

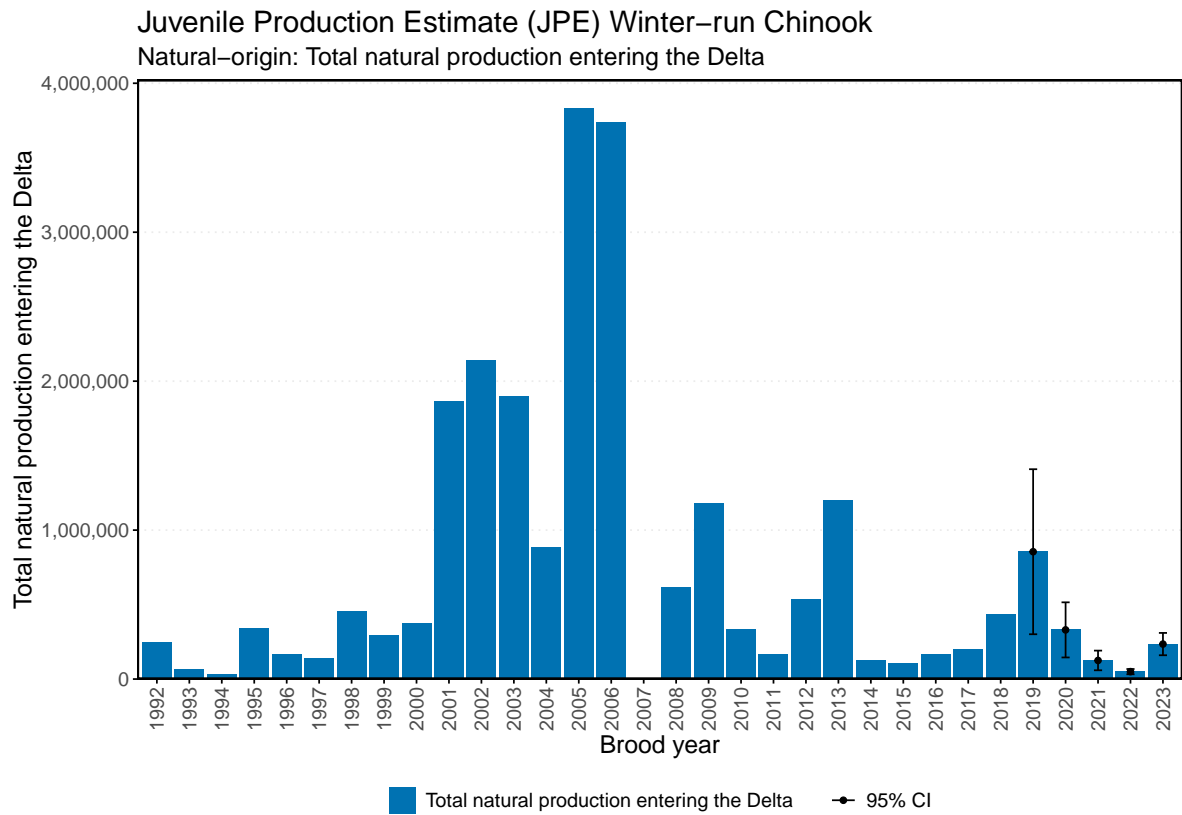
# Track-a-Cohort: Winter-run Chinook

2024-08-21

## Background

This document uses shared resources via [BDO github](#) from BOR to replicate figures requested and adjust underlying code to include dynamic data. See [Track a cohort\\_WR\\_plots.docx](#) for figures requested. Certain figures include a link to more interactive plot types using Shiny (in development) and all figures include a link to code in separate CBR developed [github repo](#).

## Juvenile Production Estimate (JPE)



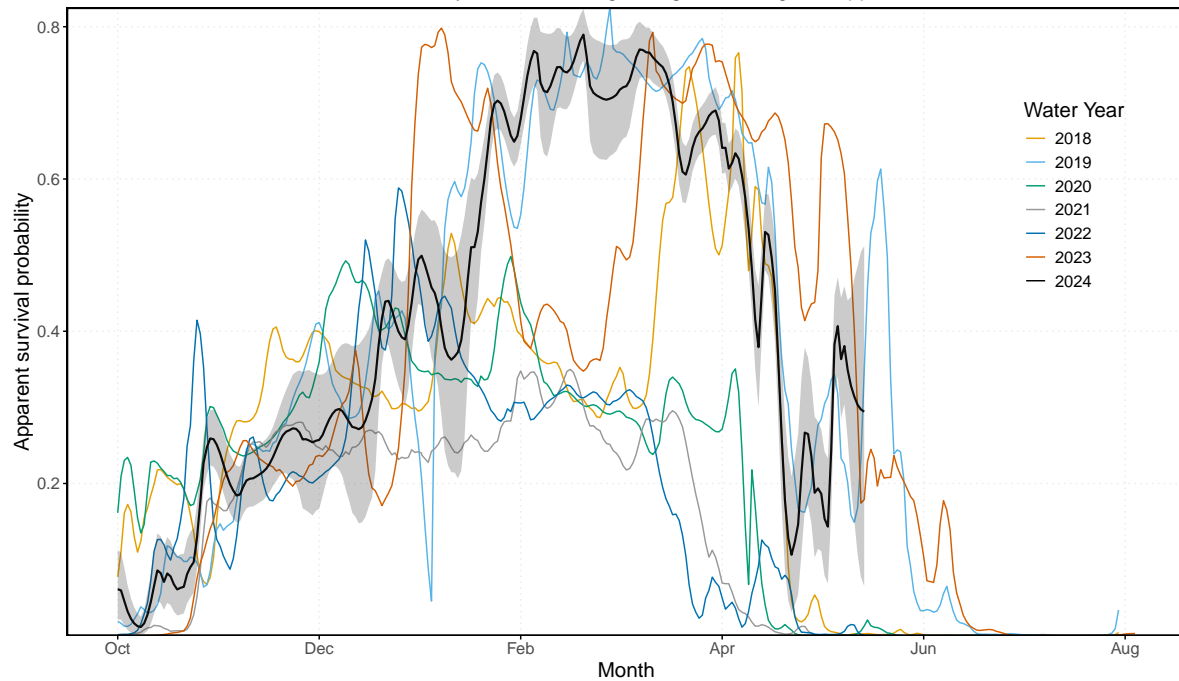
Related links: [SacPAS Query](#), [GitHub Repo Code](#)

## Delta STARS Survival and Routing Probabilities

Overall Survival: Median survival of daily cohorts for all routes combined

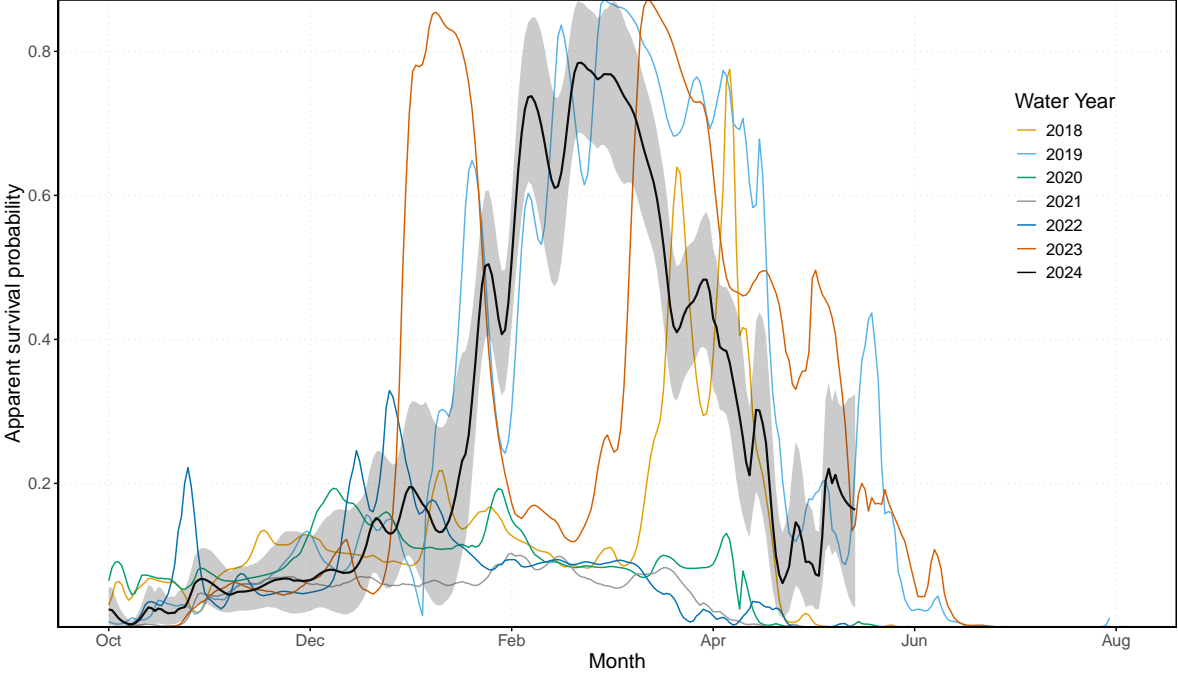
Delta STARS Model –

Predicted Natural Winter-run Chinook Daily Cohorts Passage, Knights Landing to Chipps Island



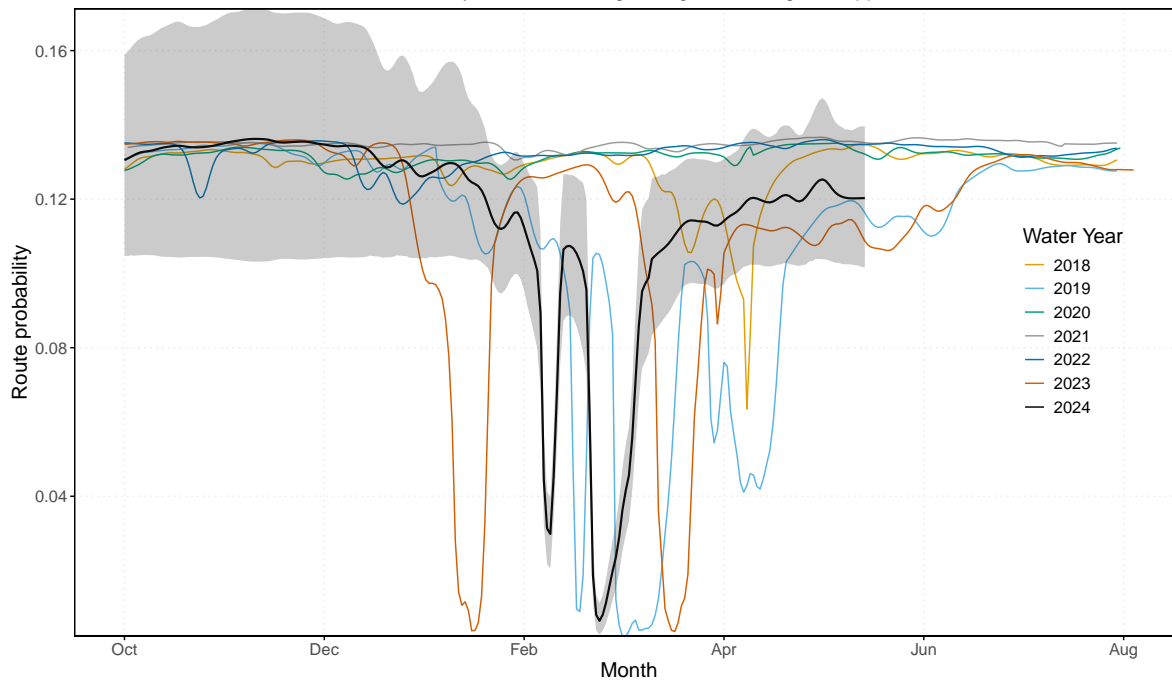
Data source: Delta STARS developed by USGS Quantitative Fisheries Ecology Section and deployed by SacPAS.

Interior Delta Route-specific Survival Probability: Median survival of daily cohorts using the Interior Delta STARS Model – Predicted Natural Winter-run Chinook Daily Cohorts Passage, Knights Landing to Chipps Island



Data source: Delta STARS developed by USGS Quantitative Fisheries Ecology Section and deployed by SacPAS.

Interior Delta Route-specific Probability: Proportion of daily cohorts using the Interior Delta route  
Delta STARS Model –  
Predicted Natural Winter-run Chinook Daily Cohorts Passage, Knights Landing to Chipps Island

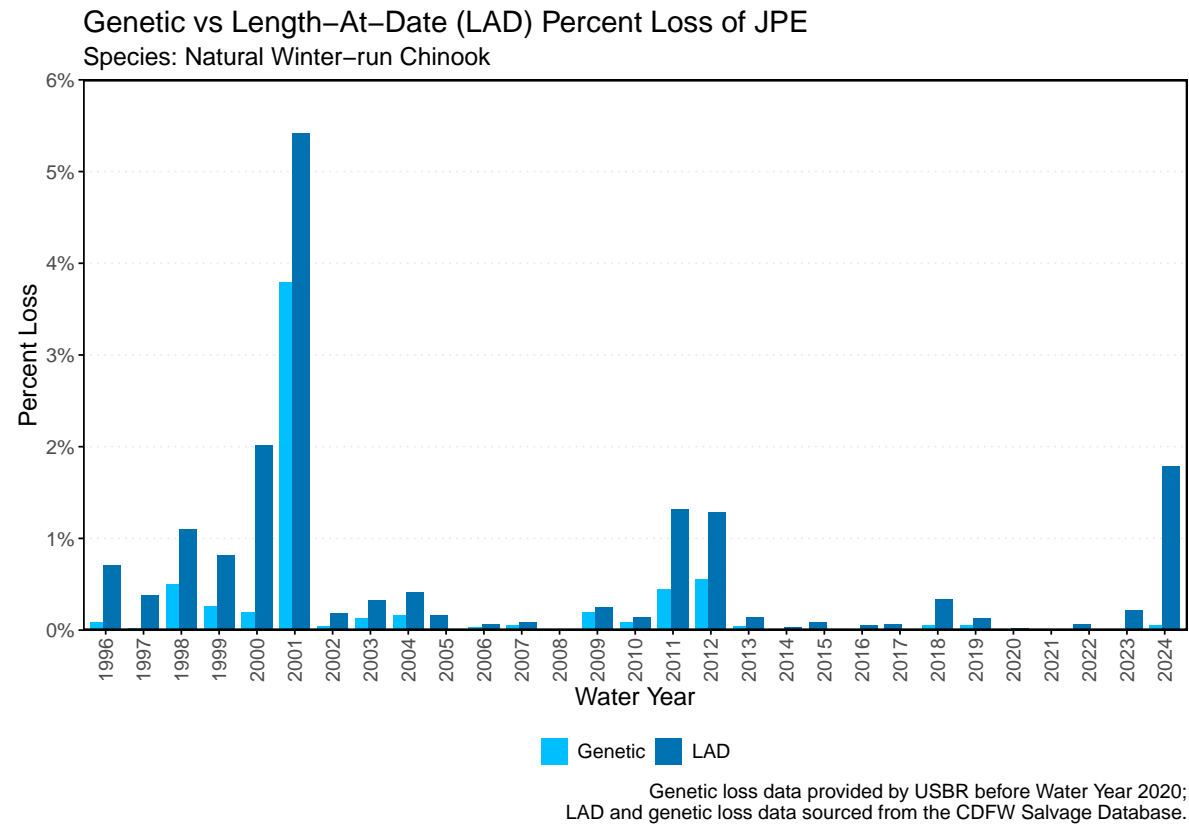


Data source: Delta STARS developed by USGS Quantitative Fisheries Ecology Section and deployed by SacPAS.

Related links: [Interactive Plot - ShinyApp](#), [GitHub Repo Code](#), [STARS ShinyApp](#)

- Issues:
  - Update interactive plot - Shiny App

## Percent loss of Juvenile Production Estimate (JPE)

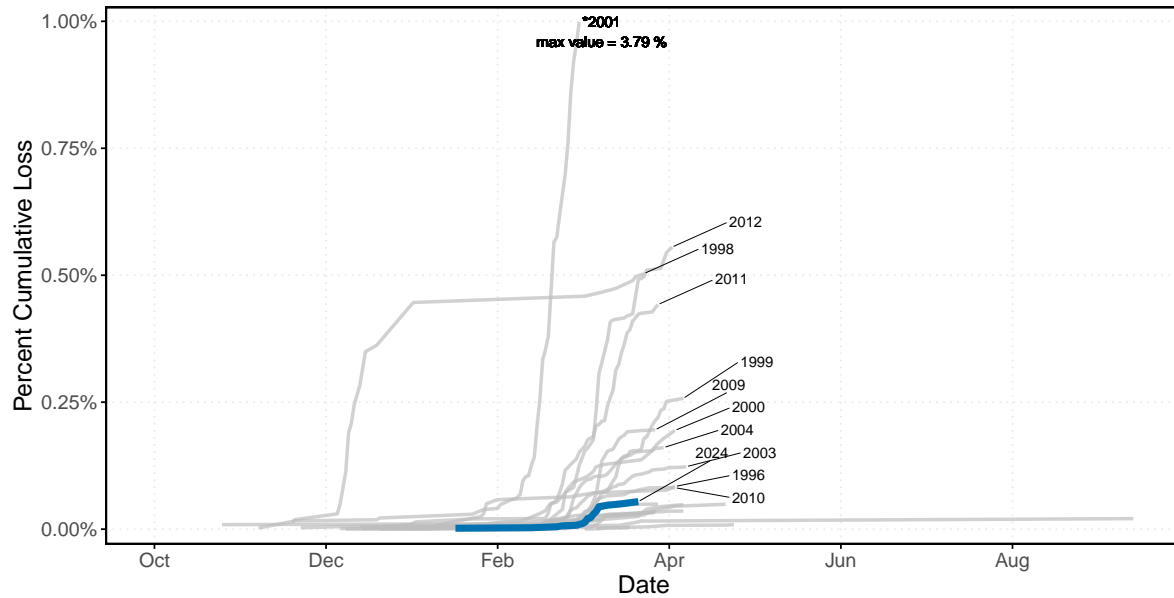


Related links: [GitHub Repo Code](#)

## Current and Historical Percent Cumulative Genetic Loss of JPE

Species: Natural Winter-run Chinook

Data Years: WY1996 to WY2024



Current Water Year: — 2024

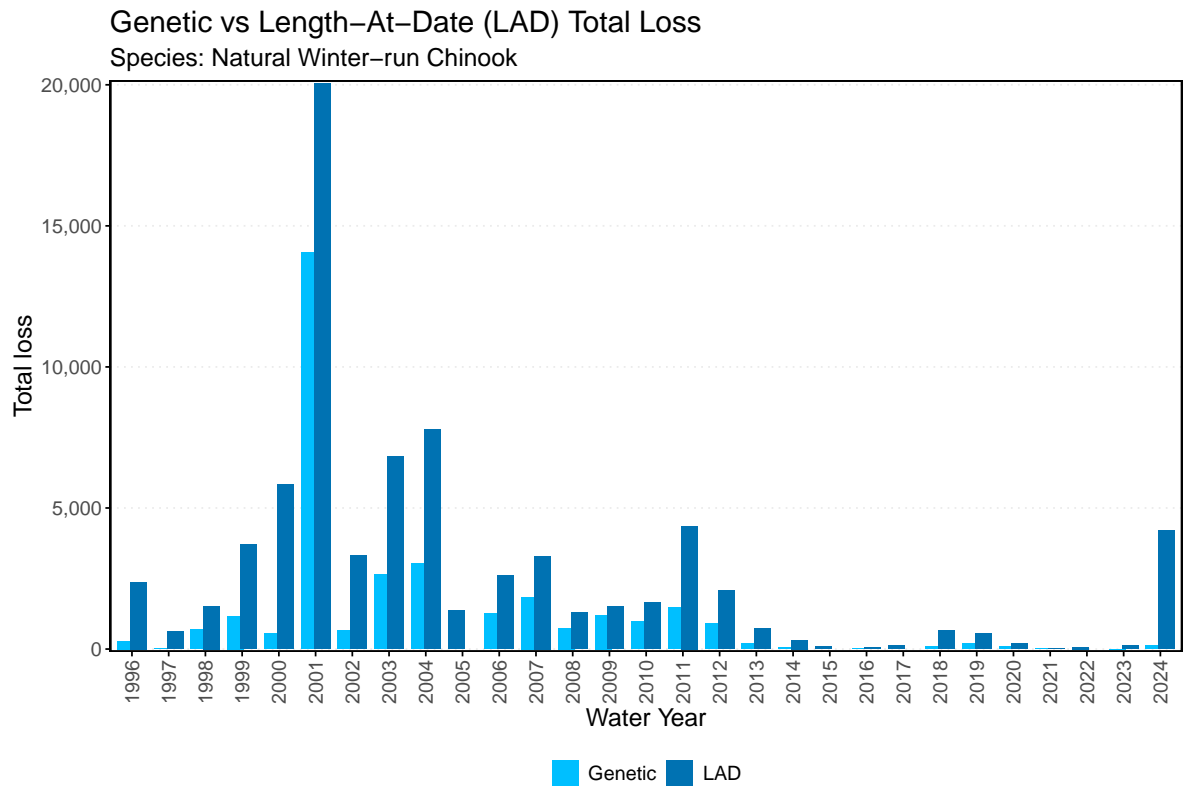
Historical Water Years: — 1996 to 2023,  
WY > WY2024 loss labelled

Genetic loss data provided by USBR before Water Year 2020;  
LAD and genetic loss data sourced from the CDFW Salvage Database.

Related links: [GitHub Repo Code](#)

- Issues:
  - ShinyApp pending

## Total Loss



Data sources: Genetic loss provided by USBR. LAD loss from CDFW Salvage Database.

Related links: [GitHub Repo Code](#)



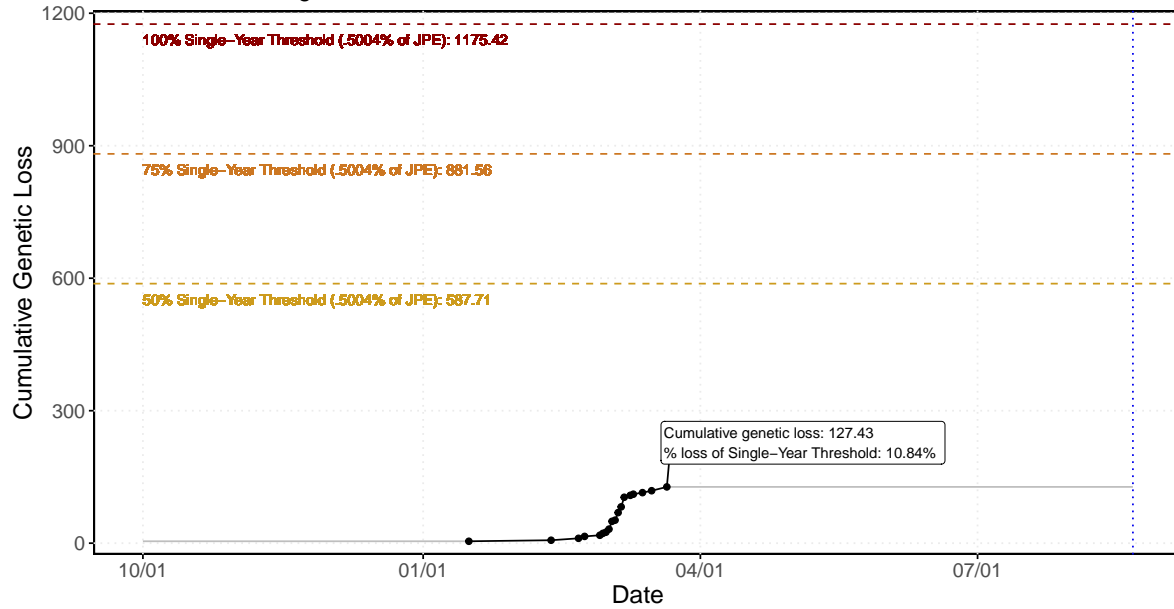
## Cumulative Loss with Single-Year Thresholds

### Cumulative Genetic Loss for WY2024 with Single-Year Thresholds

Species: Natural Winter-run Chinook

Cumulative genetic loss to date: 127.43

Percent loss of Single-Year Threshold: 10.84%



Current Date — No Loss Reported — Reported Loss

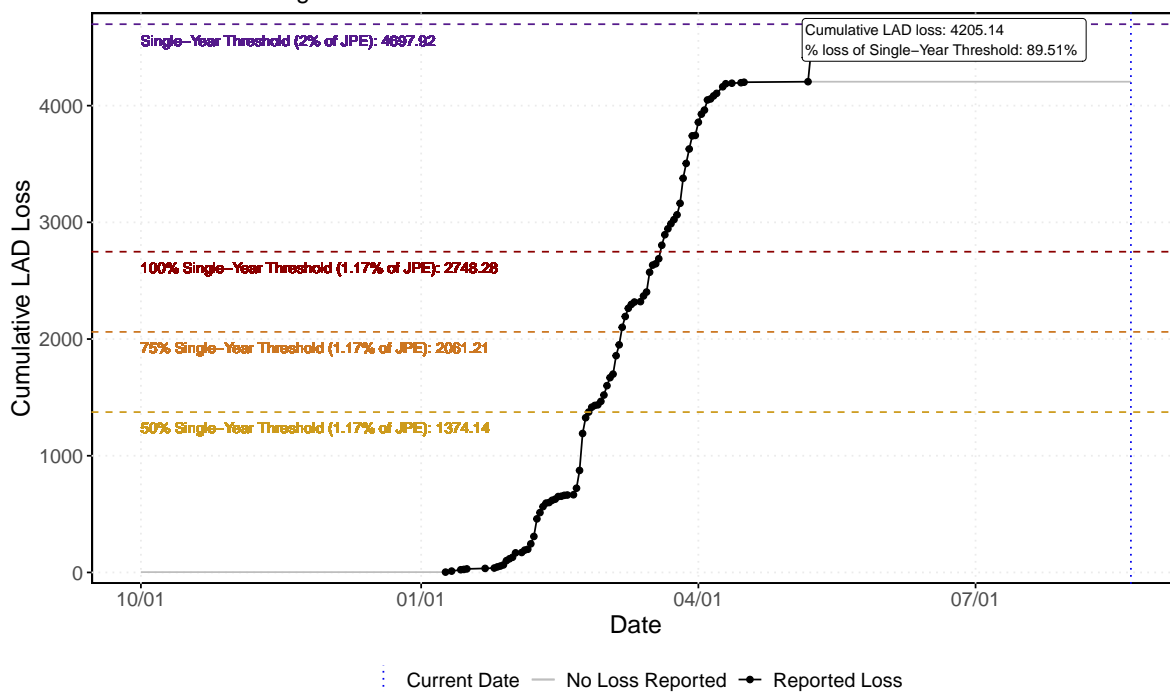
Genetic loss data provided by USBR before Water Year 2020 otherwise sourced from the CDFW Salvage Database.

## Cumulative LAD Loss for WY2024 with Single-Year Thresholds

Species: Natural Winter-run Chinook

Cumulative LAD loss to date: 4205.14

Percent loss of Single-Year Threshold: 89.51%



Related links: [SacPAS Query](#), [GitHub Repo Code: cumul\\_genetic\\_loss](#), [GitHub Repo Code: cumul\\_lad\\_loss](#)

- Issues:
  - Confirm addition of “no data reported”, start at 10-01, and continue limits to today’s date.
  - ShinyApp pending

## Cumulative Loss by BiOp Status and Hydrological Classification Index (HCI)

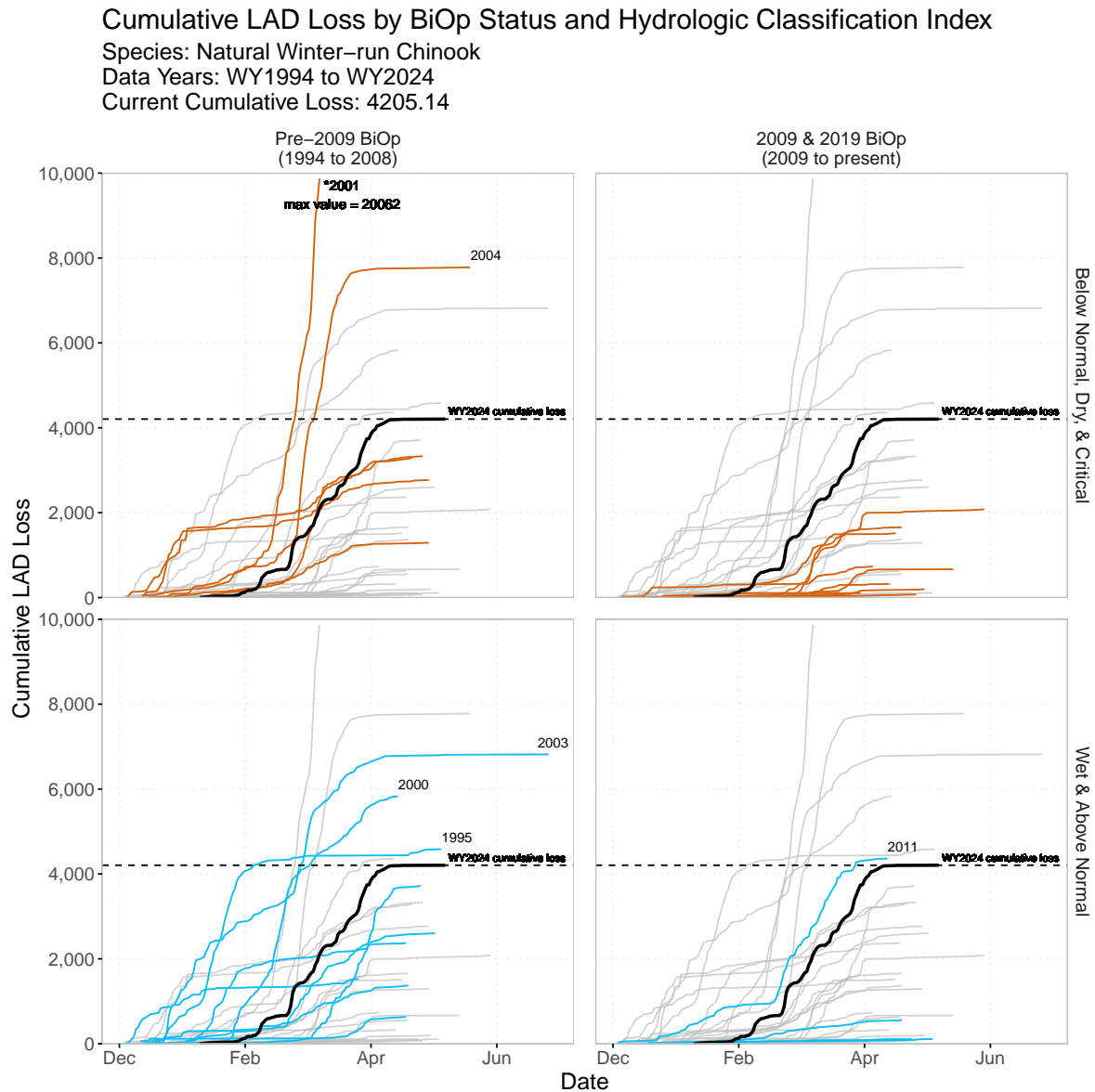
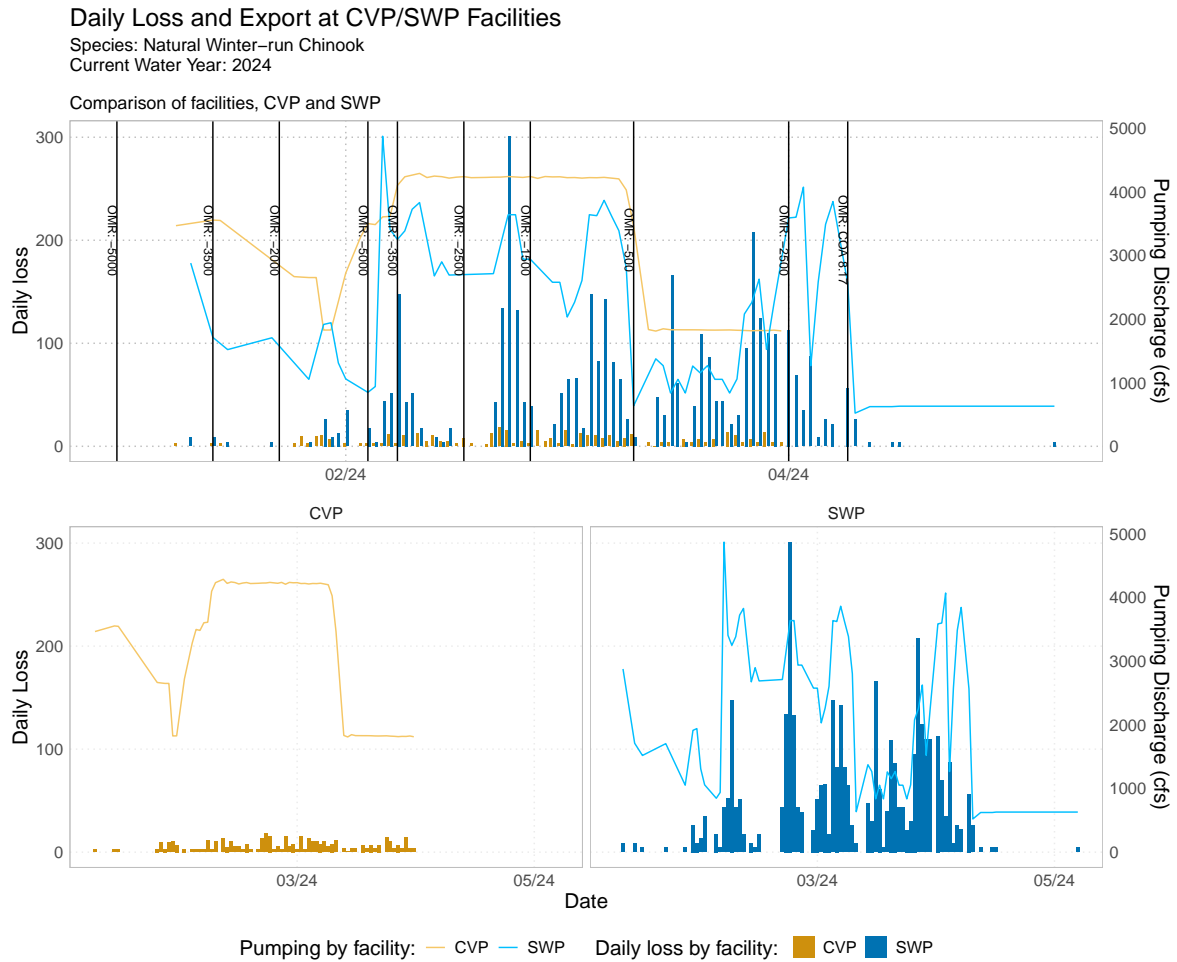


Figure 1: The figure shows cumulative loss by BiOp Status and Hydrological Classification Index (HCI). Each quadrant of the faceted plot includes grey lines for historical years, colored lines (blue for wet years, red for dry years) for years within the BiOp status and HCI type, a black line for the current year, and a dashed horizontal line indicating the current cumulative loss maximum.

Related links: [GitHub Repo Code](#)

- Issues:
  - Add legend key (pending) currently have figure caption to support.
  - SI to provide query string to HCL – update code when available
  - ShinyApp pending

### Daily Loss and Export by Pumping Facility



Related links: [Interactive Plot - ShinyApp](#), [GitHub Repo Code](#),

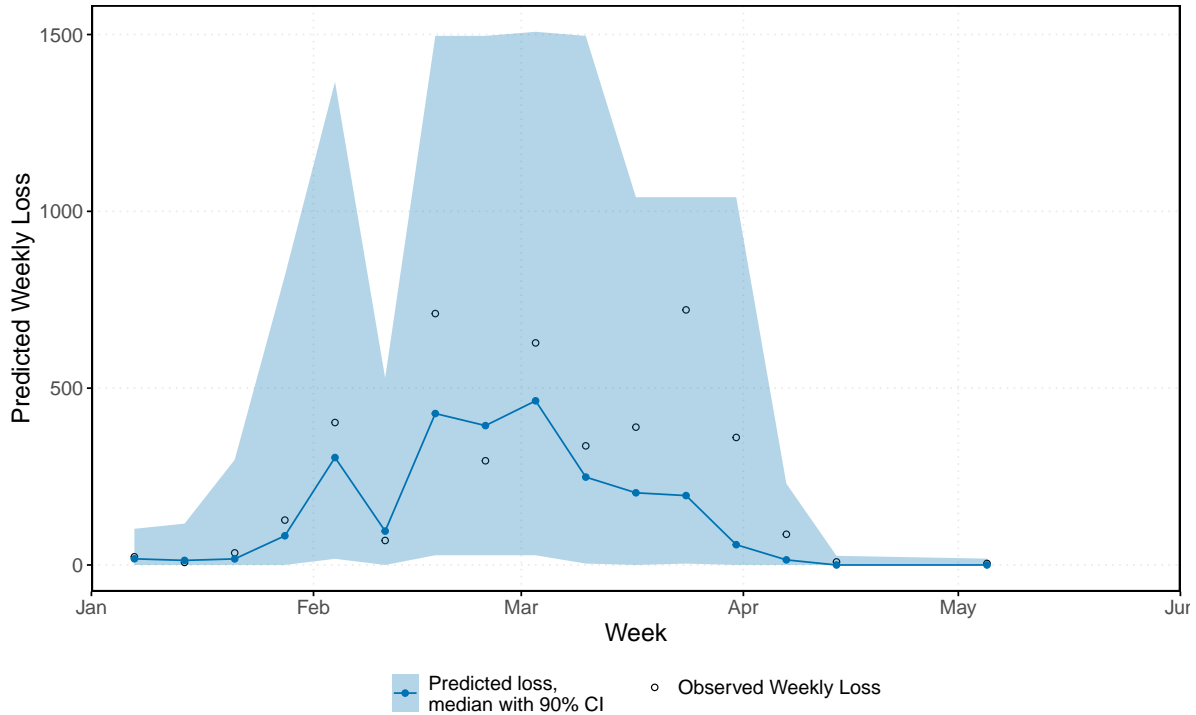
- Issues:
  - Update Shiny App

## Predicted Weekly Loss - Tillotson Model

### Predicted Weekly Loss – Tillotson et al. (2022)

Species: Natural Winter-run Chinook

Water Year: 2024



Related links: [SacPAS Tillotson Tool](#), GitHub Repo Code: [Tillotson model](#), [data wrangling and prediction output](#), [plot output](#)

- Issues:
  - Currently using BOR supplied code to run model, confirm same output with NB code.
    - \* Update: NB believes this is updated code and will look into comparing and update Loss and Salvage Predictor Tool as needed when time allows (Estimates time in August).
  - Confirm shared code is duplicate of the most up-to-date Tillotson code. If this is Tillotson code confirm with authors on use and confirm permissions to include model code in public facing repo. Alternatively, pull results from Loss and Salvage Predictor Tool.
    - \* JG or NB to reach out?
  - Confirm change in plot design
  - Update glb package with newer version and confirm no errors

Table 1: Table of  
origin W  
Old and  
from CV  
and water

Water year week	Date	Observed loss	OMR USGS tidally filtered	Export, SWP & CVP (CFS)
15	2024-01-07	23.08	-5512.86	5986.71
16	2024-01-14	7.21	-5300.00	5388.57
17	2024-01-21	34.18	-2805.71	3931.57
18	2024-01-28	126.88	-3189.57	3938.71
19	2024-02-04	402.82	-4537.14	7296.14
20	2024-02-11	69.26	-4202.86	6703.14
21	2024-02-18	710.88	-3310.00	7049.71
22	2024-02-25	294.65	-3432.86	6731.71
23	2024-03-03	627.96	-3248.57	7551.43
24	2024-03-10	336.82	-1377.86	3261.86
25	2024-03-17	389.74	-2051.71	2893.57
26	2024-03-24	721.31	-3552.14	3750.86
27	2024-03-31	360.55	-2424.86	4132.71
28	2024-04-07	86.81	-1043.00	2141.29
29	2024-04-14	8.66	154.14	1532.43
32	2024-05-05	4.33	-939.71	1469.00

Related links: [SacPAS Tillotson Tool](#), GitHub Repo Code: [Tillotson model](#), [data wrangling and prediction output](#), [Table configuration](#)

- Issues:
  - See predicted losses figure issues