



Meeting Minutes

Fall Chinook Working Group

Tuesday, April 06, 2010
 9:30 – 5:00 pm

Battelle EMSL, Room 1077
 Richland, WA

Technical Members

Paul Wagner, NMFS
 Robert Heinith, CRITFC
 Holly Harwood, BPA
 Keith Truscott, CPUD
 Bill Tweit, WDFW
 Marcie Mangold, WDOE
 Russell Langshaw, GCPUD
 Steve Hemstrom, CPUD

Joe Skalicky/Dan Diggs, USFWS
 Paul Ward/Bob Rose, YN
 Brett Swift, American Rivers
 Tom Kahler, DPUD
 Paul Hoffarth, WDFW
 John Clark, ADFG
 Todd Pearsons, GCPUD

ATTENDEES: (*Denotes Technical member)

Paul Wagner, NMFS* (on phone)
 Steve Hays, CPUD (on phone)
 Russell Langshaw, GCPUD*
 Joe Skalicky, USFWS (on phone)
 Marcie Mangold, WDOE* (on phone)
 Todd Pearsons, GCPUD*
 Tom Kahler, DPUD*
 Tracy Hillman, Facilitator

Bob Rose, YN* (on phone)
 Geoff McMichael, Battelle
 John Clark, ADFG*
 Paul Hoffarth, WDFW
 Alyssa Buck, Wanapum (on phone)
 Eric Oldenburg, Battelle
 Debbie Williams, GCPUD

Action Items:

1. Langshaw will meet with the Grant PUD auditor and discuss payment of a stipend to expert panel members.
2. Hillman will distribute the expert panel invitation letter within the next week or so.
3. Eric Oldenburg will provide survival updates on the second fertilization group at the next meeting.

4. **Battelle will draft a letter of methodologies to conduct egg to fry studies.**
5. **Williams will upload to the website the stranding videos.**
6. **Hillman and Pearsons will draft a list of metrics, by life stage, and send them to the FCWG. Members should send additional variables to Pearsons.**

Final Meeting Minutes

- I. **Welcome and Introductions** – Hillman welcomed everyone to the meeting and attendees introduced themselves around the table and on the conference line.
- II. **Agenda Review** – The proposed agenda was adopted and it was noted that Eric Oldenburg, Battelle, would provide an update on egg-to-fry survival studies in the Hanford Reach.
- III. **Approval of Meeting Minutes**
 - February 02, 2010 – Minutes approved with edits from Langshaw.
 - March 08, 2010 - Minutes approved with edits from Skalicky.
- IV. **Review of Action Items** - Action items identified during the March meeting were reviewed and discussed.
 - A Langshaw will distribute the draft Flow Fluctuation Report by April 19, 2010.
 - B WASCO Funds - Rose noted that the FCWG should not go back to that group to ask for funds until we have a definite plan and know the amount of money that will be requested. A list of studies that will be funded needs to be determined before going back to them.
- V. **Study Plan Updates**
 - A **Use of WASCO Funds** - See item IV, B above.
 - B **Update from the HRWG and Ecology** – Hillman provided an overview of the HRWG meeting. Please refer to the May 05, 2010 Hanford Reach Work Group meeting minutes.
 - C **Draft Hanford Reach Study Plan (HRSP) Review** - Mangold reported that the Washington Department of Ecology (WDOE), Washington Department of Fish and Wildlife (WDFW), and Grant PUD met on April 1st to discuss the HRSP. Grant PUD will submit a timeline of completion to WDOE by April 16th. The Federal Energy Regulator Commission (FERC) deadline for submittal is July 30, 2010. Langshaw hopes to have the final version to Ecology by the end of April.

Mangold explained that WDOE agrees with the phased approach presented by Grant PUD, but said it was confusing how phase 2 studies could be decided upon when phase 1 study results have not been determined. WDOE has asked that a response summary be included in the study plan and that the adaptive management portion of the plan be beefed up. WDOE suggests adaptive management be used to guide studies from phase 1 to phase 2, and told members that the outcome of phase 1 studies might change rankings of phase 2 studies. Langshaw explained that while Grant PUD did not follow the exact ranking of the FCWG, the method used was consistent with the ranking process. Out of the top ten studies, there is only one study (ramping rate) that Grant PUD did not agree to fund. Langshaw said that Grant PUD is committed to using science to guide which studies are to be implemented.

- D Review Draft Invite letter to Potential Expert Panel Participants** - Clark provided comments on the letter inviting experts to participate on the productivity panel. The first meeting with the expert panel will be around August 2010. **Langshaw will meet with the Grant PUD auditor and discuss payment of a stipend to expert panel members.** Members edited the invitation letter during the meeting. **Hillman will distribute the letter within the next week or so.** Terry Quinn was identified as another candidate to serve on the expert panel.

Hillman told members to start thinking about documents and data they want the panel to review. Hoffarth will find comparative data for the Lewis River. CRITFC or the Warm Springs Tribe could provide smolt data for fall Chinook on the Deschutes River. Cam Sharp or Pat Hewlitt could also provide that information.

Langshaw noted that he is not expecting the expert panel to come up with numbers. Rather, he would like the FCWG to hammer out the actual data that are going to be used. We will present the data and results to them and they will let us know if the assumptions, logic, and analyses are reasonable, stated Skalicky.

- E Information Update on Incubation and Emergence Studies** - Eric Oldenburg joined the meeting at 11:00 a.m. to update members on egg-to-fry survival studies at Vernita Bar. Oldenburg provided a handout that showed the results to date on the studies.

Oldenburg showed a figure (on the handout) that indicated the number of degree days since fertilization for embryos reared at Battelle and Vernita Bar. In addition, he described the percent survival from egg to emergence. It was noted that for some females, the survival of their progeny appeared low (<20%). McMichael noted that there was a large female effect. Survival of progeny from the other females (numbers 6-10) is considerably

higher. Oldenburg also described the length-weight relationship of emergent alevins.

McMichael indicated that it may be better to start the experiment with eyed-eggs. This would avoid the handling effect. Skalicky reminded the group that we need to assess the effects of Priest Rapids operations on egg-to-fry survival. He questioned, at the time when Chinook build their redds, what percentage of the total eggs deposited are viable and what are the fertilization rates? There are many factors that determine viability, stated Skalicky, and there is a lot of year-to-year variability. Hays asked if one were to excavate a redd after emergence, would one be able to estimate the number of unfertilized or undeveloped eggs and dead alevins. Hillman noted that decomposition takes place during the period from deposition to emergence, and the rate of decomposition is a function of temperature and oxygen levels. In addition, one would not be able to estimate accurately the percentage of viable eggs, because there is no accurate estimate of the total number of eggs deposited. McMichael noted that they see a lot of decomposed eggs in the lab...they are cakey and rancid. There is also plenty of fungus on the eggs and tubes. When hatchery staff find dead eggs in the incubators, they pick them quickly to allow better survival. Both Hillman and McMichael reported that they have seen the presence of fungus, worms, and other decomposers within natural Chinook salmon redds.

It was suggested that dead eggs could be placed within artificial redds, and then, at different points in time, the redds could be excavated to see what fraction of the dead eggs are still present. This would provide an estimate of decomposition rates. Hays asked if it is possible to do excavations in deep water? Hillman responded that it is possible with SCUBA gear. He noted that they built a large suction device (underwater vacuum) that they used to extract eggs, embryos, and alevins from deep-water redds. It is expensive to work in deep water.

Hillman reminded the group that it still needs to respond to Skalicky's question posed several months ago, which is, how can we estimate egg to fry survival rates without using artificial redds?
Eric Oldenburg will provide survival updates on the second fertilization group at the next meeting. Battelle will draft a letter of methodologies to conduct egg-to-fry studies. Williams will upload to the website the stranding videos.

- F Update on Entrapment and Stranding Studies** – Members discussed the past stranding and entrapment studies, which were summarized by McMichael, Skalicky, and Hoffarth. These studies will be used by the Working Group to create a robust study in 2011, 2012, and 2013.

As noted in the summaries prepared by McMichael, Skalicky, and Hoffarth, results from the different years of studies are difficult to compare because of changing methods and sampling designs. In addition, there is considerable variability in the estimates. A small work group has been set up to develop more robust methods for estimating entrapment and stranding. The small group consists of Joe Skalicky, Paul Hoffarth, Russell Langshaw, Steve Haeseker, Ken Tiffen, Geoff McMichael, Chris Murray, and Tracy Hillman. The small work group will develop a draft study plan with cost estimates. They will share this information with the FCWG in May or June.

- G Environmental Variables to Include in Productivity Analysis –** The FCWG began identifying environmental variables that could be correlated with the residuals in the fall Chinook stock-recruit relationships. After the stock-recruit analyses are complete, these environmental variables will be analyzed for their correlation with the residuals (difference between the expected or modeled value and the true or measured value). The purpose is to identify factors, other than stock size, that explain some of the variation in the number or fall Chinook recruits.

Langshaw thought the group should focus on variables for which there are long-term data, e.g., vertical feet dewatered. The following variables were identified during the discussion:

- Vertical feet dewatered during the different life stages
- Total area dewatered during the different life stages
- Magnitude of flow fluctuation during the different life stages
- Maximum temperature during spawning
- Variability in temperature during the different life stages
- Number of days to reach 1,000 TUs
- Mean flow during April-September the previous year
- Solar radiation
- Snow pack
- Spill
- Barging
- Proportion of hatchery spawners
- Flow stability during smallmouth bass spawning

Several of these variables will likely have to be modeled. Hillman noted that in addition to using measures of central tendency, one can also estimate the variability (coefficient of variation) in the

metrics. Pearsons recommended that the Group rank the variables in terms of their importance. The alternative is to conduct a “data snooping” exercise, which basically amounts to running correlation matrices to identify highly correlated metrics. Caution must be exercised to avoid autocorrelations among independent metrics. McMichael suggested that the Group categorize variables by life stage. **Hillman and Pearsons will draft a list of metrics, by life stage, and send them to the FCWG. Members should send additional variables to Pearsons.**

Clark suggested that the full stock recruitment relationship needs to be updated. Clark is currently working on compiling freshwater survival estimates and harvest rates. **Clark will get PRH survival rates before the next meeting.** McMichael noted that PR Hatchery fish survive well through the Hanford Reach to McNary, but he thinks wild fish survive better overall.

Additional metrics that were kicked around included size of escapement (surrogate for nutrients and superimposition). McMichael indicated that productivity of predators could also be included in the analysis. Skalicky noted that flow fluctuations can also influence primary and secondary productivity. In addition, variation in sex ratios and fecundity can also affect fall Chinook productivity; although Hoffarth noted that there is not much variation in these metrics in the Hanford Reach.

Hillman asked how the group would decide if a metric should be included in the analysis. For example, would a metric be included if it achieves a certain r^2 value, and if so, what would that value be? Members will ponder these questions and other decision rules during the next meeting.

VI. Next Meeting: Monday, May 04, 2010 in Richland, WA.