



Grant County  
**PUBLIC UTILITY DISTRICT**  
*Excellence in Service and Leadership*

## Priest Rapids Fish Forum

Wednesday, 7 September 2016

9:00 a.m. – 12:00 p.m.

Grant PUD, 11 Spokane St., Suite 205B, Wenatchee, WA

Call-In Number: 1-800-977-8002, Bridge: 7422882

### MEETING MINUTES

#### PRFF REPRESENTATIVES

---

Steve Lewis, USFWS

Bob Rose, YN

Doris Squeochs, Wanapum

Jason McLellan, CCT

Mike Clement, Grant PUD

Tracy Hillman, Facilitator

Patrick Verhey, Chad Jackson, WDFW

Pat McGuire, Breean Zimmerman, WDOE

Aaron Jackson, Carl Merkle, CTUIR

Keith Hatch, BIA

Chris Mott, Grant PUD

Orlene Hahn, Grant PUD

#### ATTENDEES

---

Pat Wyena, Wanapum

Patrick Verhey, WDFW

Breean Zimmerman, WDOE (via phone)

Orlene Hahn, Grant PUD

Mike Clement, Grant PUD

Steve Lewis, USFWS

Tracy Hillman, Facilitator

#### Action Items:

1. Tracy Hillman will try to find the presentation by Ralph Lampman that discussed juvenile lamprey survival in the lower Columbia River.
2. Tracy Hillman will contact Bob Rose to determine the status of the CRITFC lamprey proposal.

#### I. Welcome and Introductions

#### II. Agenda Review

- A. **Additional Agenda Items** – No new agenda items added.

#### III. Approve August Meeting Notes – 3 August 2016 Meeting Minutes were reviewed and approved.

##### A. Review Action Items from June Meeting

1. Tracy Hillman will send the PRFF's responses to the Columbia Basin White Sturgeon Program questionnaire to the PRFF attendees for final review and editing. Tracy will then send the final responses to Paul Anders. **Complete and forwarded onto Paul Anders.**

#### IV. Update on White Sturgeon Management Plan (WSMP)

- A. **Update on Juvenile Rearing** – Mike Clement stated that Chris Mott has not heard anything from the Yakama Nation on the status of juvenile sturgeon rearing at Marion Drain. He assumes this means that everything is going well. The last he heard was that grow rates and survival appear to be on par with rates measured last year.
- B. **Larvae Collection** – Patrick Verhey had no new information to provide. WDFW is preparing a report that should be available in October or November. Given the poor success of the program, Mike Clement stated that Grant PUD is having internal discussions regarding future directions for the program. Mike and Chris will discuss these with Chad Jackson. Patrick pointed out that they are learning from past efforts and they should be able to dial in the program so it will be more successful in the future.
- C. **Update on Monitoring Activities** – Mike Clement stated that Grant PUD started juvenile index monitoring today (7 September). The protocol is similar to previous years, except this year Golder will have two boats in Wanapum reservoir. The increased effort will improve the precision of monitoring statistics such as growth, size, and survival. Grant PUD will have one boat in the Priest Rapids reservoir. They are using standardized gear that targets ages 2-6 sturgeon. Last time there were two Colville boats that were very efficient. If all goes well, sampling will end on 7 October. After Golder has the information, they will update the database and we should have results in a few months. Any CRITFC fish collected will be sacrificed, analyzed for diet, and then given to the Food Bank or Wanapum.

Steve Lewis asked about the total number of juvenile lamprey found in a sturgeon sampled last month. Mike stated that they stopped counting at about 125 fully intact juvenile lamprey and roughly 40 – 50 partially digested pieces from others. He said Grant PUD will prepare a short report summarizing the presence/absence diet information and share it with the PRFF, either as part of the annual report or as a stand-alone summary of fish sampled to date. Members were concerned over the large number of lamprey in sturgeon. Steve asked if the Fish Forum should focus attention on the interactions between sturgeon and lamprey. Although these observations are from the project area, there is reason to believe this is a concern throughout the Columbia River.

- D. **Other White Sturgeon Items** – Mike Clement indicated that he spoke to one local guide, who said he was tired of filleting sturgeon. Mike indicated that the guide has been very successful in helping clients harvest sturgeon in the project area. Mike said the goal is to harvest about 600 sturgeon in the project area per year. Chad Jackson will provide more information on the success of the selective harvest next month.

#### V. Update on Pacific Lamprey Management Plan (PLMP)

- A. **Adult Lamprey NNI Update**
  - **Results from Pacific Lamprey Subgroup Meeting** – Tracy Hillman discussed the results from the Pacific Lamprey Subgroup Meeting (see Attachment 1). He said the PRFF and RRFF Pacific Lamprey Subgroups met on 4 August 2016 to (1) identify lamprey passage metrics, (2) describe methods to estimate passage metrics, and (3) describe methods for assessing unavoidable effects (NNI). The Subgroups first reviewed regional notes and documents to assess the applicability of lamprey passage metrics and methods used in the Columbia River basin. In short, the region has not identified passage metrics or described methods to assess passage metrics or applied them for lamprey. Therefore, the Subgroups

decided to identify and develop their own metrics (measurements; not standards or targets) and methods with respect to their Pacific Lamprey Management Plans.

The Subgroups identified and defined the following adult lamprey passage metrics: (1) *Within-Fishway Passage Efficiency* = Fraction of adult lamprey that successfully egress a fishway; (2) *Entrance Efficiency* = Proportion of adult lamprey being detected at a fishway entrance at least once after release; and (3) *Adjusted Inter-Dam Conversion Rates* = Ratio of adult lamprey counted at an upstream dam to the number counted at a downstream dam, adjusted for overwintering, tributary escapement, predation, fallback/re-ascension, and reservoir/tailrace spawning. The Subgroups then identified and discussed methods and assumptions associated with each metric. They concluded that Within-Fishway Passage Efficiency is the passage metric most likely to be measured accurately. The other passage metrics have assumptions that are difficult to accept or measure at this time.

The Subgroups indicated that once an adequate estimate of Within-Fishway Passage Efficiency is generated (based on at least three valid study estimates with study assumptions achieved), one can then estimate unavoidable effects (NNI). However, at this time, the Subgroups were unable to define NNI in terms of passage success. That is, does 100% passage efficiency define passage success, or is it defined as something less than 100% assuming that some level of mortality – like predation – occurs under natural conditions? In addition, the Subgroups were unable to determine at this time what NNI tools (actions) would be used to address unavoidable effects. The Subgroups did note that a greater effort would be needed to address a 70% passage efficiency than, say, a 95% passage efficiency. These are issues that may need to be determined using a model or by consensus of the policy representatives.

Mike Clement suggested that the PRFF should exercise some level of concern regarding differentiating between NNI and project effect. NNI does not singularly apply to something that is not measurable. Steve Lewis recalled a presentation by Ralph Lampman that attempted to measure survival of downstream migrating juvenile lamprey through the lower Columbia River. Tracy will try to find the presentation.

Tracy asked for next steps. Members agreed that at least three years of passage data are needed. There were questions regarding what the passage standard should be, whether or not additional improvements can be made to the fishways, and if there are passage bottlenecks within the fishways. Mike indicated that he and Rod O'Connor with Blue Leaf will develop a final report and give a presentation to the Forum on passage efficiency at Priest Rapids and Wanapum dams. After that, the Forum can identify what actions need to be implemented, and, if necessary, engage the Policy Committee.

- B. **Adult Lamprey Monitoring** – Mike Clement gave an overview of the HDX PIT-tag study that evaluates lamprey passage in the upper, left-bank fishway at Priest Rapids Dam (evaluating if there is a passage issue at the OLAFT). Mike said they successfully collected and tagged 150 adult lamprey and released them in the lower, left-bank fishway. Of the 150 fish released, they detected 148 lamprey, and of those, 84% passed. The average travel time for those fish was 14 hours, which is similar to last year. At this time there appears to be no issue with the OLAFT. Mike noted that of the 148 detected at Priest Rapids Dam, 73% have exited Wanapum Dam. Thus, 87% of the fish that exited Priest Rapids passed Wanapum Dam. Mike stated that this is

preliminary information, but passage success so far looks good. Rod O'Connor with Blue Leaf will prepare a report that describes in detail the results from the study.

- **Adult Tagging and Collection** – Mike Clement discussed the active-tagging study that Grant PUD is conducting this year. Grant PUD tagged 100 adult lamprey with acoustic tags (sleep-mode tags) and FDX PIT tags. These fish were released in July and August. A total of 70 were released in Wanapum reservoir and 30 in Priest Rapids reservoir. This is the second year of this study. Of the 100 adult lamprey released, 97 have been detected (this is better than last year at this time). Of the 97 fish detected, 76 have been detected at least as far upstream as Rock Island tailrace. Of those detected at Rock Island, three were later detected in the lower Wenatchee River and 26 at the Rocky Reach exit. No tagged lamprey were detected moving downstream out of the project area.
  - C. **Update on the CRITFC Lamprey Proposal** – This item will be discussed at next month's meeting. Tracy Hillman will check with Bob Rose on this topic.
  - D. **Other Pacific Lamprey Items (All)** – None
- VI. **Next Meeting:** 5 October 2016 – Grant PUD Natural Resources Wenatchee Office. Possibly have the 2 November 2016 meeting at the new Wanapum Heritage Center.

# Attachment 1

## Results from the Pacific Lamprey Subgroup Meeting Held on 4 August 2016

### Introduction

The PRFF and RRFF Pacific Lamprey Subgroups met on 4 August 2016 to (1) identify lamprey passage metrics, (2) describe methods to estimate passage metrics, and (3) describe methods for assessing unavoidable effects (NNI). The Subgroups first reviewed regional notes and documents to assess the applicability of lamprey passage metrics and methods used in the Columbia River Basin. In short, the region has not identified passage metrics or described methods to assess passage metrics or applied them for lamprey. Therefore, the PRFF and RRFF will identify and develop their own metrics (measurements; not standards or targets) and methods with respect to their Pacific Lamprey Management Plans. What follows is a summary of discussions and recommendations from the Subgroups.

### Lamprey Passage Metrics

The Subgroups identified the following fish passage metrics that may be measurable for adult lamprey.

- ***Within-Fishway Passage Efficiency*** = Fraction of adult lamprey that successfully egress a fishway.
- ***Entrance Efficiency*** = Proportion of adult lamprey being detected at a fishway entrance at least once after release.
- ***Adjusted Inter-Dam Conversion Rates*** = Ratio of adult lamprey counted at an upstream dam to the number counted at a downstream dam, adjusted for overwintering, tributary escapement, predation, fallback/re-ascension, and reservoir/tailrace spawning.

The Subgroup did not identify travel time (within the fishway, to the fishway entrance, or from one dam or counting station to the next) as a passage metric, because lamprey tend to wander widely, may hold within certain areas (e.g., reservoirs, fishways, etc.) for extended time periods, and may overwinter for one or more years in the project area. On the other hand, travel time can be used as a covariate that may explain passage success. For example, delays within a segment or segments of the fishway may indicate a potential passage problem. Thus, although travel time is not a specific passage metric, it should be measured and used to help explain variation in passage metrics.

### Lamprey Passage Metrics Methods and Assumptions

The Subgroups described methods and assumptions associated with each passage metric.

#### Within-Fishway Passage Efficiency

Within-Fishway Passage Efficiency is a measurement of adult lamprey passage success through the fish ladder. This is the metric that is often referred to when biologists speak of dam passage. Mark-recapture techniques are used to estimate Within-Fishway Passage Efficiency. Given that PIT-tag interrogation systems have been installed throughout the fishways, PIT tags are appropriate for marking fish and estimating Within-Fishway Passage Efficiency. Active tags can also be used provided they do not affect fish

behavior or negatively affect swimming ability. In general, the approach includes capturing adult lamprey within the fishway being tested (assumes the fish intends to pass the project), tagging them, releasing them in the lower fishway or below the fishway, and recording the number of adult lamprey that exit the upstream end of the fishway. It is necessary to track the number of tagged fish that successfully egress the fishway, fallback, and re-ascend the fishway; track tagged fish that leave the fishway downstream and are detected at downstream dams or tributaries; and track fish that overwinter within the fishway if the fishway is not taken out of service during off-season. These data can be used to adjust Within-Fishway Passage Efficiency estimates.

Key assumptions associated with this approach include (1) tagged fish have the same probability of survival and passage through the fishway as untagged fish, (2) behavior of tagged fish is the same as untagged fish, (3) tagged fish intend to pass upstream of the dam through the fishway, (4) tags are not shed or lost, (5) tagging effects do not affect subsequent detections, and (6) enough fish are tagged, or detection efficiencies are high enough to estimate passage success accurately. An important assumption is that adult lamprey captured and tagged within the fishway desire to pass the project. Results from recent tagging studies indicate that adult lamprey can move through various projects multiple times before entering a downstream tributary, reservoir, or tailrace to spawn. This means that not all adult lamprey that enter a fishway intend to pass the dam. Rather, these fish may interact with the fishway but ultimately move downstream of the dam and reproduce successfully. Thus, it is important to track these fish for at least two years to determine their final location if they spawn downstream from the project. Within-Fishway Passage Efficiency can then be adjusted based on these results.

Because of variation in passage efficiency estimates, the Subgroups agreed that at least three valid study estimates would be best to estimate Within-Fishway Passage Efficiency.

## Entrance Efficiency

Entrance Efficiency evaluates how successful adult lamprey are at entering the fishway through existing entrances, assuming the fish desire to move upstream. Mark-recapture techniques with active and/or PIT tags are needed to estimate entrance efficiency. In general, the approach includes capturing adult lamprey within the fishway (assumes the fish intends to pass the project), tagging them, releasing them downstream from the dam, and recording the number of adult lamprey that enter the fishway and are detected at two or more different interrogation stations within the fishway.

Assumptions associated with this approach include (1) tagged fish have the same probability of survival and entering the fishway as untagged fish, (2) behavior of tagged fish is the same as untagged fish, (3) tags are not shed or lost, (4) tagging effects do not affect subsequent detections, and (5) enough fish are tagged, or detection efficiencies are high enough to estimate entrance success accurately. An important assumption is that adult lamprey captured within the fishway desire to pass the project. Because this may not be the case, it is important to track these fish after they are released downstream from the project to determine if fish subsequently move downstream or are consumed by a predator. Entrance efficiency can then be adjusted based on these results.

## Adjusted Inter-Dam Conversion Rates

Adjusted Inter-Dam Conversion Rates estimate the loss of adult lamprey between dams (exit from one dam to the exit of another). In general, window counts at one dam are compared to window counts at another downstream dam. These rates are "adjusted" using results from active and passive tag studies to correct

for overwintering, tributary escapement, predation, fallback, re-ascension, and reservoir/tailrace spawning. Some of these “adjustments” are not measurable at this time.

Because this approach relies on dam (window) counts, a major assumption is the dam counts are accurate (i.e., no fish are missed at the dams). Adjustments to dam counts are made using mark-recapture techniques. As before, mark-recapture assumptions include (1) tagged fish have the same probability of survival as untagged fish, (2) behavior of tagged fish is the same as untagged fish, (3) tags are not shed or lost, (4) tagging effects do not affect subsequent detections, and (5) enough fish are tagged, or detection efficiencies are high enough to estimate conversion rates accurately. The mark-recapture estimates must be precise enough to estimate overwintering, tributary escapement, predation, fallback, re-ascension, and reservoir/tailrace spawning. These estimates are then used to adjust dam counts.

## Assessment of Unavoidable Effects (NNI)

The Subgroup concluded that Within-Fishway Passage Efficiency is the passage metric most likely to be measured accurately. The other passage metrics have assumptions that are difficult to accept or measure. For example, predation and reservoir/tailrace spawning are difficult to measure at this time. In addition, Within-Fishway Passage Efficiency can be estimated with PIT tags and other less preferable technologies. Thus, the Subgroups recommend Within-Fish Passage Efficiency as the primary metric for assessing adult lamprey passage success. The Subgroup believes this is the most appropriate metric are assessing unavoidable effects.

Once an adequate estimate of Within-Fishway Passage Efficiency is generated (based on at least three valid study estimates with study assumptions achieved), one can then estimate unavoidable effects (NNI). However, at this time, the Subgroups were unable to define NNI in terms of passage success. That is, does 100% passage efficiency define passage success, or is it defined as something less than 100% assuming that some level of mortality – like predation – occurs under natural conditions? In addition, the Subgroups were unable to determine at this time what NNI tools (actions) would be used to address unavoidable effects. The Subgroups did note that a greater effort would be needed to address a 70% passage efficiency than, say, a 95% passage efficiency. These are issues that may need to be determined using a model or by consensus of the policy representatives.

## Juvenile Passage Success

The Subgroups evaluated the current status of methods and tags needed to evaluate juvenile survival and concluded that evaluation of juvenile passage success is not possible at this time.