.1	16.8
9	2020	MC-on-station	59.6	105	3.4	5.8	204.9
10	2020	MC-on-station	59.4	113	3.3	5.5	213.7
11	2020	MC-Chewuch	59.6	106	2.8	4.8	213.1
12A	2020	Twisp	59.1	100	3.0	5.2	218.5
12B	2020	MC-Goat Wall	60.3	102	3.0	5.0	177.0

2020 Twisp Spring Chinook Salmon

A total of 25,036 fish were on-station at the end of the month with 55 additional fish reported as mortalities. These fish had a mean fork length of 59.1 mm (Table 1) and were approximately 219 FPP. The number of fish on-station that apply to Douglas PUD HCP, Chelan PUD HCP, and Grant PUD Salmon and Steelhead Settlement Agreement (SSSA) mitigation obligations is listed in Appendix A.

2020 Methow Composite Spring Chinook Salmon

A total of 214,966 fish were on-station at the end of the month with 113 additional fish reported as mortalities. These fish had mean fork lengths between 59.4 and 60.3 mm (Table 1) and were approximately 177-214 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 HCP, Chelan PUD HCP, and Grant PUD Salmon and Steelhead Settlement Agreement (SSSA) mitigation obligations is listed in Appendix A.

2019 Summer Chinook

Wells Hatchery had 366,682 yearling program summer Chinook juveniles on-station with 345 additional fish reported as mortalities during the month. These fish were at approximately 12 FPP at the end of the month. Summer Chinook are being reared to fulfill Wells HCP mitigation obligations (Appendix A).

2020 Summer Chinook

Wells Hatchery had a total of 375,479 sac-fry for the yearling program and 1,450,858 fry for subyearling programs on-station at the end of the month. The subyearling population reflects a 77,060 decrease after routine population inventory monitoring. This population includes releases for the Douglas PUD inundation compensation program, the State of Washington Orca-program, and the Pacific Salmon Treaty program. Mortality for the subyearling program fish totaled 2,033 fish overall during the month. Summer Chinook are being reared to fulfill Wells HCP mitigation obligations (Appendix A).

2020 Summer Steelhead

A fish health exam was conducted on the Omak conservation steelhead on 9 March and the population was healthy overall. Wells Hatchery transferred the entire population (12,155) of Omak conservation program fish to the St. Mary's Acclimation Pond on 18 March. The hatchery had 173,059 parr for the Columbia safety-net group, 106,740 parr for the Methow safety-net group, and 89,849 parr for the Okanogan hatchery group remaining on-station at the end of March. Mortality during the month for these populations totaled 289 fish from the Columbia safety-net ($N = 150$), Methow safety-net ($N = 100$), Okanogan hatchery ($N = 30$), and the Methow ($N = 2$), Twisp ($N = 6$), and Omak Creek ($N = 1$) conservation programs.

Wells Hatchery also had 24,172 parr for the Methow conservation program and 27,639 parr for the Twisp conservation program on-station at the end of March and these groups experienced mortalities of 2 and 6 fish during the month, respectively. Steelhead progeny are being reared to fulfill Douglas PUD Wells HCP mitigation obligations and to fulfill Grant PUD SSSA mitigation obligations.

2021 Summer Steelhead

The 2021 summer steelhead broodstock for Wells Hatchery and Winthrop National Fish Hatchery (WNFH) programs has primarily been collected through hook-and-line angling in the Methow River. Similarly, broodstock for Okanogan Basin programs has also been collected via angling in the Okanogan River. During March, staff at Wells Hatchery completed spawning of fish for the Columbia safety-net (37 pairs spawned) and Methow safety-net programs (28 females and 15 males spawned). The hatchery also spawned 11 females and 9 males for Okanogan Basin programs during March. Spawning will continue for Okanogan Basin programs until egg collection requirements are satisfied.

2020 Kamloops Rainbow Trout

Wells Hatchery had 34,778 rainbow parr on-station at about 2 FPP with 189 additional fish reported as a mortality during March. A recent fish health examination has identified bacterial coldwater disease and bacterial gill disease, as well as predation, as the main causes for mortality. Adjustments to feeding regimen is recommended to reduce stress and improve water quality; additional therapy may be considered if symptoms worsen and scheduled release can be pushed back to accommodate drug withdrawal mandates. A trapper has been contacted to remove any otter, mink or raccoons from the premises to decrease stress on the fish in addition to any direct mortality. Kamloops Rainbow Trout are reared under the Off-License Settlement Agreement between Douglas PUD and WDFW (Appendix B).

2019 Methow Coho

A fish health exam was conducted on the 2019 brood Coho on 9 March and the population was found healthy overall. Wells Hatchery transferred the entire population of 39,770 Methow Coho to the Twisp Acclimation Pond on 23 March. At transfer, these fish were at approximately 22 FPP, and an additional 35 fish were reported as mortalities at Wells Hatchery prior to the transfer. These fish were reared to meet Wells HCP mitigation obligations (Appendix A).

2020 Methow Coho

Wells Hatchery had 27,025 Methow Coho eyed-eggs on-station at the end of March. These eggs were incubating at Wells Hatchery throughout the month. The 2020 brood Coho will be reared at Wells Hatchery until transfer to the Twisp Acclimation Pond as pre-smolts in spring 2022.

2020 White Sturgeon

Wells Hatchery had 336 White Sturgeon progeny on-station at the end of the month. These fish were between 0.5 and 0.75 FPP and no mortality was reported during March. White Sturgeon progeny are reared at Wells Hatchery under the Wells 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>

2021 Steelhead Spawning Ground Surveys

Steelhead spawning ground surveys were initiated 2 March in mainstem Methow reaches. A total of 25 redds were found in mainstem reaches during the month. Two additional redds were documented in the WNFH outfall by USFWS personnel.

2021 Smolt Trapping

River conditions were favorable for trapping at both the Methow and Twisp sites during the month of March. The Twisp trap was installed on 1 March and operated continuously for the remainder of the month. The Methow trap operated the entire month with no 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 13.0 to 29.7 m³s, providing expected trap efficiencies greater than 1.4 percent. Twisp River discharge for the period operated ranged from 2.6 to 6.6 m³s, providing expected trap efficiencies between 16.9 and 21.1 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2021.

Species/origin	Methow		Twisp	Basin total
	February	March	March	
Yearling Chinook/wild	0	60	52	112
Sub Chinook/wild-fry	24	1,012	5	1,041
SHR/wild-transitional	0	1	6	7
SHR/wild-parr	0	18	19	37
Coho/wild-smolt	0	0	8	8
Coho/wild-fry	0	21	48	69
Coho/hatchery	0	2	0	2
Bull trout	0	0	1	1
Rainbow Trout	0	0	1	1
Sockeye/wild-fry	11	68	0	79
Total	35	1,182	140	1,357

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	103.2	6.4	60	11.2	2.0	60	1.0
Yearling Chinook/wild	Twisp	97.7	7.5	52	9.9	2.1	52	1.0
Sub Chinook/wild/fry	Methow	38.5	1.7	820	--	--	--	--
Sub Chinook/wild/fry	Twisp	36.0	2.4	5	--	--	--	--
Steelhead/wild/transitional	Methow	127.0	--	1	19.9	--	1	1.0
Steelhead/wild/transitional	Twisp	166.7	24.1	6	46.4	22.3	6	0.9
Steelhead/wild/parr	Methow	89.3	16.3	18	7.8	3.9	18	1.0
Steelhead/wild/parr	Twisp	85.1	15.0	19	6.7	3.8	19	1.0
Coho/wild/smolt	Twisp	90.4	14.1	8	7.9	3.6	8	1.0
Coho/wild/fry	Methow	35.2	1.1	21	--	--	--	--
Coho/wild/fry	Twisp	33.8	1.7	48	--	--	--	--
Coho/hatchery	Methow	125.5	3.5	2	20.2	1.6	2	1.0
Bull Trout	Twisp	178.0	--	1	53.3	--	1	0.9
Rainbow Trout	Twisp	390.0	--	1	--	--	--	--
Sockeye/wild/fry	Methow	27.8	1.7	68	--	--	--	--

Appendix A. Number of fish reared at Wells and Methow hatcheries to meet Douglas County PUD’s Wells 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 '20	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '21	Feb	Mar	
2018	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	64,190
2018	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	142,270
2018	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	30,891
2019	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	65,760	65,808	65,796	65,751	65,683	65,520	65,321	64,984	64,820	64,647	64,514	64,311	--
2019	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	145,749	145,857	145,829	145,730	145,578	145,217	144,716	144,028	143,665	143,282	142,987	142,538	--
2019	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	31,647	31,670	31,664	31,642	31,610	31,531	31,435	31,273	31,194	31,111	31,047	30,950	--
2020	Spring Chinook	Yearling smolt	CCPUD NNI	60,516 <i>released</i>	--	--	--	--	--	--	65,706	65,706	65,287	65,110	64,953	64,907	--
2020	Spring Chinook	Yearling smolt	GCPUD Priest Rapids NNI	134,126 <i>released</i>	--	--	--	--	--	--	145,629	145,629	144,700	144,308	143,959	143,859	--
2020	Spring Chinook	Yearling smolt	DCPUD Wells NNI	29,123 <i>released</i>	--	--	--	--	--	--	31,621	31,621	31,419	31,334	31,258	31,236	--
2018	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	50,926	--	--	--	--	--	--	--	--	--	--	--	351,741
2019	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	--	--	--	--	--	--	--	--	--	531,860
2019	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	393,904	393,160	391,819	378,059	367,786	367,786	367,786	367,777	367,527	367,277	367,027	366,382	--

Appendix A. Continued.

Brood year	Species	Life stage	Program	Target release No.	Month												Total released /transfer
					Apr '20	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '21	Feb	Mar	
2020	Summer Chinook	Yearling smolt	DCPUD Fixed Hatchery Compensation	320,000 <i>released</i>	--	--	--	--	--	--	--	415,479	375,479	375,479	375,479	375,479	--
2020	Summer Chinook	Sub-yearling	DCPUD Fixed Hatchery Compensation	484,000 <i>released</i>	--	--	--	--	--	--	--	--	--	557,477	523,359	496,338	--
2019	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	300,000 <i>released</i>	300,660	--	--	--	--	--	--	--	--	--	--	--	300,660
2019	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	8,000 <i>released</i>	8,018	--	--	--	--	--	--	--	--	--	--	--	8,018
2019	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	80,176	--	--	--	--	--	--	--	--	--	--	--	80,176
2019	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	9,542	--	--	--	--	--	--	--	--	--	--	--	19,653
2020	Summer steelhead	Yearling smolt	DCPUD Fixed Hatchery Compensation ¹	300,000 <i>released</i>	--	--	354,615	353,741	349,474	334,709	323,726	326,821	326,589	326,325	326,093	325,870	--
2020	Summer steelhead	Yearling smolt	DCPUD Wells NNI ¹	8,000 <i>released</i>	--	--	9,456	9,433	9,319	8,926	8,633	8,715	8,709	8,702	8,696	8,690	--
2020	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	80,000 <i>released</i>	--	--	94,564	94,331	93,193	89,256	86,327	87,152	87,091	87,020	86,958	86,899	--
2020	Summer steelhead	Yearling smolt	GCPUD Priest Rapids NNI	20,000 <i>transferred</i>	--	--	16,926	16,879	16,833	16,804	16,298	12,178	12,168	12,160	12,156	12,155	--
2019	Methow Coho	Yearling smolt	DCPUD Mitigation	37,000 <i>released</i>	41,452	41,362	41,325	41,300	39,952	39,920	39,908	39,983	39,865	39,831	39,805	--	39,770

¹40,000 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 '20	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '21	Feb	Mar		
2019	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (pounds) released	2,413	2,643	2,631	2,624	2,619	2,618	--	--	--	--	--	--	--	
					(1,207)	(1,317)	(2,631)	(2,624)	(5,238)	(8,727)	(9,703)	(--)	(--)	(--)	(--)	(--)	(--)	53,290
				Goal is 20,000 pounds annual combined	25,500	3,650	--	--	--	--	2,620	--	--	--	--	--	--	--
2020	Kamloops Rainbow trout	Juv.	WDFW sport fish	Number (pounds) released	25,832	25,613	25,532	22,435	64,683	60,798	45,975	34,998	34,979	32,879	34,967	34,778		
					(9)	(32)	(96)	(431)	(1,310)	(2,781)	(79)	(318)	(921)	(3,653)	(8,742)	(17,389)	18,831	
				Goal is 20,000 pounds annual combined	--	--	--	--	--	--	18,831	--	--	--	--	--	--	--

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

Brood year	Species	Life stage	Program	Target disposition	Month												Total released/culled /transferred		
					Apr '20	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan '21	Feb	Mar			
2019	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supple-mentation	Up to 325	571	--	--	--	--	--	--	--	--	--	--	--	--		
				Culled	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	--	--	--	--	--	--	--	--	--	--	--	--	--	--	365
				Wells reservoir	--	570	--	--	--	--	--	--	--	--	--	--	--	--	570
2020	White Sturgeon	Juvenile rearing	Wells White Sturgeon Supple-mentation	Up to 325	--	--	--	1,543	1,384	1,203	738	350	350	336	336	336			
				Culled	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
				Transferred	--	--	--	--	--	--	436	647	--	--	--	--	--	647	
				Wells reservoir	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--