# Tracy Research Technical Report Abstract

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Wu, Brandon J., René C. Reyes, Michael R. Trask, Christopher L. Hart, and Scott A. Porter. 2023. *Optimal Carbon Dioxide Concentration for Removal of Striped Bass from the Bypass Pipes and Secondary Channel*. Tracy Fish Collection Facility Studies, Tracy Series Volume 58. Bureau of Reclamation, California-Great Basin Region, 43 pp.

Predation contributes to fish loss at the Tracy Fish Collection Facility (TFCF), and Striped Bass (*Morone saxatilis*) are considered the most prevalent piscivorous fish species within the facility. To estimate optimal carbon dioxide (CO2) concentration for removal of juvenile and adult Striped Bass based on removal effectiveness and 96.0-h post-treatment survival, consecutive CO2 insertions (in the form of dry ice) were performed in the TFCF bypass pipes and secondary channel. While CO2 concentration significantly influenced removal effectiveness, it did not significantly influence 96.0-h survival. Instead, 96.0-h survival was significantly influenced by water temperature, with higher water temperatures associated with reduced survival. It is recommended the lowest CO2 concentration estimated to generally be 100% effective at removing Striped Bass (i.e., 185.0 mg/L) be used during predator removals in the bypass pipes and secondary channel at the TFCF. To obtain a CO2 concentration of 185.0 mg/L within the TFCF bypass pipes and secondary channel using current procedures, approximately 89.8 kg (198.0 lbs) of dry ice should be inserted into each bypass pipe for each treatment. If survival of Striped Bass is a concern, CO2 predator removals should be avoided at the TFCF when water temperatures exceed 20.0 °C.