



FISH PASSAGE CENTER

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MEMORANDUM

TO: FPAC

FROM: FPC STAFF

DATE: April 25, 2018

RE: GRJ bypass delay

The FPC staff has documented a delay of juvenile salmon in the new bypass at Lower Granite Dam. An SMP oversight visit noted the presence of fish gathering above the separator on April 12, 2018 (Figure 1). As can be observed in Figure 1, approximately 200 smolts are holding in a hydraulic eddy above the separator. We analyzed PIT-tag detections in the bypass between April 1 and April 22 in 2018 compared to 2017. We compared first coil detection to last coil detection to determine the amount of time PIT-tagged fish spent in the bypass. There were 28,088 tags detected in the bypass in 2018 compared to 26,021 in 2017 for the same time period. An analysis showed that nearly half or 41% of PIT-tagged fish (11,637) were delayed at least an hour in 2018 and over 18% were delayed for three or more hours. By comparison, only 0.9% (240 PIT-tagged fish) delayed greater than an hour in 2017 (during the same time period; April 1 and April 22). In 2017, first detections were on the separator, while in 2018 first detections were at the Full Flow Bypass (FFB) coils. Although one would expect a little delay between the FFB and the top of the separator, given the new bypass design, the degree of delay observed so far in 2018 is much more than one would expect. Figure 1 shows the relative proportions of all PIT-tags passing through the bypass in 2018 by the hours from first to last detection in the bypass.

In recent days the COE has attempted to reduce delay by adjusting flows through the bypass. As of this writing it is difficult to evaluate the success of their actions since our data set contains PIT-tag coil detections through the end of April 22.

Our recent data suggests the delay is still occurring. See Table 1 below.

Table 1. Summary of recent detections at GRJ showing total tags, first detection date, proportion with last detection more than an hour later, and number of fish with no detection past the Full Flow Bypass.

Day of first detect	Total PIT-tag detections	Proportion with delay > 1 hour	Number still unobserved
4/18	1067	0.57	3
4/19	1164	0.51	2
4/20	850	0.50	9
4/21	948	0.49	20
4/22	578	0.42	60

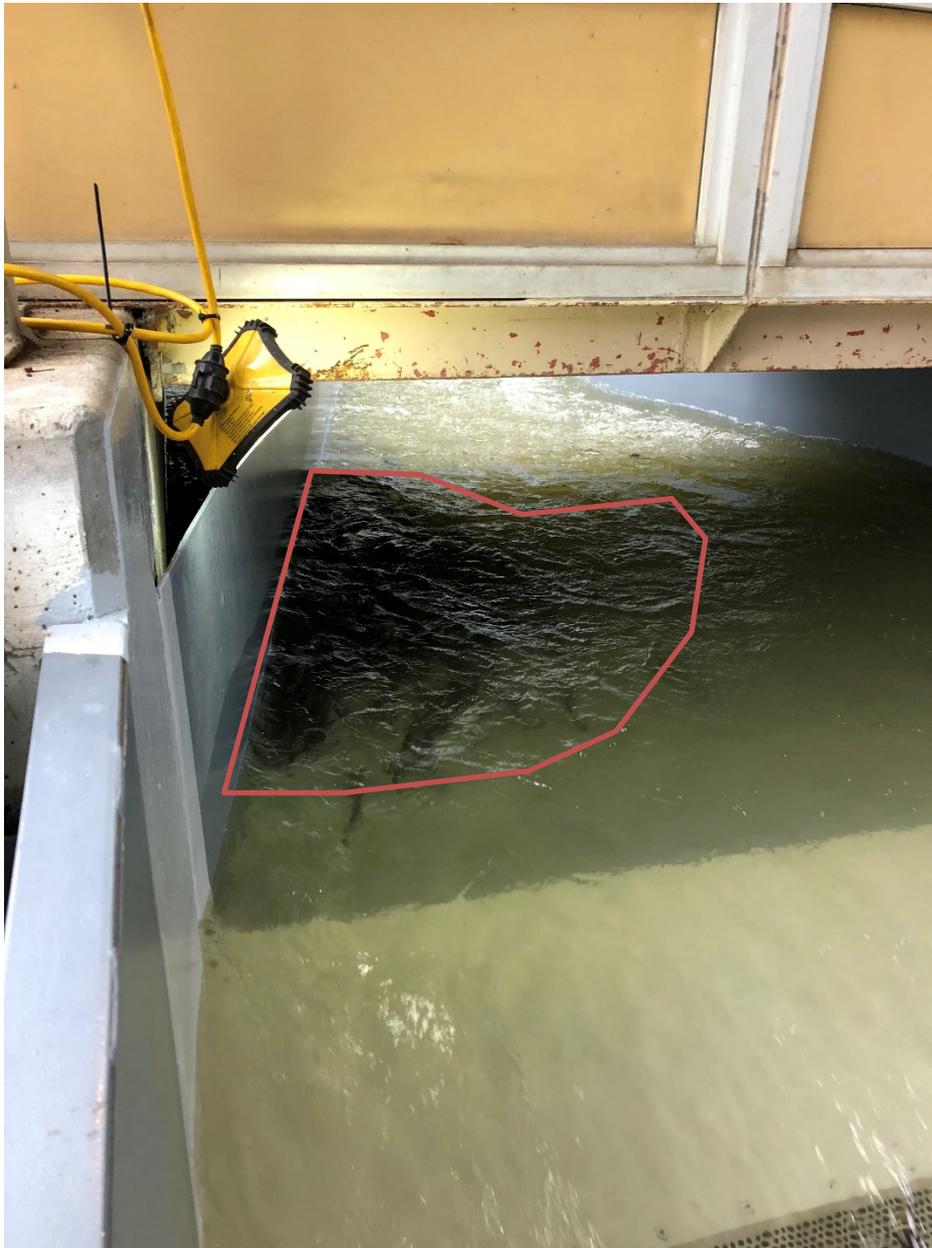


Figure 1. Picture taken April 12 at Lower Granite bypass showing juvenile salmon holding above the separator. Area of hydraulic eddy where fish are holding is highlighted by red outlined area.

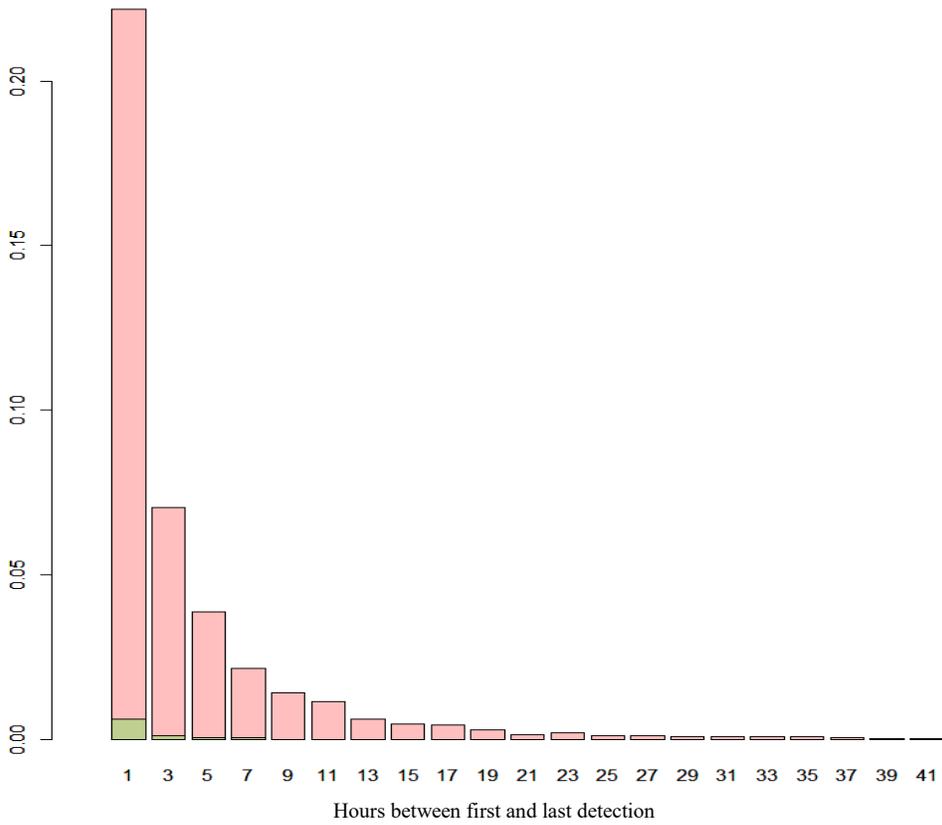


Figure 2. Frequency histogram of hours between first PIT-tag detection and last detection for 2017 (green bars) and 2018 (pink bars). The y-axis shows the proportions per hour, and the x-axis shows the number of hours between first to last detection. Proportions of less than 1-hour delay were not graphed (i.e. 59% of 2018 PIT-tagged fish had less than hour to between first and last coil detects in the bypass, while in 2017 99% passed in less than an hour).