**Tracy Research Technical Bulletin Abstract**

* ***Tracy Technical Bulletin 2019-2***
Fullard, Clarence D., Javier B. Miranda, Michele N. Johnson, Brandon J. Wu,
René C. Reyes, and Zachary A. Sutphin. 2019. *Exploring Methods to Measure Fish Predation at Sacramento-San Joaquin Delta Release Sites.* Tracy Fish Collection Facility Studies, Tracy Technical Bulletin 2019-2. Bureau of Reclamation, Mid-Pacific Region, 48 pp.

A proof-of-concept study was conducted between spring 2017 and fall 2018 to assess various techniques to better understand and reduce predation of salvaged fish released in the Sacramento-San Joaquin River Delta (Delta). We investigated the use of novel predation-detection acoustic telemetry transmitters in the lab and field. We also tested the viability of Predation Event Recorders (PERs) to measure Delta predation. Finally, we monitored predator behavior in response to a cessation of daily releases at the Curtis Landing Release Site by externally tagging predators with acoustic transmitters and performing stationary and mobile tracking. Laboratory testing to assess trigger times for predation-detection acoustic transmitters resulted in 6.4–33.2 hours for internally-applied transmitters, and 3.0–23.2 hours for externally-applied transmitters (n = 13). These trigger times did not provide the resolution needed to assess predation in the near-field area around release sites. Two of the 21 tagged predators responded to the cessation in releases by leaving the near-field area, indicating that a modified salvage fish release scheme where a release “break” happens for 5+ days could reduce the willingness of certain predators to reside near the release pipe area. This study improves the understanding of predator behavior around federal and state release sites in the Delta and helped refine future studies to reduce predation of salvaged fishes at release sites in the Delta.