**Tracy Research Technical Report Abstract**

***Volume 34***
Sutphin, Zak, 2008. *High Pressure Injection of a Photonic Marking Agent: Mark Retention and Effects on Survival in Juvenile Striped Bass, Morone saxatilis, and Adult Delta Smelt, Hypomesus transpacificus*, Tracy Fish Collection Facility Studies, Volume 34, U.S. Bureau of Reclamation, Mid Pacific Region and Denver Technical Service Center, 21 pp.

Employing appropriate marking techniques and marking agents, that ensure adequate mark retention and fish survival, are critical when developing mark and recapture experimental designs. Fluorescent pigments (BMX-1000, New West Technology, Arcata, California) injected into the dorsal, caudal, and anal fins of adult delta smelt *Hypomesus transpacificus* (53 – 86 millimetres [mm] fork length [FL]) using a pressurized CO2 gun, exhibited adequate retention rates (> 80 percent) through 77 – 105 days (in two experiments) and resulted in survival rates > 82.5 percent through 28 days. Employing the same techniques and injectable fluorescent pigments using juvenile striped bass *Morone saxatilis* (74 – 170 mm FL) resulted in mark retention rates through 28 – 35 days between 30 and 100 percent, as well as 100 percent survival of test fish. In general all test fish displayed highly visible marks, appeared healthy, and exhibited no immediate adverse effects after mark injection. This study demonstrates the applicability of injectionable fluorescent pigment marks for short-term mark and recapture study designs using adult delta smelt and to a lesser degree juvenile striped bass.