

MEMORANDUM FOR THE RECORD

SUBJECT: 23BON100 MFR FG3-21 Pacific Lamprey Mortalities

On the morning of 19 December, Bonneville Project Biologists identified 40-50 Pacific lamprey mortalities while fishing diffuser pit FG3-21 in B-Branch ladder. These lamprey seemed to have been forcefully pushed into the grating from below.

- A. Species – Pacific Lamprey (*Entosphenus tridentatus*)
- B. Origin – Unknown
- C. Length – Unknown
- D. Marks and tags – Unknown
- E. Marks and Injuries found on carcass – advanced decay
- F. Cause and Time of Death – It is suspected that the mortalities were caused by routine orifice flushing as defined in FPP Section 3.1.6. VII. “Diffuser pits will be cleaned of debris by using a rolling operation. Diffusers are opened one-at-a-time for a period of ~5 minutes, starting with the furthest diffuser upstream to allow debris in the pits to be flushed down the ladder. This should be done at A-branch, B-branch, Cascades Island, and any other diffuser deemed necessary by Project Fisheries. This should be done in November before the start of winter maintenance and in summer concurrent with ROV inspections to minimize impacts on fish passage.”
- G. Future and Preventative Measures – Open diffusers more slowly in the upcoming year with a Project Biologist on hand. Possibly install more lamprey attachment points in this specific diffuser bay. It was noted that this bay has a tall step up to the weir orifice, posing a challenge for lamprey to attach and traverse compared to other weirs. This observation also aligns with Keefer’s research which demonstrates that an elevated step into the orifice is a notable obstacle for lamprey (Keefer et al. 2010). This could also explain why there were so many more lamprey in this diffuser bay/pit than others.

Sincerely,
BON Project Fisheries

Citation List

Keefer, M. L., W. R. Daigle, C. A. Peery, H. T. Pennington, S. R. Lee, and M. L. Moser. 2010. Testing adult pacific lamprey performance at structural challenges in Fishways. North American Journal of Fisheries Management 30(2):376–385.



Comments from FPOM –

1.1.1.23BON100 MFR FG3-21 Lamprey Dewatering Morts. Swank asked about the corrective actions. He asked what action can be taken if lamprey are seen in the diffuser pit. Derugin said you can't see if lamprey are in the pits. Cycling the diffusers is important to flush the sediment from the diffuser valves. Derugin said opening diffusers more slowly may allow the lamprey to exit rather than be impinged. He also noted that reducing the grating opening would help prevent lamprey from getting into the pits. Swank would like to brainstorm ideas for how to prevent a kill of this magnitude in the future.