**Objectives**

The objectives of this data collection program included determining the relative abundance and distribution of rearing juvenile Chinook salmon and steelhead as well as providing baseline data for future monitoring programs associated with habitat restoration projects.

**Sampling Protocol**

This study was conducted using a hierarchical sampling design where the survey section represented the general location where a survey was done and a survey unit represented the specific area within the survey section that was sampled.

Level 1: Section

Level 2: Unit

Snorkel surveys are conducted each year between January and September at 20 sampling sections along the Feather River (12 in the Low Flow Channel and 8 in the High Flow Channel). At each section, snorkeling units were identified by aerial maps and transects were assigned to each snorkeler. Three to six divers are distributed along three transects (left side of river, right side of river, center of river). The center transect is typically done in the downstream direction because currents are too strong to swim upstream whereas the other transects along the riverbanks are done in the upstream direction. Divers use plastic slates to mark observations of fish. The number of units snorkeled can change between surveys mostly due to flow conditions.

Attributes collected include species (this includes all species, however the amount of data collected for species that are not chinook or steelhead has changed over time. Since 2015, data was collected for all species encountered), number of fish of a given size (groups of similar sized fish that were observed in a 1 square meter or less are treated as a single observation), substrate type (presence of every type of substrate is recorded), cover (presence of every type of cover is recorded), habitat type, approximate fork length (fish identification and size estimation are calibrated by training divers with tethered fishing lures in a controlled setting). The accuracy of size estimates is enhanced by comparing observed fish to nearby objects whose dimensions are measured using the scales mounted on plastic writing slates. Environmental attributes were collected for each section though protocols do not specify where within the section these data were collected.

**Caveats**

There were some cases where survey sections could not be safely surveyed (e.g. high flow events) and other locations were chosen as substitute. These can be identified in the dataset as “random” survey sections (section\_type) and likely do not have a section name or number.

This study relies on river miles for spatial information and the majority of observations can be associated with a river mile. Specific coordinates were not recorded for survey sections and units, though in an effort to add more spatial information to the dataset coordinates were included where feasible and may be iteratively improved. In order, to associate coordinates with survey sections we relied on section names. Section names were not standardized and were cleaned to group all sections with common names. DWR maintains a mapbook of the coordinates for frequently surveyed sites and these coordinates were associated with the dataset by section name.

The methods throughout the study did not remain consistent but it is not well-documented when they were modified.

**Attachments**