Interagency Ecological Program 2025 Work Plan Element Genetic Analysis and Storage of Listed Species to Inform Multiple Studies for State Water Project Operations

Project Manager and Affiliation

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Annual Cost (thousands) and Funding Sources

$1,242 DWR

Description

The project element aims to genetically analyze listed species to obtain accurate information about species identification, distribution, and abundance as well as genetic diversity assessments, species response to environmental changes, and species response to management actions. Chinook Salmon and Delta Smelt samples for three SWP-related studies are being routinely genotyped and archived at the DWR Genetic Monitoring (GeM) laboratory. These studies are: 1) rapid genetics of Chinook Salmon to inform water operations; 2) run Identification for Spring-run Chinook Salmon Juvenile Production Estimate; 3) environmental DNA for Larval Smelt Entrainment Monitoring. Products include reports for all studies (minimally produced annually), presentations at regional conferences, weekly distribution of salvage data to the interagency Salmon Monitoring Team (SaMT), and scientific publications (in prep). DWR's Genetic Monitoring (GeM) lab coordinates all project activities and works collaboratively with CDFW, USFWS, USBR, NMFS, Cramer Fish Sciences, and UC Davis.

Project Need

The Department of Water Resources Genetic Monitoring (GeM) Program focuses on using genetic approaches to inform continued operation of the State Water Project (SWP). Studies support fulfillment of SWP mandates:

- Incidental Take Permit (ITP) conditions 3.4.5, 6.3
- Biological Opinion (BiOp) conditions 3.13.6, 7.5.2, 7.6.2

These studies align with current IEP science priorities including accurate salmon run identification (including those at salvage facilities) and improvement of existing monitoring surveys for smelt species.

Project Objectives

- Increase accuracy and/or efficiency of species identification, distribution, abundance, and monitoring for listed aquatic species in the Bay-Delta ecosystem
- Rapid genetic identification of Chinook Salmon to inform water operations
- Run identification of Spring-run Chinook Salmon Juvenile Production Estimate
- Environmental DNA (eDNA) detection of larval smelt for entrainment monitoring

Schedule of Milestones

2022: Initiation of genetic run identification for Spring-run Juvenile Production Estimate

January 2023: Initiation of genetic rapid run identification pilot study at salvage facilities

May 2023: Completion of Year 1 sampling for eDNA larval smelt monitoring studies

May 2024: Completion of Year 2 sampling for eDNA larval smelt monitoring studies

December 2024: Anticipated submission of manuscript detailing Year 1 eDNA findings to a peer-reviewed journal

Project Reports and Publications

Other publications are in process and are not yet available.