



INFORMATION ITEM

Department of Water Resources' Setback Levee Monitoring Pilot Project

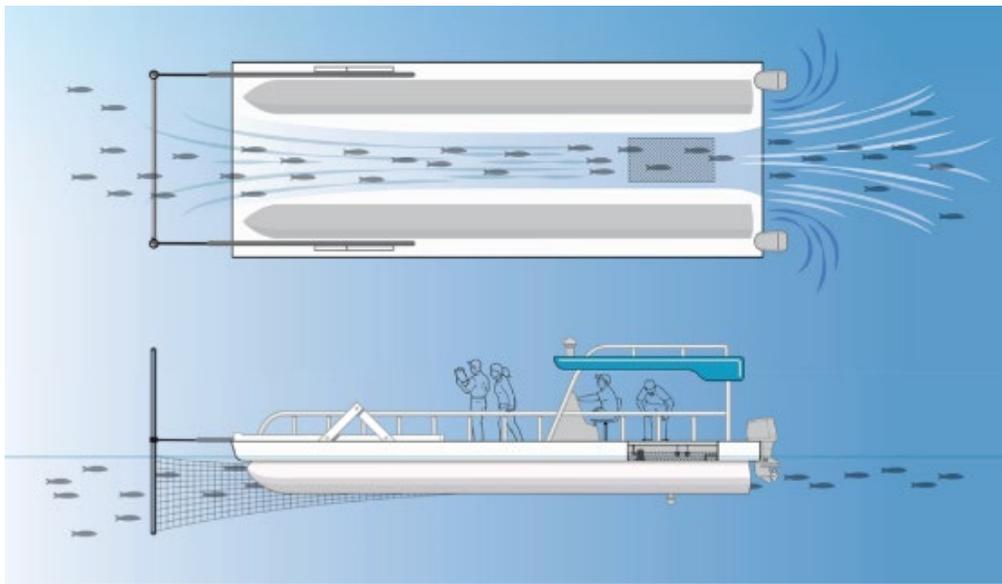
Summary: The Department of Water Resources (DWR) will provide a briefing on ongoing work with Cramer Fish Sciences exploring the effect of various waterside habitats on native fish species. Habitats that have been investigated include setback levees on Sherman and Twitchell Islands, rocked channels, and midstream environments. Much of the historic Delta habitat has been lost due to human activities. In an effort to support native species, waterside habitat mitigation, restoration, or enhancements are a required component for levee maintenance, rehabilitation, and improvement projects. Delta Plan Policy **ER P4** (Cal. Code Regs., tit. 23, § 5008), requires covered action levee projects to evaluate, and, where feasible, incorporate alternatives to increase floodplains and riparian habitats. DWR's work may provide critical information on best practices for improving waterside habitat for native fish species.

BACKGROUND

DWR began a pilot project in 2019 to see if environmental DNA (eDNA) could be detected in the Delta using new technology: the Aquatic Habitat Sampling Platform (AHSP). DWR partnered with Cramer Fish Sciences who, along with the U.S. Bureau of Reclamation, developed technology that allows for the monitoring of fish in shallow, vegetated, and complicated environments. The pilot project investigated if the AHSP could function in heavily vegetated habitats and riprapped levee slopes. The AHSP is a patented, shallow draft pontoon boat with a forward-mounted, adjustable net frame that can move close to the shore, imaging fish moving through the net and simultaneously recording time, location, and water quality. Fish move through the net into an imaging box and are recorded using high-definition video. Fish then move out the open end of the net unharmed. Concurrent with the fish imaging, water is collected and pooled during the transect for eDNA analysis.

Detection of eDNA allows the characterization of fish species in a large area of water without the difficulty and mortality associated with current means of fish collection. By pulling water from the study area and filtering it through a glass filter, eDNA left by the fish in the water column can be isolated, and DNA markers are used to identify the fish species present. This method avoids direct fish contact in the water column and the consequent stress and mortality, or the limited capture from within vegetation and riprap.

The invention of the AHSP by Cramer Fish Sciences coupled with their developing expertise in eDNA detection and analysis allows for an opportunity to monitor complicated habitats such as intertidal marshes, vegetated levee benches, steep riprapped levee slopes, and highly vegetated areas without harm to sensitive aquatic organisms, or requiring an incidental take permit under Section 10 of the federal Endangered Species Act.



Graphic representation of the ASHP

Habitat loss is one of the greatest stressors to the Delta ecosystem. Habitat degradation impacts human health, water supply reliability, recreation, and industries dependent on natural resources. Delta Plan Policy **ER P4** requires levee projects to evaluate and, where feasible, incorporate alternatives, including the use of setback levees, to increase floodplains and riparian habitats (Cal. Code Regs., tit. 23, § 5008). The data collected through this project will help us to understand how successful habitat enhancement projects have been in supporting native fish species. This pilot study could inform and improve the outcome of riparian restoration projects and fisheries throughout the Delta by identifying best practices for waterside enhancement projects.

TODAY'S PRESENTATION

Randy Mager, a senior environmental scientist in the Delta Ecosystem Enhancement section of the Delta Levees Program, a part of DWR's Division of Multibenefit Initiatives, will present on the aquatic monitoring pilot project DWR is conducting. The pilot project is undertaken along Delta levees to compare the effectiveness of setback levees and their waterside levee habitat for native fish

species to that with riprapped levees. Mr. Mager will discuss this cutting-edge technology, how DWR uses it, preliminary results, and future monitoring efforts.

FISCAL INFORMATION

Not applicable.

LIST OF ATTACHMENTS

No attachments.

CONTACT

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