**Tracy Research Technical Report Abstract**

***Volume 38***
Wang, J.C.S. 2007. *Spawning, Early Life Stages, and Early Life Histories of the Osmerids Found in the Sacramento-San Joaquin Delta of California*. Tracy Fish Collection Facility Studies. Volume 38. U.S. Bureau of Reclamation, Mid-Pacific Region and Denver Technical Service Center. 110 pp.

Delta smelt, *Hypomesus transpacificus*; surf smelt, *Hypomesus pretiosus*; longfin smelt, *Spirinchus thaleicthys*; and wakasagi, *Hypomesus nipponensis*, are observed in the upper Sacramento-San Joaquin River Estuary (Delta, including Suisun Bay). This report provides drawings, photographs, and information of early life stages and early life histories and updates the Interagency Ecological Program Technical Report No. 9 published in 1986 (Wang). Delta smelt is a euryhaline fish and is endemic to the Delta. Spawning occurs at the lower reaches of the Sacramento and San Joaquin Rivers and extends further upstream to the Central and South Delta during dry years. Spawning also occurs in Suisun Bay and Napa River but may descend further downstream to other tributaries during wet years. Spawning locations mainly occur above the entrapment zone and changes with Delta outflow. The delta smelt population fluctuates annually, but recruitment occurs in the estuary in all types of water years. Surf smelt, a coastal marine species, uses the estuary as an extended nursery ground. Juveniles are found in the Delta occasionally. Longfin smelt spawn mainly in Suisun Bay but they also spawn in Cache Slough, an inland spawning location. Longfin smelt is the most abundant smelt species in the study area, although its population size appears to be decreasing. Wakasagi, an introduced species from Japan, descended from the reservoirs and established a reproductive population in the Delta in the early 1990s. Their distribution is known principally in freshwater. Their spawning information is scarce and abundance trends have not been observed.