

EVALUATION OF ADULT LAMPREY USE OF LAMPREY PASSAGE STRUCTURES AT BONNEVILLE DAM

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ABSTRACT

At Bonneville Dam, lamprey passage structures (LPSs) provide adult Pacific lamprey (*Lampetra tridentata*) with a passage route from the auxiliary water supply channels (AWSs) to the powerhouse forebays. In 2008, the LPS at the Bradford Island AWS passed 6,441 fish, a higher percentage of the Bradford Island count than in any other year of its operation (2004-08). Passage success for lamprey detected entering this structure was 100% and the median time to pass through the structure was 0.8 h. At the Washington-shore AWS LPS, 1,985 lamprey were counted as they exited the AWS LPS in the period from 19 May to 28 October. A lower percentage of lamprey used this structure and passage efficiency was also apparently less than at the Bradford Island LPS. Of the 609 lamprey that we tagged with a half-duplex passive integrated transponder (PIT) and released below Bonneville Dam, 55 were detected in the Bradford Island AWS LPS (9%) and 16 in the Washington-shore LPS (3%). These data suggest that together the AWS LPSs contribute significantly to overall passage of adult lamprey at Bonneville Dam.

Poor passage at Bonneville Dam fishway entrances has also been the focus of recent mitigation efforts for adult Pacific lamprey. In 2008, the Washington-shore fishway entrance collector captured 490 lamprey and 16 of these had a PIT tag (3%). Both the efficiency and collection rate for this structure were higher than in any other year of operation (2005-08). Preparations are underway to install a similar LPS collection system at the Cascades Island fishway entrance next year. In 2008, a significant number of PIT-tagged lamprey (9%) was detected as they entered the flow control region of this fishway. These data indicate that large numbers of lamprey use this fishway and that providing aids to passage immediately inside this fishway entrance may afford passage to a greater number of fish.