

Preliminary Data Report

Evaluation of Adult Steelhead Fallback and Downstream Passage at the Sluiceway and Turbines at The Dalles Dam, Fall 2009 and Winter 2009/2010

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Prepared for USACE, Portland District

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Introduction

This report presents *preliminary* data for fisheries managers and engineers to use in decision-making for sluiceway operations at The Dalles Dam (TDA). The goal of this study was to characterize adult salmonid spatial and temporal distributions and passage rates at the turbines and sluiceway at TDA during fall and winter of 2009/2010. The objective was to estimate the number and distribution of adult steelhead-sized acoustic targets passing into the sluiceway and turbines at TDA during the study period.

To accomplish our objective, we conducted a full powerhouse hydroacoustic study where a transducer was randomly deployed in one of the three intakes of each turbine unit (22 in-turbine transducers) and paired transducers (8 sluiceway transducers) were deployed in each of four operating sluiceway entrances (1-2, 1-3, 18-1, and 18-2).

We present data on passage rates, run timing, and horizontal distribution for November 1 through December 15, 2009 (turbines and sluiceway) and December 16, 2009 through January 24, 2010 (turbines only)¹. The data are preliminary and subject to change.

Results for November 1 through December 15, 2009 – Turbines and Sluiceway

The main findings are:

- A total of 879 ± 165 (95% confidence interval) adult steelhead-size targets passed through the powerhouse intakes and operating sluiceway entrances (Figure 1).
- Of the 879 total fish, 804 passed into the sluiceway (92%) and 75 passed into powerhouse intake units (8%).
- A daily average of 20 adult steelhead-size targets passed the dam during the 45-day study period.
- Run timing peaked in early December (Figure 1).

¹ Data from November 1, 2009 to January 24, 2010 were analyzed for this preliminary data report. We are still collecting data for the winter study period which ends February 28, 2010.

- Total fish passage was highest at Sluice 1 (483 targets). Sluice 18 had the second highest number of fish passing (321). A small number passed through powerhouse Main Units 8, 16 and 18 (26, 37, and 12 fish, respectively) (Figure 2).
- For individual sluice entrances, sluice 1-3 passed the highest numbers of fish (469) followed by sluice 18-2 (293 fish). Sluice 18-1 passed 28 fish and sluice 1-2 passed 14 fish (Figure 3).
- Diel distribution of fish passage was highly variable with no consistent pattern (Figure 4).

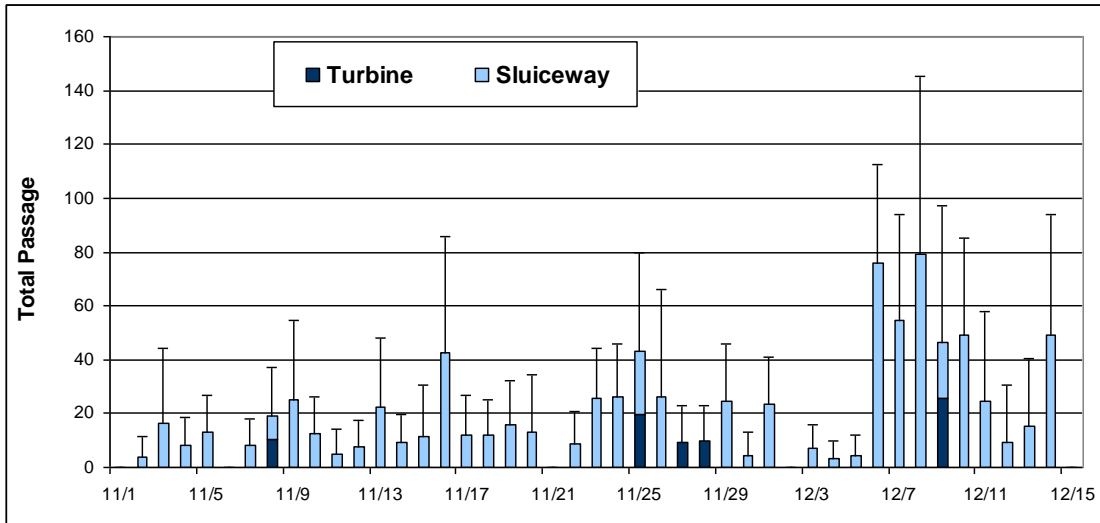


Figure 1. Total number of overwintering summer steelhead targets passing daily at each route of the powerhouse and sluiceway from November 1 – December 15, 2009 (95% CI).

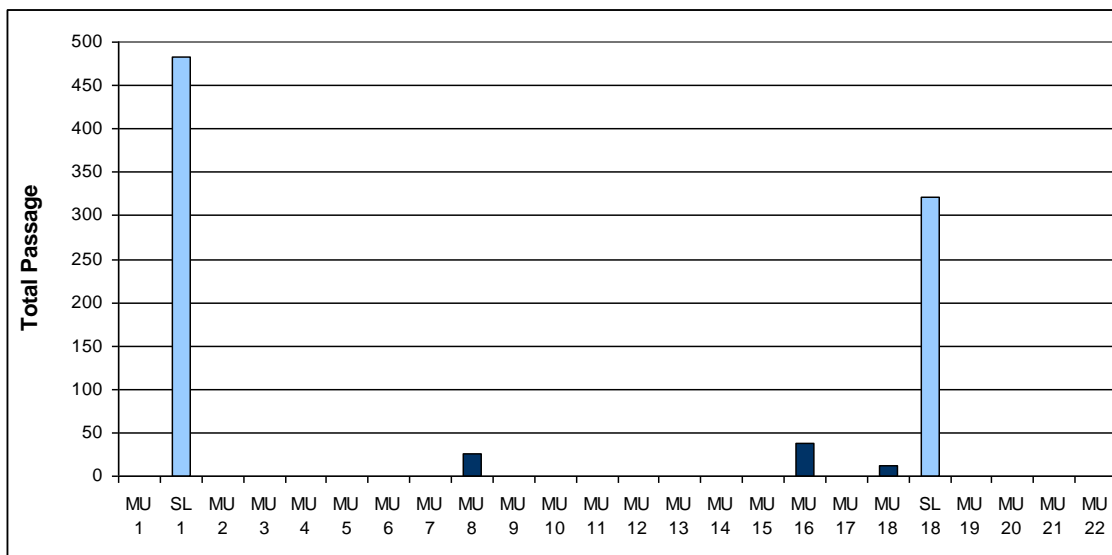


Figure 2. Horizontal distribution of total overwintering summer steelhead targets passage at each route of the powerhouse and sluiceway from November 1 – December 15, 2009.

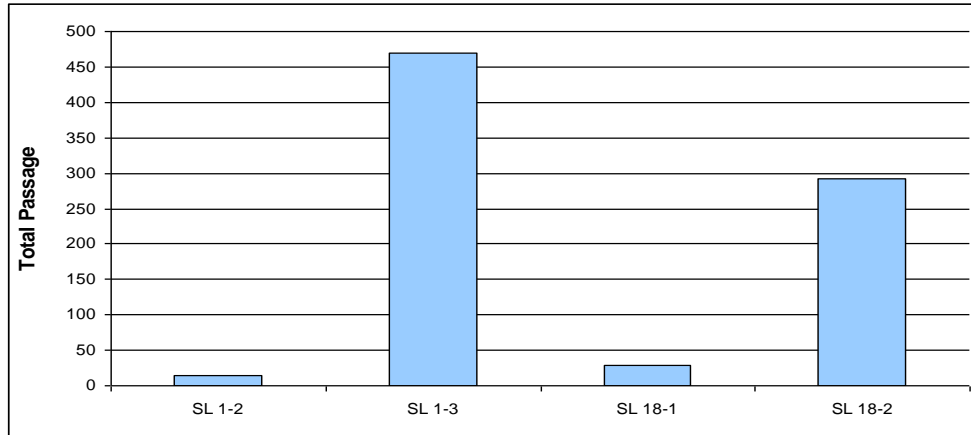


Figure 3. Horizontal distribution of total overwintering summer steelhead targets passage at each sluiceway entrance from November 1 – December 15, 2009.

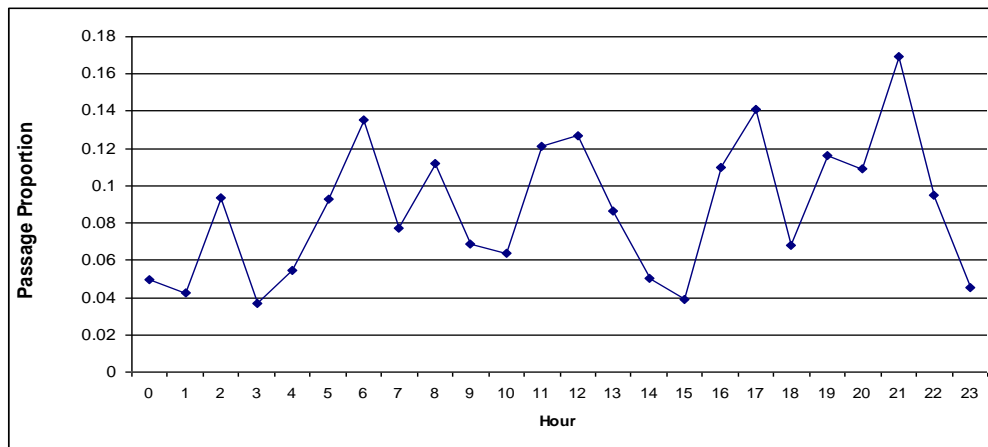


Figure 4. Diel distribution of overwintering summer steelhead targets from November 1 – December 15, 2009. Data are the hourly proportions of total passage.

Results for December 16, 2009 through January 24, 2010 – Turbines only (Sluiceway closed)

The main findings are:

- A total of two adult steelhead-size targets passed the powerhouse between December 16, 2009 and January 24, 2010.
- Both fish passed in January; one on January 11 at 0200 at main unit 18 and the other on January 14 at 0700 at main unit 5.

Future Reporting

- The next report for this study will be a preliminary report of the full 2009/2010 effort from November 1, 2009 to April 10, 2010.