Priest Rapids Fish Forum

Conference Call

Wednesday, 4 January 2023
9:00 a.m. – 10:30 a.m.

FINAL MINUTES

PRFF Members

RD Nelle, USFWS
Ralph Lampman, Donella Miller, YN
Nathan and Clayton Buck, Wanapum
Jason McLellan, Bret Nine, CCT
Mike Clement, Chris Mott, Grant PUD
Tracy Hillman, Facilitator
Patrick Verhey, Laura Heironimus, WDFW
Breean Zimmerman, WDOE
Aaron Jackson, Carl Merkle, CTUIR
Marchelle Foster, BIA
Tom Skiles, CRITFC/CTUIR

Meeting Attendees

Ralph Lampman, YN
Mike Clement, Grant PUD
RD Nelle, USFWS
Jason McLellan, CCT
Breean Zimmerman, WDOE
Erin Harris, Grant PUD
Laura Heironimus, WDFW
Tim Taylor, Grant PUD
Patrick Verhey, WDFW
Chris Mott, Grant PUD
Nathan Buck, Wanapum
Tracy Hillman, Facilitator

Action Items:

- PRFF comments on the draft 2022 bull trout annual report are due to Grant PUD by Friday, 6 January 2023.

Decision Items:

- None.

I. Welcome and Introductions

Tracy Hillman welcomed everyone to the meeting and identified all attendees.

II. Agenda Review

The PRFF reviewed and approved the January agenda with one addition: Presentation by Jason McLellan on White Sturgeon Larval Collections and Mark-Recapture Studies.

III. Approve September Meeting Notes

The PRFF reviewed and approved the 2 November 2022 meeting minutes.

IV. Review Action Items

There were no action items to review.

V. White Sturgeon

2022 White Sturgeon Spawning and Rearing – Ralph Lampman reported via email that all fish on station are doing well. They are growing and average 11.5 fish per pound.

2022 White Sturgeon Annual Report – Mike Clement indicated that Golder will complete the draft report in two to three weeks. Grant PUD will review the draft report internally and then share it with the PRFF. Mike reminded the group that this report is the Five-Year Biological Objectives report and will therefore include a summary of results over the past five years. It will include results from two years of adult indexing as well as five years of juvenile index monitoring. Mike indicated that Ecology will need to review and approve the document before it is submitted to FERC.

White Sturgeon Larval Collections and Mark-Capture Studies – Jason McLellan gave a presentation on white sturgeon larval collections in the upper Columbia (see Attachment 1). Jason indicated that the results and data are preliminary and should not be cited. Jason said this presentation was given to the Upper Columbia White Sturgeon Initiative and includes research conducted with natural-origin sturgeon captured in the Upper Columbia (upstream from Grand Coulee Dam). As background, Jason indicated that they have captured natural-origin larvae every year since 2004, except for 2009. These fish have been used for conservation aquaculture purposes and recruitment-failure research. The latter includes identifying bottlenecks (life stages with the greatest mortality) and investigating the larvae drift hypothesis (after hatching the larvae drift downstream but do not end in locations that promote regular recruitment).

Jason said the first thing they looked for was the survival bottleneck. They successfully capture tens of thousands of larvae a few weeks after hatching, but they capture no age-0 natural-origin juveniles, and they document high survival of hatchery-origin sturgeon released at age-1. These observations are based on the capture and handling of about 10,000 sturgeon during the period 2013-2017 in the Transboundary Reach, which is located between Grand Coulee Dam and Hugh Keenleyside Dam in Canada (256-km reach of which the lower 200 km are in the US and the upper 56 km are in Canada).

Jason described the methods used to evaluate the larvae drift hypothesis. He said they evaluated this hypothesis using intra-reservoir translocations. They went to a location where they could capture several thousand first-feeding larvae (the site was located downstream from the US-Canada border in an area known as China Bend), marked them with calcein, which binds to calcium receptors in hard structures and fluorescence under blue light, and then transported and released them downstream in the area hypothesized as the “death zone.” The “death zone” is located in a depositional area near the

river-reservoir transition zone. Jason described the apparatus that was used to release fish at the bottom of the river. They then tried to recapture the fish at age-0 during fall (October-November) sampling to estimate survival rates. Jason said they conducted the experiment over a three-year period (2017-2019). Jason showed a table that identified the number of sampling sessions per year, total number of larvae captured, and the number of larvae marked and released. Numbers marked and released over the three-year period ranged from 21,941 to 32,185 larvae. During recapture sessions in late October and early November, they were unable to capture any age-0 marked or unmarked sturgeon. Using a micromesh gill net, they did capture one unmarked age-1 fish in 2018. This fish was PIT tagged and released alive. Jason said they used a variety of gear to try and capture age-0 fish, including different sizes and types of gill nets, setlines, and minnow traps. Jason identified some of the possible reasons why they did not capture any age-0 fish. Those reasons included poor survival of released fish, inefficient gear, and/or limited sampling area. Jason noted that they have been tagging hatchery-origin age-0 fish with acoustic tags. These fish are released into an area with a grid of acoustic receivers to estimate movement rates. They are also conducting gear retention rate experiments. These studies are needed to estimate statistical power, which informs the number of fish to mark and the level of effort needed to capture a sufficient number of marked fish to estimate survival rates.

Jason then described the Phase II Translocation Study. The purpose of this study is to estimate larvae capture efficiency, estimate larvae production, develop a juvenile sampling strategy, and then resume translocation experiments. They are conducting their capture efficiency studies in the China Bend area. Larvae are captured at night near the China Bend site, immediately marked with calcein, and transported and released 4.6 km upstream from the China Bend site. The fish were released near the water surface at a location that is 27.6-m deep. Because the fish are photonegative, they moved immediately down to the bottom of the river. This work was conducted once in 2020, four times in 2021, and twice in 2022. For each release event, Jason showed the numbers of fish marked, numbers of fish captured, numbers of recaptures, capture efficiencies, larvae production estimates, and confidence limits. Capture efficiencies ranged from 2.3% to 5.7%.

Studies conducted in 2022 included evaluation of drift timing from the US-Canada border to China Bend and drift timing from China Bend to Evans. For the Border release, they released 17,242 marked larvae on 21 July at dusk. Jason then described the number of marked and unmarked larvae captured over three consecutive nighttime monitoring sessions at China Bend. They captured thousands of larvae during each session, with 360 marked larvae captured during the first night, 7 during the second night, and 0 marked larvae during the third night. For the China Bend Release, they marked and released 15,514 larvae on 23 July. Based on continuous sampling at Evans over three days, they captured a total of 47 larvae and none were marked. Jason pointed out that thousands of larvae were drifting through the China Bend area but very few were making it to Evans.

Jason showed a table that presents all their free embryo and larvae collections over the period 2004-2022. The table identifies the catch, effort (net hours), sampling period, sampling location, and the agency or project. Jason pointed out the large variation in captures over the years of sampling and stated that a large portion of the variation is due to refinements in sampling techniques and equipment.

Jason concluded that they are capable of capturing thousands of larvae on an annual basis, mark-recapture studies are effective upstream from China Bend (with an average gear efficiency of 4.1%), larvae drift rapidly downstream to China Bend, and most larvae appear to settle or perish in the reach downstream from China Bend (between China Bend and Evans). Jason then acknowledged all the entities that have funded and/or helped with collections.

Jason was asked whether they know the reasons why larvae do not survive in the reach between China Bend and Evans. Jason responded that it is likely a combination of factors, including deposition of slag,

which is high in metals (including copper). Jason noted that sturgeon larvae are very sensitive to copper, causing both lethal and nonlethal effects. The metals in the reach may also reduce food for larvae. Thus, larvae may need to swim more to find food, which subjects them to higher predation. Starvation may also occur in this reach. Jason said years with higher flows (which are rare) result in a higher production of larvae and more fish from these high production years may be able to drift past (escape) the "death zone," resulting in higher survival.

Other White Sturgeon Items – No other White Sturgeon items were discussed.

VI. Pacific Lamprey

2022 Annual Pacific Lamprey Report - Mike Clement reported that Grant PUD should have the annual report reviewed internally within two weeks. They will then send it to the PRFF for review. Mike said it is similar to previous year's reports. The report retains the table that summarizes all the recent research. The table is exhaustive, but Mike believes the PRFF will find the wealth of information in the table useful. Based on previous comments, Grant PUD fine-tuned the adult lamprey passage efficiency estimates. Previous estimates had large confidence intervals (CIs). They are now using a different model, which does not incorporate a correction factor based on upstream detections, to estimate passage efficiency and CIs. Previously, adult passage efficiencies were estimated to be in the upper 80s and low 90s; now they are in the low 80s with smaller CIs. The report should be out to the PRFF for review by the end of the month or early next month.

Results from the Pacific Lamprey Summit and Information Exchange – Laura Heironimus stated that the first day was mostly a policy discussion with several agencies signing the conservation agreement. She also noted that some data gaps have been filled in various areas. Unfortunately, the status of lamprey has not improved and in some areas the populations have declined because of climate change. She added that several federal agencies supported the conservation agreement, but some of the CRITFC tribes elected not to sign the agreement because they believe the agreement does not go far enough to protect and restore lamprey populations. As a result, a new workgroup was established to identify abundance goals and targets for different regions.

Laura said the second day was more technical and each region provided an update on the status of lamprey and work that is currently being implemented within their respective regions. Laura said it was a good meeting but was too short for the amount of information shared. Laura added that the mid and upper Columbia regions as well as the Snake River region were the only regions that did not identify climate change as the most important factor affecting lamprey populations there. Fish passage was identified as the number one concern in the mid and upper Columbia regions.

Ralph Lampman indicated that he provided the update on the status of lamprey in the upper Columbia Region. He said he covered the partnership projects including translocations and other actions implemented or being implemented in the Upper Columbia. Ralph added that the Yakama Nation did not sign the conservation agreement for the reasons Laura noted; however, the Yakama Nation did submit a letter of support.

Ralph stated that Alicia Marrs will be stepping down as the Pacific Lamprey Conservation Initiative Coordinator. They will be looking for a new coordinator soon.

Other Pacific Lamprey Items – No other Pacific lamprey items were discussed.

VII. Resident Fish

2022 Resident Fish Surveys - Mike Clement reported that WDFW began their resident fish surveys on 24 October 2022. Sampling was interrupted because of weather; however, they were able to complete the surveys on 30 October. Mike said WDFW will provide a draft report at the end of the month or early next month. The report will identify the catch and compare those catches with previous sampling efforts. Mike added that this work happens every five years. Mike will ask WDFW to give a presentation to the PRFF in March or April.

Other Resident Fish Items – No other Resident Fish items were discussed.

VIII. Bull Trout

2022 Annual Bull Trout Report – Mike Clement indicated that the draft 2022 bull trout annual report was sent to the PRFF on 6 December 2022. Grant PUD is asking for PRFF review and to send their comments to Mike by Friday, 6 January 2023. Mike noted that he received some comments from RD Nelle. Mike indicated that they did not observe any bull trout in the fishways in Priest Rapids and Wanapum dams during 2022.

Other Bull Trout Items – No other Bull Trout items were discussed.

IX. Adjourn

With no additional business to discuss, Tracy Hillman adjourned the meeting at 10:30 am.

X. Next Meeting

The next meeting of the PRFF will be on 1 February 2023.

Attachment 1

Presentation by Jason McLellan on White Sturgeon Larvae Collections and Mark-Recapture Studies

(*Note: These are Preliminary Data and Should Not Be Cited*)

PRELIMINARY DATA – DO NOT CITE

US White Sturgeon Larvae Collection Update

UCWSRI TWG Meeting

November 16, 2022

Jason McLellan and Matt Howell
Colville Confederated Tribes

PRELIMINARY DATA – DO NOT CITE

Background

- Larvae collection conducted annually since 2004 (except 2009)
- Conservation aquaculture
- Recruitment failure research
  - Identify bottleneck
  - Investigate larvae drift hypothesis – translocation experiments

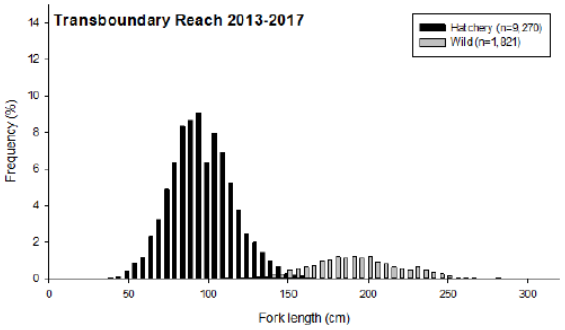
PRELIMINARY DATA – DO NOT CITE

Survival Bottleneck

Between first-feeding larvae and age-1 juvenile stages

Capture tens of thousands of first-feeding larvae annually

No captures of wild age-0 juveniles



High survival of hatchery fish released at age-1

PRELIMINARY DATA – DO NOT CITE

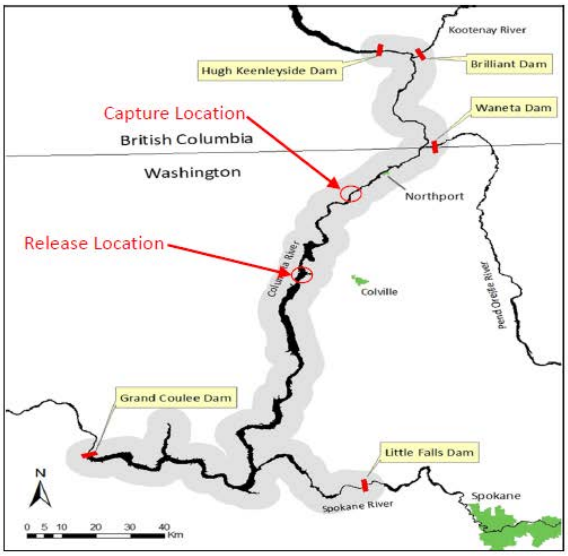
Evaluating the larvae drift hypothesis

Intra-reservoir translocation

- Capture first-feeding WS larvae
- Mark with calcein
- Repatriate downstream of hypothesized "death zone"
- Evaluate survival - recapture marked age-0 juveniles in fall sampling

PRELIMINARY DATA – DO NOT CITE

Larvae captured, marked, and translocated



PRELIMINARY DATA – DO NOT CITE

Larvae capture/marking/release results

Dates	Number of Sessions	Total Catch	Number Marked and Released
July 6-30, 2017	21	40,123	32,185
July 1-25, 2018	21	26,869	21,941
June 24 – July 24, 2019	28	34,752	26,377
Total	70	101,744	80,503

PRELIMINARY DATA – DO NOT CITE

Survival evaluation

Year	Gear	Sets	Location	Time
2017	Gill net – 2.0"	160	Chalk Grade to Little Dalles	late October
	Gill net – 1.5"	160	Chalk Grade to Little Dalles	late October
	Gill net – FWIN exp	150	Reservoir-wide	early November
2018	Gill net – 2.0"	80	Chalk Grade to Little Dalles	late October
	Gill net – 2.0" bagged	80	Chalk Grade to Little Dalles	late October
	Gill net – 1.5" bagged	80	Chalk Grade to Little Dalles	late October
	Gill net – 0.75"	80	Chalk Grade to Little Dalles	late October
	Gill net – FWIN exp	150	Reservoir-wide	early November
2019	Gill net – 2.0"	80	Chalk Grade to Little Dalles	late October
	Gill net – 2.0" bagged	80	Chalk Grade to Little Dalles	late October
	Gill net – 1.5" bagged	80	Chalk Grade to Little Dalles	late October
	Setline – small hook	40	Chalk Grade to Little Dalles	late October
	Minnow trap	40	Chalk Grade to Little Dalles	late October
	Gill net – FWIN exp	150	Reservoir-wide	early November

- No age-0 captured (marked or unmarked)
- A single unmarked age-1 fish captured in 2018
  - Micromesh gill net (0.75")
  - Released alive with PIT tag

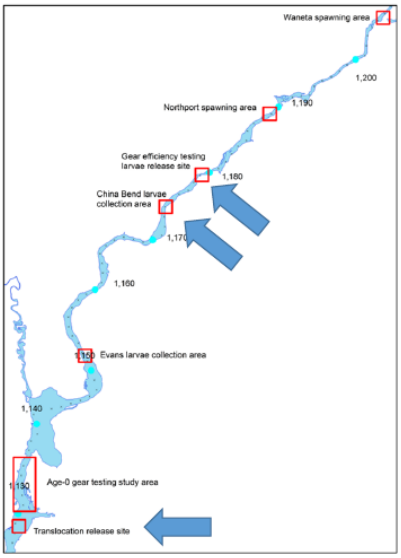
Possible reasons:

- Poor survival of releases
- Gear inefficient
- Sampling area too limited

PRELIMINARY DATA – DO NOT CITE

Phase II translocation study

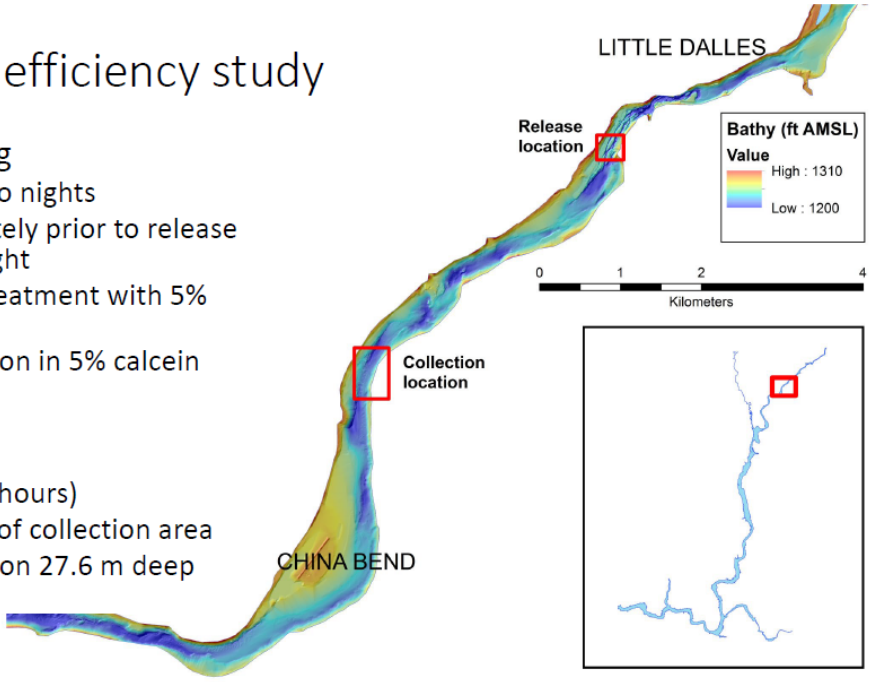
- Estimate larvae capture efficiency
- Estimate larvae production
- Develop juvenile sampling strategy
- Then – resume translocation experiments



PRELIMINARY DATA – DO NOT CITE

Larvae capture efficiency study

- Collection/marking
  - Captured over two nights
  - Marked immediately prior to release – dusk of third night
  - 3.5 minute pre-treatment with 5% salt
  - 7 minute immersion in 5% calcein
- Releases
  - Dusk (2110-2220 hours)
  - 4.6 km upstream of collection area
  - at surface – location 27.6 m deep



PRELIMINARY DATA – DO NOT CITE

Larvae capture efficiency and production estimate study

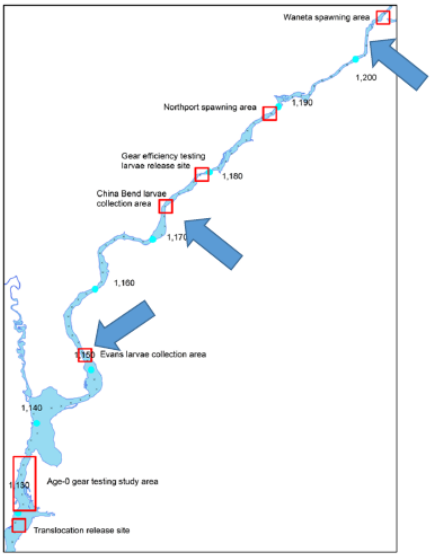
Rel Date	M	C	R	Efficiency	N	99% LCL	99% UCL
July 17, 2020	18,590	9,573	1,049	5.6%	169,514	160,096	178,931
July 15, 2021	3,055	1,431	106	3.5%	40,898	33,591	48,205
July 17, 2021	2,830	1,038	93	3.3%	31,291	25,375	37,206
July 19, 2021	1,141	173	26	2.3%	7,359	4,876	9,841
July 23, 2021	2,073	1,337	119	5.7%	23,124	19,298	26,950

M = number of marked larvae released
C = total larvae caught during monitoring
R = number of marked larvae recaptured

PRELIMINARY DATA – DO NOT CITE

2022 Experiments

- Evaluate drift timing from Border to China Bend
- Evaluate drift timing from China Bend to Evans



PRELIMINARY DATA – DO NOT CITE

Border Release

- Released 17,242 marked larvae on July 21, 2022 at dusk

- Monitoring at China Bend (night sampling)
  - Session 1 (release night)
    - 9,904 larvae caught
    - 360 marked larvae (recaptures)
  - Session 2
    - 12,328 larvae caught
    - 7 marked larvae (recaptures)
  - Session 3
    - 6,916 larvae caught
    - 0 marked larvae (recaptures)

PRELIMINARY DATA – DO NOT CITE

China Bend Release

- Released 15,514 marked larvae on July 23, 2022 after dark

- Monitoring at Evans
  - Continuous from PM July 23 – AM July 25
  - 47 larvae captured
  - 0 recaptures of marked larvae

PRELIMINARY DATA – DO NOT CITE

Summary – all free embryo and larvae collection

Year	Catch	Effort (net hours)	Sampling period	Study location(rkm)	Agency (Project)
2004	26	223	28 June - 25 July	1,152-1,204	WDFW (LRSRP)
2005	59	312	25 June - 29 July	1,152-1,193	WDFW (LRSRP)
2006	446	1,831	9 June - 29 July	1,152-1,204	WDFW (LRSRP)
2007	752	4,221	26 June - 31 July	1,158-1,192	WDFW (LRSRP)
2008	678	3,773	29 June - 24 July	1,161-1,183	WDFW (LRSRP)
2010	2,348	3,640	10-25 July	1,176	WDFW (LRSRP)
2011	11,226	1,033	14 July - 2 August	1,174	WDFW (LRSRP)
2012	2,071	--[1]	16 July - 29 August	1,174	STI (LRSRP)
2013	4,383	--[1]	27 June - 26 July	1,174-1,176	STI (LRSRP)
	5,353	883	30 June - 25 July	1,174	CTCR
2014	12,335	--[1]	26 June- 17 July	1,173-1,176	STI (LRSRP)
	24,264	777	9-18 July	1,174	CTCR
2015	8,319	--[1]	23 June –13 July	1,173	STI (LRSRP)
	21,042	749	26 June - 1 July	1,174	CTCR
2016	7,686	--[1]	6 June-24 July	1,173	STI (LRSRP)
	22,164	469	6-24 June	1,174	CTCR
2017	41,933	5,441	6-30 July	1,174	CTCR/STI (WSEP/LRSRP)
2018	26,869[2]	--[1]	1-24 July	1,174	CTCR/STI (WSEP/LRSRP)
2019	37,021	10,161	24 June - 24 July	1,174	CTCR/STI (WSEP/LRSRP)
2020	35,956[3]	1,053	9-19 July	1,174	CTCR/STI (WSEP/LRSRP)
2021	24,962[3]	7,137	22 June – 25 July	1,174	CTCR/STI (WSEP/LRSRP)
2022	69,707[3]	--[1]	8-25 July	1,152&1,174	CTCR/STI (WSEP/LRSRP)

[1] Net hours not available
[2] Includes only larval stages
[3] Includes only larval stages – preliminary data

PRELIMINARY DATA – DO NOT CITE

Conclusions

- Thousands of larvae can be captured
- Mark-recapture experiments effective above China Bend
  - Mean Gear efficiency 4.1% (SD=1.4%)
  - Production estimates produced
- Larvae drift rapidly above China Bend
  - Most recaptures during night of release
    - Little Dalles – 100%
    - Border – 98.1%
- Most larvae appear to settle and/or perish between China Bend and Evans
  - No recaptures
  - Only a few larvae captured despite thousands being captured at China Bend

PRELIMINARY DATA – DO NOT CITE

Acknowledgements

- Confederated Tribes of the Colville Reservation
  - Resident Fish Division staff
  - Environmental Trust Department staff
- Spokane Tribe of Indians
- Washington Department of Fish and Wildlife
- Bonneville Power Administration
- Douglas PUD
- Chelan PUD
- US Department of the Interior
  - National Park Service
  - Bureau of Indian Affairs
- Upper Columbia Trustees Council

PRELIMINARY DATA – DO NOT CITE

Questions