

Rocky Reach Fish Forum

Wednesday, 7 February 2018

1:00 – 4:00 p.m.

Chelan PUD Second Floor Conference Room

Wenatchee, WA



CHELAN COUNTY

Meeting called by Steve Hemstrom
Notes taken by Meaghan Connell

Chairperson, Tracy Hillman

Attending Representatives:

Hemstrom, Steve	Chelan PUD	(509) 661-4281	steven.hemstrom@chelanpud.org
Lewis, Steve	USFWS	(509) 665-3508 x14	stephen_lewis@fws.gov
Padgett, Michael*	Alcoa	(412) 553-4545	michael.padgett@alcoa.com
Verhey, Patrick	WDFW	(509)754-4624	Patrick.verhey@dfw.wa.gov
Zimmerman, Breean*	ECY	(509) 575-2808	breean.zimmerman@ecy.wa.gov

Attending Participants:

Barron, James	USFWS	(360) 425-6072	james_barron@fws.gov
Clement, Marcie	Chelan PUD	(509) 661-4186	marcie.clement@chelanpud.org
Connell, Meaghan	Chelan PUD	(509) 661-4601	meaghan.connell@chelanpud.org
Gannam, Ann	USFWS	(360) 425-6072	ann_gannam@fws.gov
Goudy, Sean*	YN	(509) 480-5196	gous@yakamafish-nsn.gov
Hillman, Tracy	BioAnalysts	(208) 321-0363	tracy.hillman@bioanalysts.net
Keller, Lance	Chelan PUD	(509) 661-4299	lance.keller@chelanpud.org
Lampman, Ralph	YN	(509) 388-3871	lamr@yakamafish-nsn.gov
Moser, Mary	CTUIR	(541)969-2230	mary.moser@noaa.gov
Nelle, RD	USFWS	(509) 548-7573	RD_Nelle@fws.gov
Rose, Bob	YN	(509) 865-5121	rosb@yakamafish-nsn.gov
Swank, Dee	Chelan PUD	(509) 661-4601	delores.swank@chelanpud.org

* Joined via phone.

Meeting Minutes

I. Welcome and Introductions

Tracy Hillman welcomed everyone to the Rocky Reach Fish Forum (RRFF or Forum) meeting. Participants introduced themselves.

II. Agenda Review

The meeting agenda was reviewed and approved with no additions.

III. Approval of Meeting Minutes

The January RRFF meeting minutes were reviewed and approved with an edit.

IV. Review Action Items

- Steve Hemstrom will look at lamprey counts at The Dalles Dam and compare those to counts at Rocky Reach Dam. **Completed – Steve Hemstrom provided a handout of the compiled counts (see Attachment 1).**
- Breean Zimmerman will contact Ecology's Environmental Assessment Program to get more information on the active ingredients used in the herbicide to control Eurasian milfoil. **Completed – The risk assessment did not specifically address Pacific lamprey, but lamprey behavior was considered when they chose the times to use the herbicide.**
- Steve Hemstrom will talk to Ralph Lampman about his comments on the 2016 Final Passage and Escapement Report. **Ongoing**
- USGS will send a short paper to the RRFF providing guidance on studying the effects of Triclopyr TEA on Pacific lamprey. **Ongoing**
- Ralph Lampman will suggest studies on the effects of Triclopyr TEA on Pacific lamprey ammocoetes. **Ongoing**
- Breean Zimmerman will ask John Jennings at Ecology for more information on Triclopyr TEA. **Completed**
- Lance Keller will ask Corey Morrison for information about the next culling event for white sturgeon at Chelan Hatchery. **Ongoing**
- Tracy Hillman will check previous RRFF meeting notes for information on the Twenty-Five Mile Creek project. **Completed – Patrick Verhey will share this information with Graham Simon (WDFW).**

- Tracy Hillman will send a response from the Fish Forum to the ASWG thanking them for responding to the Subgroups' questions. **Completed**
- Tracy Hillman will look at past RRF meeting notes for previous discussions on changing the timeframe of screen monitoring. **Completed – Last discussed August 2015; no updated timeline was finalized.**
- Ralph Lampman will set up presentations on artificial propagation studies for the February RRF meeting. **Completed**

V. Aquatic Invasive Species

ESA Compliance for Invasive Species Response

Tracy Hillman reported that Bob Rose shared with him the Draft Action Plan for ESA Compliance for Quagga/Zebra Mussel Response in the Columbia River Basin. The Pacific States Marine Fisheries Commission (PSMFC), USFWS, and NOAA are developing the plan with several partners. The Action Plan is in development as a rapid response to invasive mollusks if detected in a waterway. Tracy said although this is not a PUD report or exercise, an understanding of the Plan will benefit the Forum.

Marcie Clement said she is involved with a committee that will continue to review the document as it is developed. She noted that her role with this plan had come from her participation in PSMFC's 100th Meridian Initiative Columbia Basin Team and her questions and concerns about the response to an AIS outbreak that took into consideration ESA and Chelan PUDs FERC obligations. Marcie stated that she was very happy with the development of the action plan; specifically, that it covers the pre-consultation process. Marcie said she participated in a rapid response exercise with WDFW at Lincoln Rock Park and much was learned about this process from that exercise. She noted that the next steps would be learning about the different chemicals used to treat an invasion and weighing the risks. Patrick Verhey stated that it may not be possible to stop an infestation once it starts, and based on his experience, prevention is the best option. Steve Lewis noted that this is an evolving document and comments are being solicited. He added that USFWS's Invasive Species Specialist could give a presentation to the Forum if there is interest. Bob Rose indicated that he will contact Lisa DeBruyckere, contractor working on the Action Plan, to see if she can attend or call into a future meeting.

Action Items:

- **Marcie Clement will send Breean Zimmerman information regarding the Flowering Rush Summit in Spokane, WA, on 27-28 February.**
- **Bob Rose will contact Lisa DeBruyckere to see if she can provide more information on the Action Plan to the RRF.**

VI. White Sturgeon

Juvenile Rearing Update

Lance Keller reported that by the end of January 2018, there were 2,807 juvenile white sturgeon on station at Chelan Hatchery. The fish are divided among six different tanks with fish per pound varying from 7 to 48 fish per pound. The fish are growing and are healthy. Lance estimated the size of the entire population on station is about 23 fish per pound. The size goal at time of release is 200 grams or roughly 2.2 fish per pound and they are on track to meet that goal. Lance said the release goal for 2018 is 2,250. At this time, there are enough fish on station to meet this goal.

Ann Gannam, USFWS, asked what feed is being used. Lance Keller said the fish are fed Otohime, which the fish have responded to very well.

2016 Annual M&E Report

Lance Keller reported that the 2016 Annual M&E Report was finalized. Lance noted that no additional comments were received after the November 2017 *Rocky Reach Reservoir White Sturgeon Monitoring and Evaluation Program 2016* presentation. Lance added that the 2017 Annual M&E Report is being drafted and should be distributed to the RRFF soon.

VII. Pacific Lamprey.

Artificial Propagation Presentations and Discussion

Mary Moser, NOAA, presented on the *Early Development of Artificial Propagation Methods for Pacific Lamprey* (see Attachment 2). Mary stated that this presentation includes work conducted by NOAA Fisheries and the Umatilla Tribes. She said the collaboration among all entities has been the key to this work's success. There is a need for both broodstock maintenance and collection, along with the ability to grow the lamprey and having the space to support rearing of different life stages.

Mary discussed broodstock collection and sexual maturation. She noted that genetic sampling has been key to the artificial propagation work; this work will allow us to determine a hatchery-reared lamprey versus a wild lamprey.

Mary stated that only 50% of adult lamprey held in the Umatilla Hatchery reach final maturation. To try to improve maturation, they conducted an experiment to test if photoperiod could be used to stimulate final maturation and synchronize males and females. Each month, they examined secondary sexual characteristics of lamprey. After the assessment, the sexually mature lamprey were pulled from the tanks. They found that photoperiod did not improve sexual maturation or synchronize males and females. Mary did note that both females and males in the dark treatment tended to mature earlier than the other treatments. They will continue to work to improve maturation success.

Mary discussed fertilization and incubation methods and what we need to know in order to maximize production from a limited number of fish. Some of the highlights from her research included (1) repeat spawning of both sexes, (2) identification of viable eggs in recently dead females, (3) ability to hold gametes for more than 24 hours, and (4) identification of short gamete contact times. In addition, Mary discussed the sensitivity of eggs to physical damage, the use of pineapple juice to reduce egg adhesion, and use of egg disinfectant to reduce fungus growth. She noted eggs were resilient to water stagnation provided water temperatures did not get too high.

Mary said after the fish hatch, feeding the fish smaller food particles provides a higher rate of growth. Bob Rose asked if the larvae only need to “breathe” in the food. Mary responded that eating may be more passive at this larval stage. She added that larvae are resilient to both temperature and salinity. Their resilience to salt is good, because salt can be used as a treatment for parasites.

Steve Hemstrom asked if they have identified hypotheses as to why lamprey eggs would be resilient to low oxygen levels. Mary responded that they have not identified any hypotheses at this time but noted that Aaron Jackson measured current velocities and oxygen levels at the bottom of lamprey nests and recorded oxygen levels near zero. She added that lamprey are very resilient and can tolerate more degraded water quality than other fish species.

Lance Keller asked what they did with lamprey that did not reach full maturity. Mary stated those fish were held over for another year and then released with the hope they would spawn in the wild. Mary added that mature lamprey will die without spawning if they are held in tanks.

Ann Gannam presented on the *Pacific Lamprey Research at the Abernathy Fish Technology Center* (see Attachment 3). Ann stated that there was not a lot of information on how to raise lamprey and it was important to determine how best to rear them. She stated that they started by reviewing research conducted on sea lamprey in the Great Lakes area. In her lab, they began by using the same feed that was used in the Great Lakes studies and expanded from there. A standard diet of Otohime and yeast was given to the lamprey along with an additive of alfalfa pellets. The additives were given to see if they would increase growth rates. Ann stated that the larvae were fed by mixing a slurry of Otohime and yeast. Water was turned off in the tank and the food was left in the tank for five hours, then the tank was flushed.

Ann discussed future studies, which include increasing the lipid levels in larvae by adding fish oil to the feed. They will also experiment with feeding frequency. One group will be fed twice a week as normal and the other will be fed five times a week. Ann noted that there is a question about larvae density affecting the growth of lamprey. They propose to study this by examining lamprey growth in three different sediment depths and at two different stocking densities. They also plan to rear the larvae to metamorphosis.

Tracy Hillman asked if the same diet is fed to all larvae life stages. Ann said yes, in addition to the additives discussed earlier. Tracy asked if there was information on the diets of wild ammocoetes. Ann stated that one of the first studies was to look at diet, and it was found that Otohime and yeast worked

the best. Ann noted that she has wondered if the ammocoetes are also getting nutrients from what is growing in the water (e.g., bacteria, fungi, etc.) in addition to what they are being fed.

RD Nelle asked if they have tried to raise ammocoetes on Abernathy water. James Barron, USFWS, noted that the stream's water temperature can fluctuate widely and there can be a lot of silt in it. Mary Moser asked what the low and high flow was for the flow experiment. James stated that the low flow was 500 mL/min and the high was 1,000 mL/min.

Steve Hemstrom asked what surprised her the most from the research. Ann stated that she was surprised about how well the lamprey did when the tanks were not cleaned. James stated that he was surprised with the poor conditions in which they can live. They can live in conditions that kill other fish.

Ralph Lampman presented on the *Development of Artificial Propagation Methods for Production of Juvenile Pacific Lamprey Yakama Nation Fisheries* (see Attachment 4). Ralph discussed the findings from studies conducted during 2015-2017. Through experimentation, they have been successful in improving average survival every year. Tracy asked at which stage the bulk of the mortality occurs. Ralph said it is within the first four weeks. He added that in the larger tanks, survival seems to be a little lower.

Ralph discussed the research to be conducted in 2018, which includes (1) how different water combinations affect sexual maturation, (2) the combined effects of sediment depth and density on growth and survival of larvae, (3) feeding frequency and alternative feeds, (4) sensitivity to transportation, and (5) rearing larvae to the macrophthalmia stage as efficiently as possible. Ralph noted that density becomes an issue as larvae grow and require more space.

Ralph, Ann, and Mary discussed the need for additional funding in order to continue research over the next three years. Bob Rose discussed the need to continue research on improving quality of feed for lamprey larvae. This would include comparing what they are fed, what they consume, and how that compares to what is available to wild lamprey in the field. Bob suggested the Forum revisit the Monahan (GeoEngineers, USFWS, and USGS) 2011 Paper. James Barron agreed with Bob that a better understanding of the microbial environment would be beneficial. Ann suggested that less frequent tank cleaning may provide a better rearing environment for lamprey. Ralph also discussed the possible use of Chelan PUD funding juvenile acoustic tag development.

Bob indicated that contracts will end soon and asked the RRF to evaluate the need to extend contracts during the next meeting. Steve Hemstrom reported that there is some funding still available. Ann Gannam provided Steve with a statement of work and budget for RRF consideration during the next meeting.

Action Items:

- **Tracy Hillman will forward the statement of work from Ann Gannam to the RRFF for review during the March meeting.**
- **Tracy Hillman will send the GeoEngineers et al. (2011) report to the RRFF for discussion during the March meeting.**

Content of the 2017 Draft Rocky Reach Lamprey Passage Report

Steve Hemstrom reported on the 2017 Draft Rocky Reach Lamprey Passage Report. He said Chelan PUD conducted its first full-duplex study in 2016 and a second study in 2017. The 2017 study will be completed by September 2018. Steve stated the results from the second study continue to look positive with a 98% passage efficiency at Rocky Reach Dam. He noted that Chelan PUD does not plan to conduct a third-year, full-duplex, lamprey tagging study in 2019,

Mary Moser reported that the Army Corps of Engineers is scheduled to do an adult tagging study at Bonneville Dam. The tags used will be half-duplex PIT tags and radio tags. Steve noted the half-duplex arrays at Rocky Reach Dam will continue to operate in 2018.

Ralph Lampman reported on a tagging study at The Dalles Dam that is looking at using the dual mode in order to get additional detections. Lance Keller stated from his experience, successful use of dual modes tends to be site specific and based on the arrangement of the arrays. Lance said using dual mode at Rocky Reach Dam compromised the detections of full-duplex tags.

Next Steps for Adult Lamprey Passage at Rocky Reach Dam

Steve Hemstrom indicated the next steps regarding adult lamprey passage at Rocky Reach will be finalizing the 2017 study and submitting an SOA to the Forum in 2018 that will formalize adult passage success at Rocky Reach Dam.

VIII. Public Comments

Meaghan Connell is leaving Office Services and therefore she will not be taking notes for the Forum in the future. She will be missed greatly. The Forum wished her well.

IX. Next Meeting

The next meeting of the RRFF is scheduled for Wednesday, 7 March 2018 from 1:00 to 4:00 p.m. and will be held at the Chelan PUD office in Wenatchee at 327 N. Wenatchee Avenue (2nd Floor Conference Room).