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Brandon J. Wu and Brent B. Bridges. 2014. Evaluating the Use of Carbon Dioxide as an Alternative Predator Removal Technique to Decrease Tracy Fish Collection Facility Predator Numbers and Improve Facility Operations. 61 pp.

The U.S. Department of the Interior, Bureau of Reclamation’s (Reclamation) Tracy Fish Collection Facility (TFCF; Byron, California) functions to separate fish from water pumped south at the C.W. “Bill” Jones Pumping Plant (formerly Tracy Pumping Plant; JPP). Operations at the TFCF divert, collect, hold and return salvaged fish to the confluence of the Sacramento-San Joaquin Delta (Delta). To improve fish salvage, research is being completed to find ways to minimize TFCF fish loss. Many factors, including predation by piscivorous fish, contribute to fish loss at the TFCF. A new predator removal method would be beneficial to reduce time the TFCF is out of operation and increase employee safety. The new predator removal method tested in this study uses carbon dioxide (CO2) as an anesthetic to force fish, including predatory fish, downstream into holding tanks. This study demonstrates fish are easily removed using a CO2 dose (250–350 mg/L), and this method can be easily implemented at the TFCF.

The CO2 treatment removed significantly more fish, of all species, than the control treatment. Median length of striped bass collected during CO2 treatment was significantly greater than that of striped bass salvaged at the TFCF during the week of testing. There was no significant difference in the median lengths of white catfish collected before and during CO2 treatment. In comparison to current predator removal methods, this method improves employee safety, reduces labor, and likely increases fish survival and the salvage efficiency of threatened and endangered species.