Weekly Assessment of CVP and SWP Delta Operations on ESA-listed Species

Bureau of Reclamation

October 06, 2022

# Executive Summary

# Operational and Regulatory Conditions

# Biology, Distribution, and Evaluation Winter-run Chinook salmon, Spring-run Chinook salmon, Central Valley Steelhead

## POPULATION STATUS

### Winter-run Chinook Salmon

#### Delta Life Stages

#### Brood Year 2021 Productivity

* Natural Winter-run Chinook salmon: **historical data number and estimate passed RBDD**
* Hatchery Winter-run Chinook salmon:

### Spring-run Chinook Salmon

#### Delta Life Stages

#### Brood Year 2021 Productivity

* Natural Spring-run Chinook salmon: **historical data number**
* Hatchery Spring-run Chinook salmon:
* Hatchery Spring-run Chinook salmon surrogates associated with the ITP
* San Joaquin River Restoration Program (SJRRP) Salmon Conservation and Research Facility (SCARP) Chinook salmon:

### Central Valley Steelhead

#### Delta Life Stages

#### Brood Year 2021 Productivity

* Spawner abundance:
* Natural steelhead:
* Hatchery steelhead:

## DISTRIBUTION

### Winter-run Chinook Salmon

#### Current Distribution

* **info on percentage in Delta, exited Delta**
* **info on natural loss**
* **info on hatchery loss**
* **info on flows at Mill and Deer creek**

#### Historic Trends

* **percent of winter-run Chinook salmon that should have been observed in salvage by this time of the water year (Table 3)**

#### Forecasted Distribution within Central Valley and Delta regions

* **info on entrainment tool estimates of median and maximum loss**
* **Genetic information from salvage**

### Spring-run Chinook Salmon

#### Current Distribution

* **percent of CV spring-run present in Delta (Table 1)**

#### Historical Trends

#### Forecasted Distribution within Central Valley and Delta Regions

* **percent of YOY spring-run observed in salvage by this time of the water year (Table 3)**
* **Deer Creek flows**

### Central Valley Steelhead

#### Current Distribution

* **percent present in the Delta (Table 1)**
* **total hatchery loss**
* **total natural loss Dec-Mar**
* **combined natural loss Apr-June**

#### Historical Trends

* **historical trends percent steelhead in salvage**

#### Forecasted Distribution within Central Valley and Delta regions

* **percent present in Delta**
* **entrainment tool estimates (SacPAS)**

### TABLES

#### TABLE 1.Salmonid distribution estimates

<https://www.cbr.washington.edu/sacramento/data/juv_monitoring.html>

# Not sure where this data comes from

#### TABLE 2. Historic migration and salvage patterns

**Table** : TABLE 2. Historic Migration and Salvage Patterns

| Species | Red Bluff Diversion Dam | Tisdale RST | Knights Landing RST | Sac Trawl (Sherwood) Catch Index | Chipps Island Trawl Catch Index | Salvage |
| --- | --- | --- | --- | --- | --- | --- |
| Chinook, Winter-run, Unclipped | 44.5%(34.3%,54.8%) | 4.0%(1.0%,7.0%) | 3.9%(1.3%,6.5%)BY: 2013 - 2021 | 0.0%(0.0%,0.0%) | 0.0%(0.0%,0.0%) | 0.0%(0.0%,0.0%)WY: 2013 - 2022 |
| Chinook, Spring-run, Unclipped | 100.0%(100.0%,100.0%)BY: 2012 - 2020 | 0.0%(0.0%,0.0%) | 0.0%(0.0%,0.0%)BY: 2013 - 2021 | 0.0%(0.0%,0.0%) | 0.0%(0.0%,0.0%) | 0.0%(0.0%,0.0%)WY: 2013 - 2022 |
| Steelhead, Unclipped (January-December) | 93.7%(89.3%,98.2%) | 90.7%(69.4%,112.1%) | 85.3%(67.4%,103.2%) | 100.0%(100.0%,100.0%) | 97.1%(92.6%,101.6%) |  |
| Steelhead, Unclipped (December-March) |  |  |  |  |  | 0.0%(0.0%,0.0%)WY: 2013 - 2022 |
| Steelhead, Unclipped (April-June) |  |  |  |  |  | 0.0%(0.0%,0.0%)WY: 2013 - 2022 |

#### TABLE 3. STARS model output

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#### TABLE 4.

**Table** : TABLE 4. Mean daily flow and percent change (Wilkins Slough, Deer Creek, Mill Creek; cfs from CDEC) and temperature and percent change (Knights Landing; °F from RST)

| MLM\_flow | MLM\_change | MLM\_alert | DCV\_flow | DCV\_change | DCV\_alert | WLK\_flow | WLK\_change |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 92.2 | -0.2 | Flow>95cfs | 64.0 | -1.0 | Flow>95cfs | 3,424.4 | -2.0 |
| 91.9 | -0.3 | Flow>95cfs | 64.2 | 0.3 | Flow>95cfs | 3,369.4 | -1.6 |
| 91.8 | -0.1 | Flow>95cfs | 64.0 | -0.2 | Flow>95cfs | 3,316.4 | -1.6 |
| 92.1 | 0.3 | Flow>95cfs | 64.0 | 0.0 | Flow>95cfs | 3,286.2 | -0.9 |
| 92.1 | 0.1 | Flow>95cfs | 64.1 | 0.1 | Flow>95cfs | 3,321.2 | 1.1 |
| 85.6 | -7.1 | Flow>95cfs | 64.0 | -0.1 | Flow>95cfs | 3,352.3 | 0.9 |
| 82.6 | -3.4 | Flow>95cfs | 64.8 | 1.2 | Flow>95cfs | 3,326.8 | -0.8 |
| 82.0 | -0.8 | Flow>95cfs | 68.0 | 5.0 | Flow>95cfs | 3,325.0 | -0.1 |

#### TABLE 5. a) WY 2022 loss and salvage predictor data: Predicted weekly loss of winter-run Chinook salmon and steelhead at CVP and SWP facilities. b) Environmental details, current and forecast.

# https://www.cbr.washington.edu/sacramento/lossandsalvage/  
# having trouble getting images to load?

#### TABLE 6. Preliminary survival (Φ) results for acoustically tagged salmonids (Chinook and steelhead). Individual studies denoted by rows with bold lines.

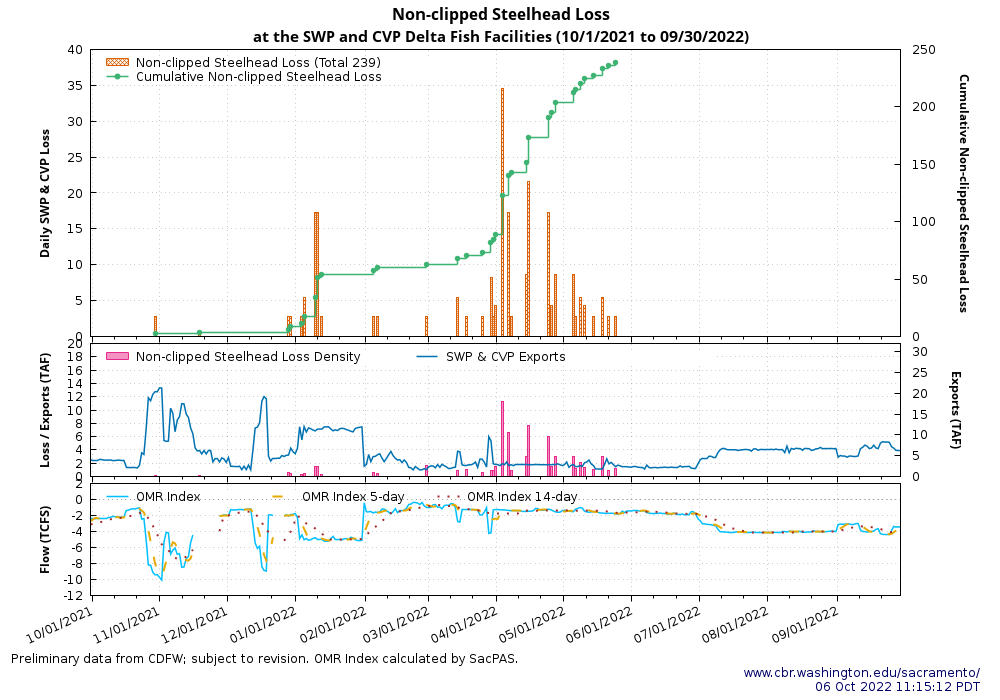
# not sure where this data comes from

### FIGURES

#### FIGURE 1. WY 2022 cumulative natural winter-run Chinook salmon loss (blue) and 2009 – 2018 historic cumulative loss (gray, different symbols). Historic daily mean plotted in black circles.

#### FIGURE 2. Predicted weekly loss of steelhead and winter-run Chinook salmon at the CVP and SWP facilities

This isn’t quite the right figure but an example of pulling a figure off the web



“Non-clipped steelhead loss”

## EVALUATION

### 1.

### 2.

### 3. What is the likelihood of increased loss exceeding the next annual loss threshold (50%, 75% or 90% of threshold) resulting in OMR management actions based on population distribution, abundance, and behavior of fish in the Delta?

**Calculate Loss**

*Also relevant to Table 2a in Outlook*

| species\_race | loss\_unclipped | loss\_clipped |
| --- | --- | --- |
| SH-early | 84.28 | 308.27 |
| SH-late | 154.38 | 331.52 |
| F | 596.29 | 45.48 |
| LF | 12.23 | 507.12 |
| S | 552.69 | 116.89 |
| W | 73.04 | 392.61 |

# Biology, Distribution, and Evaluation of Green Sturgeon

## POPULATION STATUS

## DISTRIBUTION

## EVALUATION

# Biology, Distribution, and Evaluation of Delta Smelt

## DISTRIBUTION

### Current Distribution

#### TABLE 7. Summary of recently reported detections of Delta Smelt by Region and Salvage Facilities

# Could make the mockup of this table to fill out or just let there be cut and paste?

#### TABLE 8. Summary of recent Delta Smelt detections reported since last assessment and total detections for the current water year.

# Could make the mockup of this table to fill out or just let there be cut and paste?

#### TABLE 9. Weekly summary of the origin of Delta Smelt. These identifications are considered tentative and additional genetic testing will confirm the identity of individuals. Individuals with no tags are provided alive to the FCCL as potential additions to the FCCL Broodstock. \*Larval ID still under QA/QC

# Could make the mockup of this table to fill out or just let there be cut and paste?

### Cultured Delta Smelt Experimental Releases

### Historical Trends

### Forecasted Distribution within Central Valley and Delta Regions

# ABIOTIC CONDITIONS

## Turbidity

Use CDECRetrieve - SensorDownload.R Look at just data from the past week

* Water temperature, Flow
* 3 day averages
* Which stations? OBI turbidity, CLC water temp… others? Are plots from SMT page desired?

### TABLE 10.

**Table** : TABLE 10a. Weekly Mean Turbidity (FNU) @ Old River at Bacon Island (OBI)

| station | date | meanTurbidity |
| --- | --- | --- |
| OBI | 2022-09-29 | 2.66 |
| OBI | 2022-09-30 | 2.74 |
| OBI | 2022-10-01 | 2.66 |
| OBI | 2022-10-02 | 2.57 |
| OBI | 2022-10-03 | 2.65 |
| OBI | 2022-10-04 | 2.47 |
| OBI | 2022-10-05 | 2.76 |
| OBI | 2022-10-06 | 3.90 |

**Table** : TABLE 10b. Weekly Mean Water Temperature (°C) @ Clifton Court Forebay (CLC)

| station | date | meanWaterTemp |
| --- | --- | --- |
| CLC | 2022-09-29 | 23.12 |
| CLC | 2022-09-30 | 23.21 |
| CLC | 2022-10-01 | 22.97 |
| CLC | 2022-10-02 | 22.63 |
| CLC | 2022-10-03 | 22.47 |
| CLC | 2022-10-04 | 22.45 |
| CLC | 2022-10-05 | 22.67 |
| CLC | 2022-10-06 | 22.80 |

## X2 Conditions

## Other Environmental Conditions

# EVALUATION

# DELTA SMELT REFERENCES