**Tracy Research Technical Report Abstract**

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  Zachary A. Sutphin and Connie Svoboda. 2014. *Effects of Life-Stage and Origin (Wild or Hatchery) on Delta Smelt Secondary Channel Efficiency at the Tracy Fish Collection Facility.* August 2014. 25 pp.

Operations at the Bureau of Reclamation’s Tracy Fish Collection Facility (TFCF) function to salvage fish, preventing pump-induced mortality at Bill Jones Pumping Plant. Operations and hydraulic conditions at the TFCF are frequently evaluated to promote optimal conditions for fish salvage. Due to low wild population levels of delta smelt, data collection efforts undertaken to evaluate effects of TFCF operations on salvage efficiency have historically relied on mark and recapture experiments with hatchery delta smelt. Experiments were undertaken in 2002 to evaluate effects of life-stage (adult or juvenile) and origin (wild or hatchery) on delta smelt secondary channel louver efficiency (SLE) at the TFCF. There was no significant difference in SLE of hatchery juvenile delta smelt (mean ± SE = 87.5 ± 1.7%; n = 30) and wild juvenile delta smelt (90.9 ± 2.4%; n = 7), or hatchery adult smelt (96.2 ± 0.9%; n = 30) and wild juvenile smelt (ANOVA on Ranks, P > 0.05). However, SLE of hatchery adult and juvenile fish were significantly different (ANOVA on Ranks, P <0.05). There was no significant difference in secondary louver participation (SLP) of hatchery adult (74.2 ± 4.6%) and juvenile (82.6 ± 4.3%) delta smelt (Mann-Whitney Rank Sum, P > 0.05). There was no significant relationship between SLE and either secondary channel velocity or bypass ratio for either life-stage of delta smelt tested (PCC, P > 0.05). Though a low sample size for wild juvenile delta smelt was collected (n = 7), this suggests hatchery delta smelt may serve as a surrogate for wild smelt.