Tracy Research Technical Report Abstract

***Volume 14***  
White, R., B. Mefford, and C. Liston. 2000. *Evaluation of Mitten Crab Exclusion Technology During 1999 at the Tracy Fish Collection Facility, California*. July 2000. Tracy Fish Collection Facility Studies. Volume 14. U. S. Bureau of Reclamation, Mid-Pacific Region and Denver Technical Service Center, and USGS Cooperative Fishery Research Unit, Montana State University. 60 pp.

The catadromous Chinese mitten crab, native to the coastal rivers and estuaries of the Yellow Sea, is a recent invader to the San Francisco Estuary and associated watersheds. Adult crabs leave up-river freshwater habitats in fall and migrate to the ocean to spawn. During this migration they are drawn into the BOR Tracy Fish Collection Facility (TFCF). Crab entrainment increased exponentially between 1996 and 1998. The large numbers entrained in 1998 severely hampered normal functioning of fish salvage operations resulting in high fish mortality. New technology for separating and removing crabs from fish was developed. A traveling belt screen was installed at the TFCF in fall 1999 and tested from September 19 through October 14, when the screen malfunctioned and was replaced with the standard screen provided by the manufacturer. The goal of the study was to evaluate the effectiveness of the belt screen in removing mitten crabs and debris and to examine its effect on fish passage and health. Forty two evaluations, each consisting of 3-10 minute samples, were completed for the belt screen. The screen had a minimum crab removal efficiency of about 90%, but marking experiments indicated efficiency was higher. We detected no significant effect on total fish passage or passage of any of the five most abundant species (overall or during day or night). Similar results were obtained for fish > 100 mm FL except there was a significant delay in passage at night associated with the belt screen. Of 33,341 fish sampled (25 species), only three of ESA concern were encountered (splittail). Only 17 fish were removed by the belt screen and more than one half were diseased or in poor condition; 10 of these were> 200 mm FL. Except on one occasion, debris was low. However in this one 10 minute sample, 13 fish were removed by the screen compared to 17 removed during 42-10 minute samples (7 hours). Ten (78%) of these were > 200 mm FL. Our data suggest that fish > 200 mm FL are more susceptible to removal by the screen and that during periods of high debris, more fish and more larger fish may be removed. We found no evidence that the belt screen caused physical damage to fish other than an occasional catfish caught in the mesh.