



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Michele DeHart

FROM: Erin Cooper

DATE: August 5, 2014

RE: AFEP Proposals Submitted to SRWG

At your request, I have reviewed the proposals submitted to SRWG for the 2015 funding year. Two of these proposals, one on bypass selectivity and one on Steelhead straying rates and barging, have been reviewed previously by FPC and are of particular concern. Below, I have summarized our previous comments on these proposals.

### **Evaluation of the Selectivity of Juvenile Bypass Systems**

This proposal, submitted again by Ham, Harnish, and Skalski, was previously reviewed by FPC on September 10, 2012, and has not changed appreciably since the initial submission. The proposal relies on past JSATS and PIT-tagged juveniles to determine if bypass systems are size or condition selective.

- This study does not define the level of significance that will be used to define a difference in size or condition between smolts that are bypassed and those that pass via other routes. Consequently, it is impossible to determine if these study results could be applied to management decisions.
- This study would use smolts collected in bypass systems for at least a portion of the analyses. If bypass systems are selective, the study fish will not represent the population, and therefore will not be able to measure the true impact on the smolt population. This potential for bias is why studies such as the CSS use fish tagged above Lower Granite Dam.

- If tagged fish are collected in traps far upstream from Lower Granite, or tagged in hatcheries and released weeks or months later, their size at tagging may not correlate to their size at encountering a project, given the variability in growth rates.
- This proposal includes using PIT-tag and CSS data, and data from JSATS tagging previously used for past performance standards testing for a retrospective analysis.
  - The PIT-tag data will be used in the Manly-Parr model to calculate detection probability. This utilizes downstream detections and therefore requires the assumption that downstream dams are not size-selective. This assumption is not valid for a study designed to test the size-selectivity of bypass systems.
  - Smolts used in performance testing are collected by the Smolt Monitoring Program at different projects and exclude previously PIT-tagged fish. Therefore, their passage history for all upstream projects is unknown. The initial sample may be significantly biased due to experiencing multiple selective bypass events.
  - Limitations on tagging size with JSATS tagging means that the smallest smolts collected were not used in performance standards. Given that this proposal is to test the size selectivity of bypass systems, this tagging limitation will very seriously limit the applicability of the results. Rejection rates due to size can be as high as 18%. This is especially true for runs that are on average smaller, such as subyearling Chinook.
  - JSATS tags cause a significant tag burden when compared to PIT-tagging. Acoustic tags used in 2010 performance standards were 12.02 mm in length, 12.7% of the body length of the smallest tagged fish. If this tag burden causes a change in swimming ability or behavior in smaller tagged fish, it may significantly bias results.

### **Evaluation of methods to reduce straying rates of barged juvenile methods**

This proposal, submitted again by Dittman, Marsh, and Ham, was previously reviewed by FPC on August 23, 2013, and has changed a few objectives. The project is still primarily an attempt to use gene expression in smolts to predict adult straying behavior. As in the previous proposal, manipulations in barging protocols will be used to test for differences in gene expression in genes assumed to relate to straying behavior in adults. However, the study design does not involve any ability to actually test the results in adults, and straying in adults will be extrapolated from the juvenile data. This limitation will severely limit the usefulness of any data generated by this proposal.