



IEP NEWSLETTER

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IEP QUARTERLY HIGHLIGHTS

April-June 2004

Collection, Handling, Transport, and Release Program for the Delta Fish Salvage Facilities

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In winter 2004, we obtained formal approval of three study elements to assess the effects of the terminal phase of the fish salvage process at the State Water Project's John E. Skinner Delta Fish Protective Facility (Skinner Facility). The spring 2004 activities focused on the construction of testing facilities at the Skinner Facility, technical training, pilot testing, refinement of study protocols, and preparation of standard operating procedures. Formal tests planned for winter and spring 2004 have been deferred to 2005 due to delays in the completion of the test facility and the availability of essential equipment.

A 2,400 square-foot building and fish tanker release system were constructed near the fish salvage facilities and UC Davis' Delta Smelt Aquaculture Project facilities. A high-volume water system was installed to support holding tanks for fish in the test building and to fill a large pool used to recover fish released from the tanker trucks. Water filtration, ultraviolet (UV) sterilization, and refrigeration equipment was installed to support up to 28 circular fish tanks used to observe delta smelt after exposure to Collection, Handling, Transport, and Release (CHTR) experiments. DWR's Delta Field Division is modifying a fish tanker truck to provide support for these studies.

Jerry Morinaka and his staff are involved with the evaluation of acute mortality and injury of delta smelt associated with CHTR. They focused most of their time on the final

installation of the fish holding tanks, fish recovery equipment, and water treatment equipment. Additional time was spent training staff to handle and transport fish more effectively, assess fish injuries, and operate equipment. They found several techniques that can be successfully used to handle delta smelt.

Virginia Afentoulis and her staff completed pilot tests for the Diagnostic Indicator Study that collected blood plasma from adult delta smelt that were exposed to various handling and holding conditions. Plasma samples were obtained from groups of cultured delta smelt at different intervals within a 48-hour post-exposure period. UC Davis' Clinical Endocrinology Laboratory will determine the cortisol concentration from the plasma samples using the enzyme-linked immunoassay method. Plasma cortisol is one of several methods examined to assess stress levels in delta smelt. Pilot tests showed that plasma collection from adult delta smelt can be successfully conducted at the fish facilities and that hematocrit readings were not a useful stress indicator. Afentoulis's studies were done in close collaboration with staff at USBR's Tracy Fish Collection Facility (Tracy Research staff) and were only possible this season by using their Tracy Aquaculture Facility. The Diagnostic Indicator Study will evaluate stress assessment methods, investigate stress effects on consecutively higher levels of biological organization, and determine the ecological significance of facility-induced stress on delta smelt.

During winter 2004, Geir Aasen and his staff continued pilot studies on the extent of fish predation within the CHTR phase. With the support of USBR's Tracy Research staff, a second series of pilot tests was used to determine the rate of digestion of consumed prey fish in controlled feeding trials at USBR's Tracy Aquaculture Facility. By examining the degree of digestion of artificially raised fish fed to striped bass (*Morone saxatilis*) after timed intervals, we can better determine whether fish found in stomach samples were likely consumed during the CHTR phase. Preliminary observations suggest that prey items can undergo varying degrees of digestion when several fish are found in the stomach. Lab work was completed for stomach samples collected in an earlier series of pilot tests conducted in fall 2003. This initial pilot study examined wild predatory fish taken from two points within the CHTR process. Databases have been created and data entry has been completed for both studies.