

## *Oncorhynchus mykiss* (Steelhead and Rainbow trout)

- *Oncorhynchus mykiss* exhibits the most diverse life-history patterns among California's native salmonids.
- Unlike Chinook salmon (*Oncorhynchus tshawytscha*), *O. mykiss* can complete their life cycle in freshwater creating two distinct life-history variants including an anadromous form that completes part of its life cycle in the ocean (steelhead, left photograph) and as freshwater residents (Rainbow trout, right photograph).



## Patterns and Processes of *O. mykiss* Life-History Expression

- Past research has documented over 35 unique steelhead life-history variants in watersheds across the west coast of North America.
- The creation and maintenance of a distinct life-history pathway comes from complex interactions between the genetic makeup and internal condition of individual fish, and the external environment.
- These interactions create variability in a fish's state during key developmental phases that impact its life-history trajectory (anadromy or residency, Figure 1).

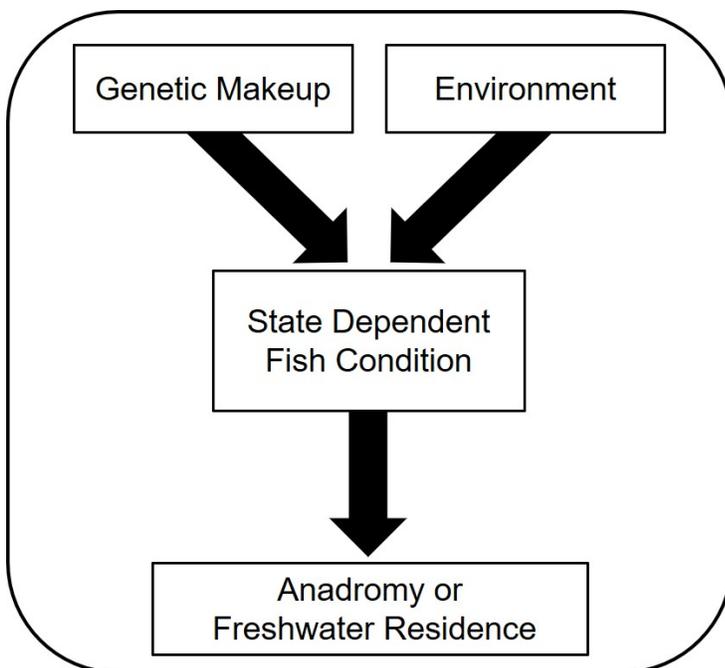


Figure 1: Pathway diagram illustrating how genetic makeup and the environment interact to alter fish condition and subsequent life-stage transitions such as maturation in freshwater or migration to sea. For more information see the Monitoring Steelhead Populations in the San Joaquin Basin - [Life-History Variation in \*Oncorhynchus mykiss\* fact sheet](https://deltacouncil.ca.gov/pdf/science-program/fact-sheets/2021-02-04-monitoring-steelhead-populations-life-history-variation.pdf) (<https://deltacouncil.ca.gov/pdf/science-program/fact-sheets/2021-02-04-monitoring-steelhead-populations-life-history-variation.pdf>).

## California Central Valley Steelhead Distinct Population Segment

Individuals included in the California Central Valley Steelhead distinct population segment are naturally spawned anadromous *O. mykiss* (steelhead) originating below natural and manmade impassable barriers from the Sacramento and San Joaquin rivers and their tributaries. This includes the Coleman National Fish Hatchery Program, the Feather River Fish Hatchery Program, and the Mokelumne River Hatchery Program. Under the Endangered Species Act, a distinct population segment—or DPS—is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species.

## Federal Endangered Species Act Listing Status

Listed as threatened since 1998.

## Current Distribution

Despite the loss of historical habitat caused by dams, Central Valley steelhead populations still occur in the Sacramento and San Joaquin basins, distributed among four diversity groups, defined by the California Central Valley salmon Recovery Plan (Figure 2).

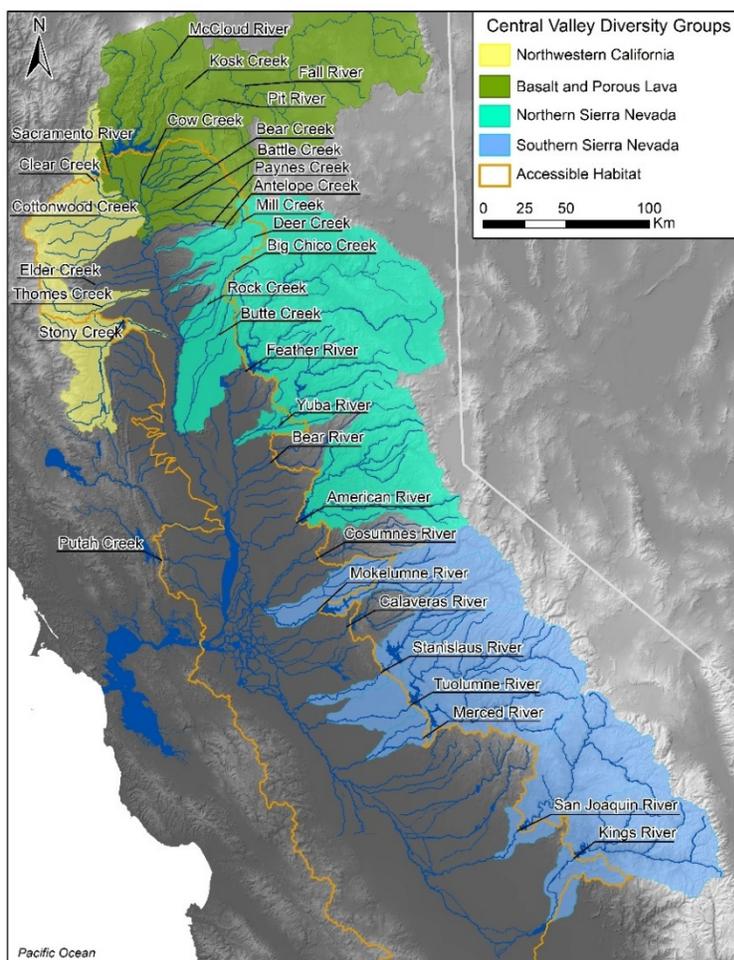


Figure 2. Central Valley Steelhead Diversity Groups as identified in the Central Valley Chinook Salmon and Steelhead Recovery Plan. This map also illustrates the location of target watersheds in the 2020 gap analysis, which was presented at the 2021 workshop jointly hosted by the Council and U.S. Bureau of Reclamation. For a complete list of watersheds and monitoring activities see [Appendix A](#).