

Estuarine Detection of Juvenile Salmonids Using Pair-Trawls 2007

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In 2007, we sampled migrating juvenile salmonids tagged with passive integrated transponder (PIT) tags using a surface pair-trawl in the upper estuary (rkm 61 to 83). We used an antenna with an 86-cm diameter fish passage opening and two detection coils in series. The trawl was 105 m long with a 91.5 m opening between the wings; sample depth was 4.9 m. We continued development of a prototype “Matrix” antenna that was a magnitude larger than previous antennas. Consisting of two front and three rear coils, the fish passage opening was 2.5 m wide by 3.0 m tall and was attached to a standard trawl.

Intermittent sampling with a single crew began 7 March, targeting yearling Chinook salmon and steelhead. Daily sampling increased using two daily crews between 23 April and 28 June, and during this period we detected 3.5% of juvenile salmonids previously detected at Bonneville Dam—a measure of sample efficiency. Single crew sampling for subyearling fall Chinook salmon continued through 19 July. We detected 14,319 spring/summer Chinook salmon, 580 fall Chinook salmon, 290 coho salmon, 3,492 steelhead, and 246 sockeye salmon in the upper estuary. Intermittent sampling with the Matrix system (55 hours) yielded an additional 304 detections.

Mean survival rates (S.E.) for non-transported yearling Chinook salmon and steelhead from Lower Granite Dam to Bonneville Dam was 59% (3.5%) and 39% (6.9%), respectively. Over 157,000 PIT-tagged salmonids were transported and of those we detected 3,081.

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