



Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

**Priest Rapids Fish Forum
Meeting**

**Wednesday, 3 April 2019
10:00 a.m. – 12:00 p.m.**

MEETING MINUTES

PRFF REPRESENTATIVES

Steve Lewis, USFWS
Ralph Lampman, Bob Rose, YN
Pat Wyena, Wanapum
Kirk Truscott, Jason McLellan, CCT
Mike Clement, Chris Mott Grant PUD
Tracy Hillman, Facilitator

Patrick Verhey, Laura Heironimus, WDFW
Breean Zimmerman, WDOE
Aaron Jackson, Carl Merkle, CTUIR
Keith Hatch, BIA
Tom Skiles, CRITFC/CTUIR
Erin Harris, Grant PUD

ATTENDEES

Paul Grutter, Golder (Via Phone)
Erin Harris, Grant PUD
Patrick Verhey, WDFW
Pat Wyena, Grant PUD (Via Phone)
Tom Skiles, CRITFC (Via Phone)
Donella Miller, YN
RD Nelle, USFWS (Via Phone)

Chris Mott, Grant PUD
Jason McLellan, CCT (Via Phone)
Doris Squeochs, Wanapum (Via Phone)
Ralph Lampman, YN
Laura Heironimus, WDFW
Mike Clement, Grant PUD
Tracy Hillman, Facilitator

Action Items:

- CCT will identify their PRFF policy representative.
- Tracy Hillman will send the memo outline to the PRFF and members assigned to write sections of the sturgeon memo will send those sections to Tracy.

- I. **Welcome and Introductions** – Tracy Hillman welcomed everyone and participants introduced themselves.
- II. **Agenda Review** – Members reviewed and approved the agenda with the addition of a bull trout update.
- III. **Review March Meeting Notes** – The March 2019 Meeting Minutes were reviewed and approved.
 - A. **Action Items from March Meeting:**
 1. Chris Mott will check with Donella Miller on the testing of juvenile sturgeon at Marion Drain for white sturgeon iridovirus and autoploidy and on the proposed fate of surplus production at the hatchery. **Complete. Donella will provide an update during the meeting today.**
 2. PRFF will review the draft White Sturgeon 2018 Annual Report and provide comments to Chris Mott by 7 March 2019. **Complete.**
 3. CCT will identify their PRFF policy representative. **Ongoing.**
 4. Tracy Hillman will find a meeting day for the White Sturgeon Subgroup. **Complete.**
- IV. **White Sturgeon Management Plan**
 - A. **Update on Juvenile Rearing** –Donella Miller reported that fish at Marion Drain are doing well. She said they sampled fish yesterday and they average 127 grams, which is consistent with past years at this time. She said they collected blood from a sample of fish and sent the samples to UC Davis for spontaneous autoploidy (12N) testing. They should have results next week. She said they have not tested fish for diseases (e.g., white sturgeon iridovirus). She noted that disease testing is the responsibility of Grant PUD.
 - B. **Review Recommendation from PRFF Sturgeon Subgroup** – Tracy Hillman reported that the white sturgeon subgroup met yesterday (2 April) to review monitoring results and to identify a recommendation to the PRFF on future stocking levels for the remainder of the SOA. They also discussed items to include in the memo to the PRFF Policy Committee. Tracy said Paul Grutter (Golder) gave a presentation, which examined evidence for negative density dependence. Paul's analyses evaluated changes in distribution, abundance, movement/entrainment, growth, and survival over time. Tracy said although there are hints of negative density dependence, the results are not conclusive. As a result, members present (GPUD, YN, Wanapum, WDFW, CRITFC/Umatilla, and USFWS¹) agreed the current level of stocking (up to 3,250 juvenile sturgeon; 1,250 in Priest Rapids Reservoir and 2,000 in Wanapum Reservoir) should continue for the remainder of the SOA (the SOA ends on 31 December 2020). Tracy asked Jason McLellan if he had a recommendation on stocking numbers for the remainder of the SOA. Jason agreed with other members and said he (CCT) supported the release of up to 3,250 in the Project Area for the remainder of the SOA.

Tracy said the subgroup also identified items to include in the memo to the PRFF Policy Committee. Those items included:

 - Summary of the SOA requirements.
 - Lack of evidence for negative density dependence.
 - Large variation in survival from year to year.
 - Uncertainties including variation in data over time may be related to the size of fish released each year, effects of Wanapum drawdown (especially on sturgeon prey),

¹ Although the USFWS was not present, Steve Lewis sent Tracy Hillman an email stating their support for stocking up to 3,250 juvenile sturgeon in the Project Area.

changes in sampling methods over time, use of a simple model to estimate survival and abundance, and variation in flows and temperatures.

- Uncertainty associated with gear saturation.
- Implementation of standardized monitoring methods. Thus, the monitoring program is on track to collect consistent data that can be used to make stocking decisions (more years of data are needed).
- Evaluations will focus on condition factor rather than individual growth rates. Condition factor is a better indicator of negative density dependence.
- Modeling will improve with more years of data collected with consistent methods.
- Comparison of results in the Project Area with results from other areas (e.g., Lower Columbia River and Transboundary data).
- The technical group believes it is too early to make a change in stocking numbers based on existing data.

Tracy said the subgroup directed him to prepare an outline for the memo, which includes the recommended items, and discuss the outline with the PRFF. Tracy shared the memo outline (see Attachment 1) and members discussed the outline and identified individuals to help write the memo.

Jason said they have more than a decade of data that can be used to estimate survival rates for sturgeon in the Transboundary area. Laura Heironimus noted that there are few data from the Lower Columbia that can be compared with data from the Priest Rapids Project Area. They may have growth data (condition factors) from Zone 6 (Bonneville to McNary dams) that can be used for comparisons.

Members noted that the memo needs to be brief but have enough information to answer Policy Member questions. Tracy said he will send the memo outline to the PRFF. Members identified to help write sections of the memo will provide their sections to Tracy before the May meeting.

- C. **Other White Sturgeon Items** – Laura Heironimus gave an update on discussions with ODFW (Peter Stevens) on broodstock collection and tagging efforts in 2019. She said ODFW was pleased with the efforts last year and they want to continue the work in 2019. Laura said ODFW tagged 28 adult sturgeon last year and tracked them over time. She said they tracked a gravid female that migrated downstream; that fish moved back upstream in the fall. Males moved both upstream and downstream. She said ODFW's study is a two-year study. They have funding from BPA for this work. After the two-year study, BPA will decide if they will continue funding the study. Because the tags have a five-year life, data will continue to be collected after the two-year study. Laura said she will send ODFW's report to the Forum as soon as the report is available.

V. Pacific Lamprey Management Plan

- A. **Update on Pacific Lamprey Adult Trapping in 2019** – Mike Clement reported that Grant PUD will follow the same trapping schedule as last year. He said they track adult lamprey counts at Bonneville Dam. Trapping at Priest Rapids Dam usually starts about one month after adults are detected at Bonneville Dam and when they see about 50 adult lamprey at Priest Rapids Dam. Mike noted they need to replace the gear boxes for all four lamprey traps. He also said Douglas PUD has not yet contacted Grant PUD regarding trapping adults for Douglas PUD's program.

Ralph Lampman asked if the adult lamprey trapped during the first three weeks of trapping could be used for the Douglas PUD program; adults collected during the last three weeks of trapping would be for the Grant PUD program. Grant PUD fish would be transported and released upstream from Rock Island Dam (or handed off to another entity), while adults trapped for Douglas PUD would be handed to Douglas at Priest Rapids Dam. Ralph said early arriving adult lampreys at Priest Rapids Dam are likely destined for areas upstream from Rocky Reach and Wells dams. Mike said he is okay with trapping fish first for the Douglas PUD program; however, these efforts need to be coordinated before trapping begins.

Doris Squeochs asked if any adult lamprey have died during transportation. Mike said no fish have died during transportation to release sites.

- B. **Annual Report Modifications for 2019** – Mike Clement indicated that each year the draft lamprey annual report goes to the PRFF for a 30-day review. He said they often get comments/edits after the 30-day review. This makes it difficult to address all comments before the final report is due. This year (2018 annual report), Grant PUD received some comments they were unable to address. They propose to address those comments in the next report (2019 annual report). Mike said they will begin working on expanding the Pacific lamprey references in August and September. They will also expand tables in the report and include information on trap efficiency.
- C. **Results from Yakama Nation Translocation Efforts** – Ralph Lampman gave a quick presentation on the Yakama Nation's adult lamprey translocation efforts (Attachment 2). He identified the number of PIT-tagged adult lampreys released into various locations within the Wenatchee, Methow, and Okanogan subbasins. Fish were released during both spring and fall in these subbasins. He identified the number and locations of detections and described the movements of adult lampreys within and among the subbasins. He also talked about detection efficiencies during spring and fall. In general, detection efficiencies at interrogation sites located in lower reaches in the rivers are greater during low flows.
- D. **Other Pacific Lamprey Items** – None.

VI. **Bull Trout**

Mike Clement noted that during the February PRFF meeting, Steve Lewis asked about monitoring bull trout passage within the Priest Rapids and Wanapum fishways during winter. At that time, Mike suggested Steve talk with Tom Dresser (Grant PUD) about monitoring fish passage during winter. Mike said Steve talked with Tom and Grant PUD is open to fishway monitoring during winter for one year. The purpose of the monitoring is to document passage of bull trout during winter months.

- VII. **Next Meeting:** The next PRFF meeting will be on Wednesday, 1 May 2019 at the Grant PUD Natural Resources Office in Wenatchee, WA.

Attachment 1

Outline for Memo to PRFF Policy Committee

MEMORANDUM

To: PRFF Policy Committee
From: PRFF
Subject: Priest Rapids Project White Sturgeon Stocking Program for Population Rebuilding, Mitigation, and Enhancement SOA three-year check in
Date: April 2019

INTRODUCTION (Hillman)

- Summary of 2016 SOA
- Three-Year Check-In Requirement

STOCKING HISTORY (Mott)

- Numbers Released
- Time of Release
- Size at Release

MONITORING AND EVALUATION (Mott and Golder)

- Juvenile Index Monitoring Methods
 - Methodology Changes and Standardization
 - Data Collection
 - Data Analysis and Modeling
- Adult Index Monitoring Methods
 - Methodology Changes and Standardization
 - Data Collection
 - Data Analysis and Modeling

M&E Results (Mott and Golder)

- Changes in Abundance over Time
- Changes in Distribution over Time
- Changes in Movement and Entrainment over Time
- Changes in Growth and Condition with Abundance

Changes in Survival with Abundance and over Time
Diet Analysis

Comparisons with Other Programs

Upper Columbia (Transboundary) Results (McLellan)

Abundance/density, movement, growth/condition, and survival.

Rocky Reach Results (Mott and Keller)

Abundance/density, movement/entrainment, growth/condition, and survival.

Lower Columbia Results (Heironimus)

Density and growth/condition

Uncertainties

Uncertainties in Monitoring (McLellan and Heironimus), Modeling (Golder), and Results (Mott)

Recommendations (Hillman)

Maintain Current Stocking Levels for the Remainder of the SOA

PRFF will Reevaluate Monitoring Methods following Conclusion of SOA

Attachment 2

Outline for Memo to PRFF Policy Committee

Overview of Adult Pacific Lamprey Translocation PIT Tag Results (Wenatchee, Methow, Upper Columbia)

Yakama Nation Fisheries
Ralph Lampman

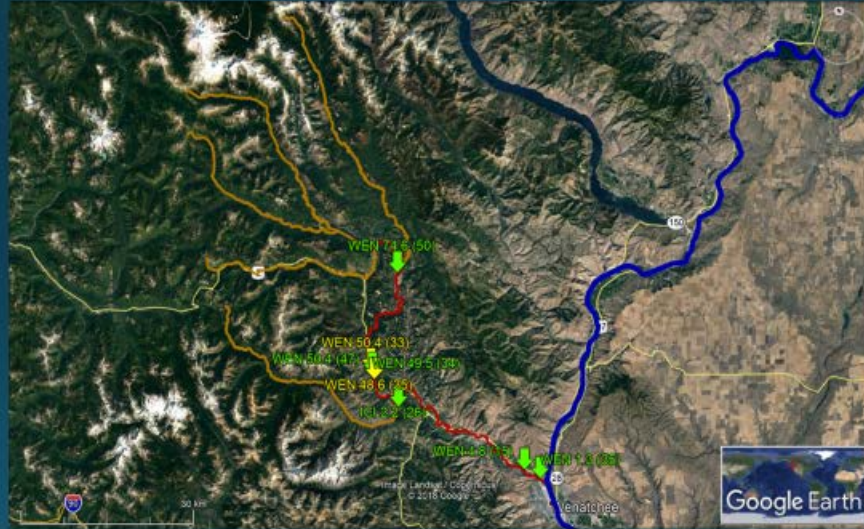


Wenatchee Subbasin

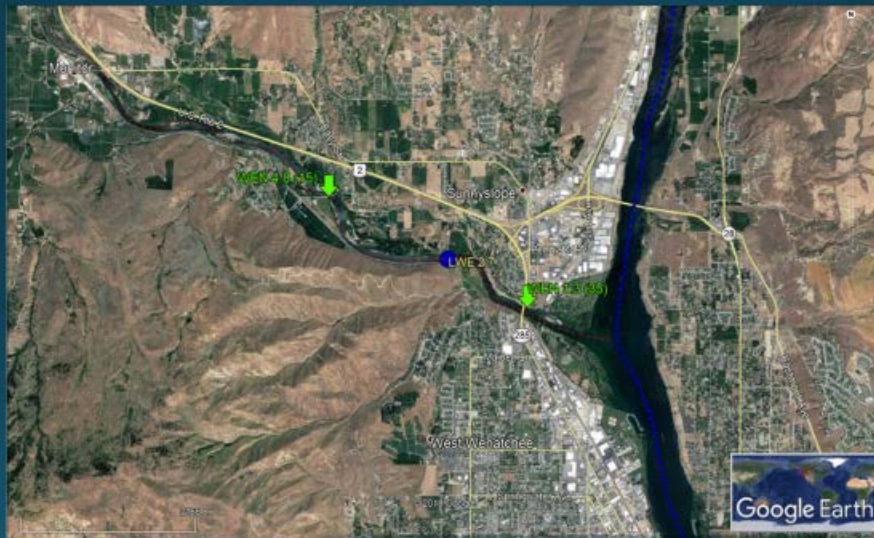
- 275 released between August 31, 2017, and April 23, 2018
- 143 lamprey (52%) were detected at least once
- 38 lamprey (14%) were detected at more than one site



Overview of Release (6 Summer/Fall & 2 Spring)



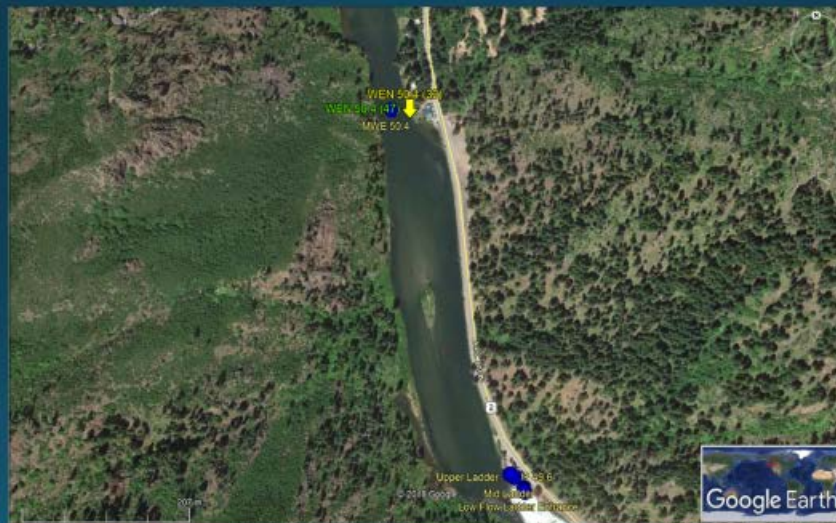
Lower Wenatchee (Summer/Fall)



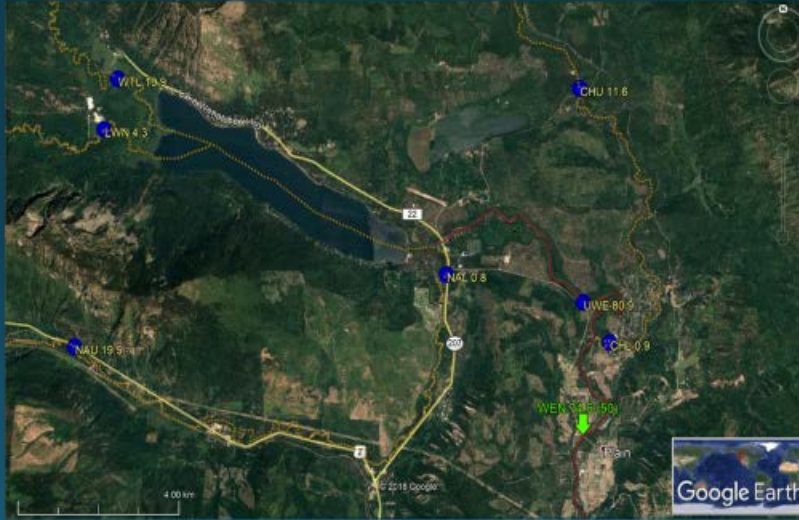
Below Tumwater Dam (Summer/Fall & Spring)



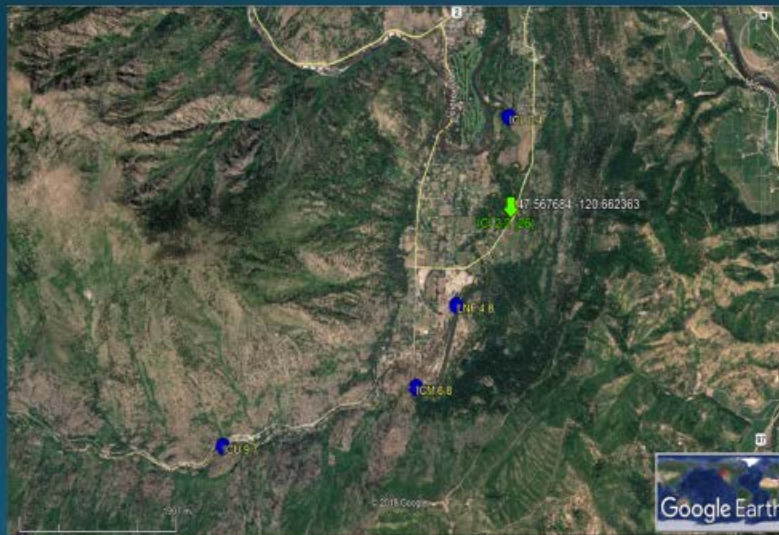
Above Tumwater Dam (Summer/Fall & Spring)



Upper Wenatchee (Summer/Fall)



Icicle Creek (Summer/Fall)



Wenatchee Overall Detection

- TUF, UWE, NAL, LWE had the highest detections

Site Subbasin Name	Site Code Value	Site Name	River	River KM	# of Lamprey Detected	% of Lamprey Detected
Wenatchee	LWE	LWE - Lower Wenatchee River	Wenatchee	2.7	30	10.9%
Wenatchee	TUF	TUF - Tumwater Dam Adult Fishway	Wenatchee	49.6	70	25.5%
Wenatchee	UWE	UWE - Upper Wenatchee River	Wenatchee	80.9	43	15.6%
Wenatchee	ICL	ICL - Lower Icicle Instream Array	Icicle	0.4	4	1.5%
Wenatchee	ICM	ICM - Middle Icicle Instream Array	Icicle	6.8	2	0.7%
Wenatchee	NAL	NAL - Lower Nason Creek	Nason	0.8	32	11.6%
Wenatchee	NAU	NAU - Upper Nason Creek	Nason	19.5	6	2.2%
Total Detections	-	-	-	-	187	-
Total # of Lamprey	-	-	-	-	143	52.0%

Wenatchee Overview (Each Release)

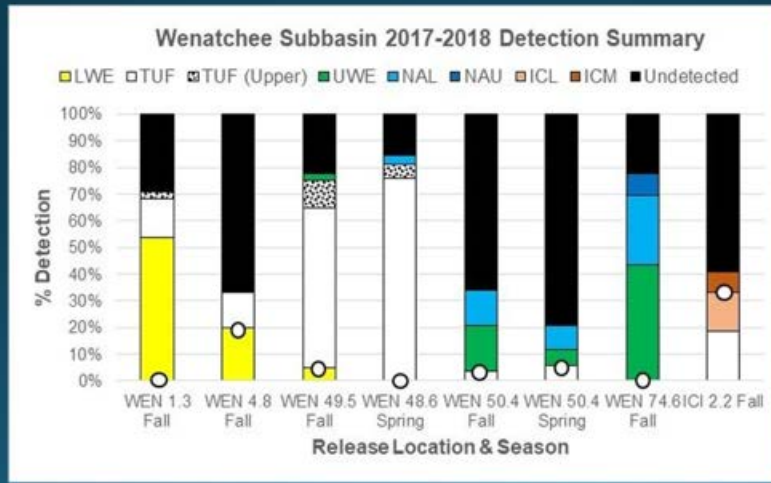
- Most were first detected upstream from their release site except WEN 4.8 and ICI 2.2

Release \ Site	# Tagged	% Initially Upstream	TUF								Undetected	
			LWE	TUF	(Upper)	UWE	NAL	NAU	ICL	ICM		
WEN 1.3 Fall	35	100%	63%	17%	3%	0%	0%	0%	0%	0%	0%	34%
WEN 4.8 Fall	15	40%	20%	13%	0%	0%	0%	0%	0%	0%	0%	67%
WEN 49.5 Fall	34	94%	6%	71%	12%	3%	0%	0%	0%	0%	0%	26%
WEN 48.6 Spring	35	100%	0%	83%	6%	0%	3%	0%	0%	0%	0%	17%
WEN 50.4 Fall	47	89%	0%	4%	0%	19%	15%	0%	0%	0%	0%	74%
WEN 50.4 Spring	33	71%	0%	6%	0%	6%	9%	0%	0%	0%	0%	82%
WEN 74.6 Fall	50	100%	0%	0%	0%	66%	40%	12%	0%	0%	0%	34%
ICI 2.2 Fall	26	18%	0%	19%	0%	0%	0%	0%	15%	8%	0%	62%

LWE - Lower Wenatchee River
TUF - Tumwater Dam Adult Fishway
UWE - Upper Wenatchee River
ICL - Lower Icicle Instream Array
ICM - Middle Icicle Instream Array
NAL - Lower Nason Creek
NAU - Upper Nason Creek

Wenatchee Overview (Each Release)

LWE - Lower Wenatchee River
 TUF - Tumwater Dam Adult Fishway
 UWE - Upper Wenatchee River
 ICL - Lower Icicle Instream Array
 ICM - Middle Icicle Instream Array
 NAL - Lower Nason Creek
 NAU - Upper Nason Creek



Tumwater Dam "Potential" Passage Rates

Release \ Site	# Tagged	# TUF	# TUF TOP	%
WEN 1.3 Fall	35	6	1	16.7%
WEN 4.8 Fall	15	2	0	0.0%
WEN 49.5 Fall	34	24	4	16.7%
WEN 50.4 Fall	47	2	0	0.0%
WEN 74.6 Fall	50	-	-	0.0%
ICI 2.2 Fall	26	5	0	0.0%
Overall Fall	207	39	5	12.8%
WEN 48.6 Spring	35	29	0	0.0%
WEN 50.4 Spring	33	2	2	100.0%
Overall Spring	68	31	2	6.5%

Tumwater Dam Trapping Operations

Start Date/Time	End Date/Time	Trapping Operations	Trapping Schedule Details	Notes
3/6/17 12:30	3/22/17 9:45	Ladder Shut Down	Closed For array installments	Closed for pit tag array installation at ladder entrance
4/3/17 0:00	4/30/17 0:00	Trapping	24hr	Hopper check 1x/daily
5/1/17 0:00	5/2/17 0:00	Video	Video monitoring	Video on Weekend
5/3/17 0:00	5/23/17 0:00	Trapping	24hr	Hopper check 1x/daily
5/23/17 0:00	6/1/17 0:00	Ladder Dewatered	No trapping	shut down high flow gates
6/1/17 0:00	7/13/17 11:25	Trapping	24hr	Hopper check 1x/daily
7/13/17 11:25	7/19/17 3:00	Trapping and Video	Trapping 2 shifts	11 pm-5:30am video only: trapping day and evening
7/19/17 3:00	8/23/17 7:00	Trapping and Video	Trapping 1 shift	6am-4pm MON-FRI (5) / video nights and weekends
8/23/17 7:00	8/31/17 12:45	Trapping	24hr	Hopper check 1x/daily
8/31/17 12:45	9/8/2017	Video	No trapping	Ladder opened for lamprey releases and passage
9/8/2017	11/3/2017	Trapping	24hr	Hopper check 1x/daily
11/3/2017	11/7/2017	Tribe Trapping/Video	Trapping 3x/WK	Trapping Days may vary
11/7/2017	12/31/2017	Video	No trapping	Winter video
12/31/17 0:00	2/28/17 9:00	Video	No trapping	Winter video
2/28/17 9:00	2/28/17 11:30	Ladder Shut Down	No trapping	Ladder Maintaince
2/28/17 11:30	3/19/18 15:30	Video	No trapping	Winter video
3/19/18 15:30	5/7/18 15:00	Video/Trapping	24/7 x3/WK	MON thru WED, video remaining time
5/7/18 15:00	5/29/18 8:00	Ladder Shut Down	No trapping	Ladder closed due to highwater
5/29/18 8:00	5/29/18 12:00	Video	ladder opened prior to trap set	-
5/29/18 12:00	7/11/18 23:26	Trapping	24/7 SPCH	Hopper check 1x/daily
7/12/18 23:26	11/19/18 19:25	Broodstock Trapping	Trapping x4/WK	6am-4pm MON-THU (4); video only
11/19/18 19:25	12/31/18 2400	Video	Ladder open all winter	Tumwater shut down and winterized on 11/19/18

Tumwater Dam "Potential" Passage Timing

- 7/11/2018 = changed to partial trapping schedule
(did the 2 wait till 7/11/2018 to pass the dam?)

Release Site	Release Date	Passage Date	Weir 18 Last Detection	Trapping Operation	Upstream Detection (1)	Upstream Detection Date (1)	Upstream Detection (2)	Upstream Detection Date (2)
WEN 1.3	8/31/2017	7/23/2018	1	6am-4pm Mon-Thu	-	-	-	-
WEN 49.5	8/31/2017	9/1/2017	1	No Trapping	-	-	-	-
WEN 49.5	8/31/2017	9/5/2017	1	No Trapping	-	-	-	-
WEN 49.5	8/31/2017	7/7/2018	1	24 Hour / 7 Days	UWE	7/16/2018	NAL	7/17/2018
WEN 49.5	8/31/2017	7/14/2018	1	6am-4pm Mon-Thu	-	-	-	-
WEN 48.6	4/23/2018	7/7/2018	1	24 Hour / 7 Days	NAL	7/18/2018	-	-
WEN 48.6	4/23/2018	7/9/2018	1	24 Hour / 7 Days	-	-	-	-
-	-	Total	7	-	-	-	-	-

Tumwater Dam Overall Passage (2017-2018)

- For accurate count of lamprey, may be best to continue counting during 24/7 trapping operation days

Passage Date	#	Trapping Operation	PIT Lamprey Passage?
8/5/2017	1	6am-4pm Mon-Fri	-
8/10/2017	1	6am-4pm Mon-Fri	-
8/11/2017	1	6am-4pm Mon-Fri	-
8/12/2017	1	6am-4pm Mon-Fri	-
8/13/2017	1	6am-4pm Mon-Fri	-
8/18/2017	1	6am-4pm Mon-Fri	-
8/22/2017	1	6am-4pm Mon-Fri	-
9/1/2017	1	No Trapping	Yes
9/2/2017	1	No Trapping	-
9/6/2017	1	No Trapping	?
7/23/2018	1	6am-4pm Mon-Thu	Yes
7/26/2018	1	6am-4pm Mon-Thu	-
7/27/2018	1	6am-4pm Mon-Thu	-
7/29/2018	1	6am-4pm Mon-Thu	-
7/30/2018	1	6am-4pm Mon-Thu	-
8/1/2018	1	6am-4pm Mon-Thu	-
8/6/2018	1	6am-4pm Mon-Thu	-
8/7/2018	1	6am-4pm Mon-Thu	-
8/9/2018	1	6am-4pm Mon-Thu	-
8/11/2018	1	6am-4pm Mon-Thu	-
8/14/2018	1	6am-4pm Mon-Thu	-
8/18/2018	1	6am-4pm Mon-Thu	-
Total	22	-	-

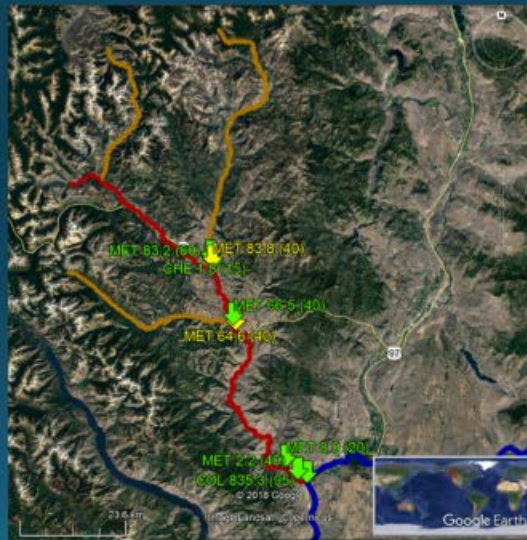
Wenatchee Highlights

Methow Subbasin

- 285 released between September 5, 2017, and April 13, 2018 in Methow
- 95 released on September 5, 2017, in Columbia River below Methow Confluence
- 158 lamprey (42%) were detected at least once
- 28 lamprey (7.5%) were detected at more than one site



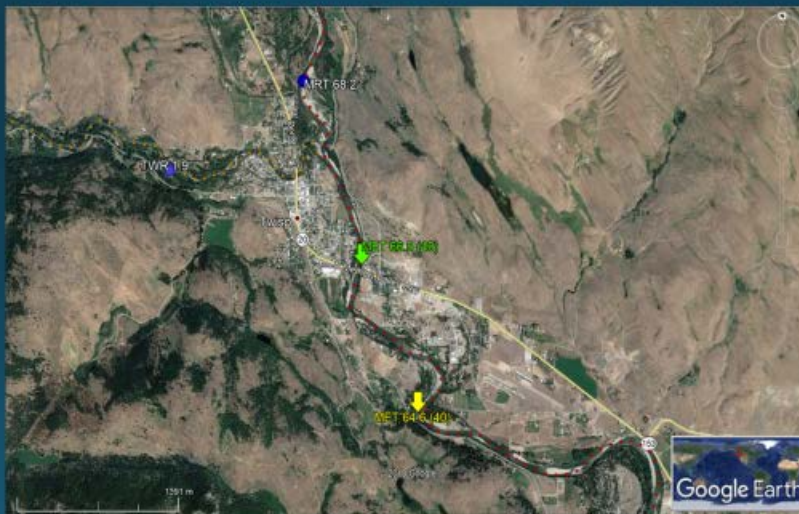
Overview of Release (6 Summer/Fall & 2 Spring)



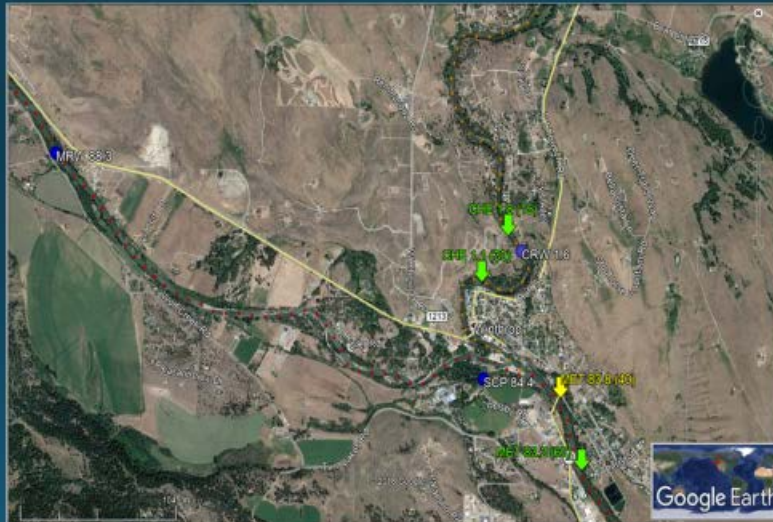
Lower Methow & Columbia (Summer/Fall)



Middle Methow (Summer/Fall & Spring)



Upper Methow & Chewuch (Summer/Fall)



Methow Overall Detection

- CRW, LMR, CRU, MRC had the highest detections

Site Subbasin Name	Site Code Value	Site Name	River	River KM	# of Lamprey Detected	% of Lamprey Detected
Upper Columbia-Entiat	RRJ	RRJ - Rocky Reach Dam Juvenile	Columbia	755.9	1	0.3%
Chief Joseph	WEA	WEA - Wells Dam, DCPUD Adult Ladders	Columbia	823.7	1	0.3%
Upper Columbia-Entiat	ENL	ENL - Lower Entiat River	Entiat	1.9	2	0.5%
Methow	LMR	LMR - Lower Methow River at Pateros	Methow	3.1	43	11.5%
Methow	MRC	MRC - Methow River at Carlton	Methow	46.4	23	6.1%
Methow	M3R	M3R - 3R side channel Methow River	Methow	78.2	5	1.3%
Methow	MWF	MWF - Whitefish SC in Methow River	Methow	80.2	6	1.6%
Methow	MRW	MRW - Methow River at Winthrop	Methow	88.3	3	0.8%
Methow	CRW	CRW - Chewuch River above Winthrop	Chewuch	1.6	79	21.1%
Methow	CRU	CRU - Upper Chewuch Instream Array	Chewuch	28.1	24	6.4%
Total Detections	-	-	-	-	187	-
Total # of Lamprey	-	-	-	-	158	42.1%

Wenatchee Overview (Each Release)

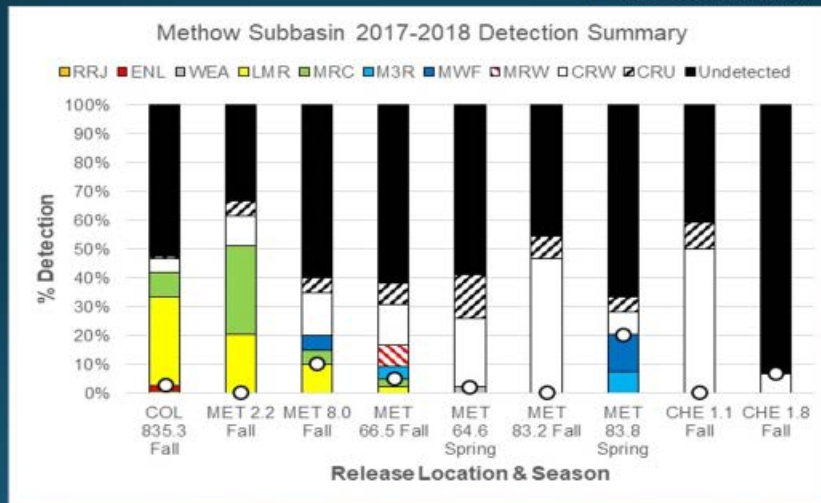
- Most were first detected upstream from their release site except MET 83.8 and CHE 1.8

Release \ Site	# Tagged	% Initially Upstream	RRJ	ENL	WEA	LMR	MRC	M3R	MWF	MRW	CRW	CRU	Undetected
COL 835.3 Fall	95	95%	1%	2%	0%	34%	9%	0%	0%	0%	5%	1%	58%
MET 2.2 Fall	37	100%	0%	0%	0%	22%	32%	0%	0%	0%	11%	5%	35%
MET 8.0 Fall	20	75%	0%	0%	0%	10%	5%	0%	5%	0%	15%	5%	60%
MET 66.5 Fall	39	92%	0%	0%	0%	3%	3%	5%	0%	8%	15%	8%	67%
MET 64.6 Spring	40	92%	0%	0%	3%	0%	0%	0%	0%	0%	28%	18%	68%
MET 83.2 Fall	60	100%	0%	0%	0%	0%	0%	0%	0%	0%	50%	8%	48%
MET 83.8 Spring	37	27%	0%	0%	0%	0%	0%	8%	14%	0%	8%	5%	70%
CHE 1.1 Fall	30	100%	0%	0%	0%	0%	0%	0%	0%	0%	53%	10%	43%
CHE 1.8 Fall	15	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%	93%

RRJ - Rocky Reach Dam Juvenile
 WEA - Wells Dam, DCPUD Adult Ladders
 ENL - Lower Entiat River
 LMR - Lower Methow River at Pateros
 MRC - Methow River at Carlton
 M3R - 3R side channel Methow River
 MWF - Whitefish SC in Methow River
 MRW - Methow River at Winthrop
 CRW - Chewuch River above Winthrop
 CRU - Upper Chewuch Instream Array

Wenatchee Overview (Each Release)

LWE - Lower Wenatchee River
 TUF - Tumwater Dam Adult Fishway
 UWE - Upper Wenatchee River
 ICL - Lower Icicle Instream Array
 ICM - Middle Icicle Instream Array
 NAL - Lower Nason Creek
 NAU - Upper Nason Creek



Methow Highlights

Upper Columbia

- 314 released on August 16, 2017
- 54 lamprey (18%) were detected at least once
- None were detected at more than one site



Mainstem Columbia (Summer/Fall)



Similkameen (Summer/Fall)

- Just downstream of Enloe Dam



Upper Columbia Overall Detection

- CRW, LMR, MRC, OKL had the highest detections

Site Subbasin Name	Site Code Value	Site Name	River	River KM	# of Lamprey Detected	% of Lamprey Detected
Wenatchee	LWE	LWE - Lower Wenatchee River	Wenatchee	2.7	1	0.3%
Upper Columbia-Entiat	ENL	ENL - Lower Entiat River	Entiat	1.9	1	0.3%
Chief Joseph	WEA	WEA - Wells Dam, DCPUD Adult Ladders	Columbia	823.7	2	0.6%
Methow	LMR	LMR - Lower Methow River at Pateros	Methow	3.1	15	4.9%
Methow	MRC	MRC - Methow River at Carlton	Methow	46.4	7	2.3%
Methow	MWF	MWF - Whitefish SC in Methow River	Methow	80.2	1	0.3%
Methow	CRW	CRW - Chewuch River above Winthrop	Chewuch	1.6	21	6.8%
Methow	CRU	CRU - Upper Chewuch Instream Array	Chewuch	28.1	2	0.6%
Okanogan	OKL	OKL - Lower Okanogan Instream Array	Okanogan	25.1	4	1.3%
Total	-	-	-	-	54	17.5%

Upper Columbia Overview (Each Release)

- Most were first detected upstream from their release site except MET 83.8 and CHE 1.8

Release \ Site	# Tagged	% Initially Upstream	LWE	ENL	WEA	LMR	MRC	MWF	CRW	CRU	OKL	Undetected
COL 828.0 Fall	136	90%	1%	1%	1%	6%	1%	0%	10%	1%	1%	79%
COL 850.8 Fall	124	0%	0%	0%	1%	4%	0%	1%	5%	0%	0%	90%
SIM 5.0 Fall	49	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	94%

LWE - Lower Wenatchee River
 ENL - Lower Entiat River
 WEA - Wells Dam, DCPUD Adult Ladders
 LMR - Lower Methow River at Pateros
 MRC - Methow River at Carlton
 MWF - Whitefish SC in Methow River
 CRW - Chewuch River above Winthrop
 CRU - Upper Chewuch Instream Array
 OKL - Lower Okanogan Instream Array

Upper Columbia Overview (Each Release)

LWE - Lower Wenatchee River
 ENL - Lower Entiat River
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 LMR - Lower Methow River at Pateros
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