



Salmon Monitoring Team (SaMT) Weekly Meeting

Teams call: 11/26/24 at 9:00 a.m.

Objective

Provide information to the Water Operations Management Team (WOMT), the U.S. Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) on measures to reduce adverse effects from Delta operations of the Central Valley Project (CVP) and the State Water Project (SWP) on salmonids and green sturgeon. Final versions of the Proposed Action Assessment, and Fish and Water Operations Outlook will be posted to Reclamation's [Delta Monitoring Work Group](#) webpage, while final version of the Meeting Notes will be posted to Reclamation's [Salmon Monitoring Team](#) webpage. Meeting participants include representatives from: California Department of Fish and Wildlife (CDFW), DWR, National Marine Fisheries Service (NMFS), State Water Resources Control Board (SWRCB), Reclamation, and the U.S. Fish and Wildlife Service (USFWS).

Participants

- California Department of Fish and Wildlife (CDFW)
- California Department of Water Resources (DWR)
- NOAA National Marine Fisheries Service (NMFS)
- State Water Resources Control Board (SWRCB)
- U.S. Bureau of Reclamation (USBR)
- U.S. Fish and Wildlife Service (USFWS)
- Kearns & West (K&W)

Announcements

- WOMT has provided permission to hold the originally scheduled 12/24/24 meeting to another day and time agreed upon by SaMT and SMT.
 - USFWS expressed no opposition to the date change but acknowledged the difficulty of gathering all the data in time. Suggested holding the meeting in the afternoon on Monday using preliminary data.
 - CDFW suggested providing an email update on Tuesday, 12/24.

- K&W to share these suggestions with SMT to get their feedback on rescheduling and then will discuss further with SaMT.
- CDFW will conduct some additional discussion before giving their presentation on Risk Assessment to SaMT.

Part 1. Updates on Water Operations and Biological Conditions

Relevant Actions & Triggers

- **Delta Cross Channel (DCC) Gate operations (PA 4.10.5.3):** See Outlook and Assessment for more information.
- **ITP 2024 Early-season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold (COA 8.17):** DWR will operate Banks Pumping Plant consistent with COA 8.17 of the ITP. These values are based on the November 1 – November 30 threshold of 6 older juvenile Chinook salmon per day. If the threshold is exceeded, a 5-day average OMR index of -5,000 cfs will be operated to for 5 days.
- **ITP Winter-run Chinook Salmon Annual Loss Thresholds (COA 8.4.3):** DWR and Reclamation will operate Banks Pumping Plant consistent with Condition of Approval 8.4.3 of the ITP. These values are based on the juvenile production estimate (JPE). The final JPE for brood year 2024 natural-origin winter-run Chinook salmon will be determined early next year. The thresholds below will be based on the final JPE.
 - The ITP natural-origin Winter-run Chinook salmon Annual Loss Threshold for this year is based on the initial length-at-date (LAD) identification of natural-origin older juvenile Chinook salmon and the thresholds described above. If genetic analysis of natural-origin older juvenile Chinook salmon observed in salvage at the SWP or CVP subsequently confirms that any given Chinook salmon is not genetically identified as a CHNWR that fish will not count towards the loss threshold. This threshold is loss of natural-origin winter-run Chinook salmon from the CVP and SWP greater than or equal to 0.5% of the winter-run Chinook salmon JPE (loss \geq N/A). If the 75% loss is exceeded AND the Winter-Run Chinook salmon Machine Learning Model predicts that an OMR index of -2,500 cfs would shift the model output to a classification of CHNWR absence with a minimum probability of absence prediction of 0.559 for 1 of 30 sub-models for any of the 7 most recent prediction days, then a 7-day average OMRI index of -2,500 cfs will be operated to for 7 consecutive days. Thereafter, each winter-run observed in salvage will trigger a 7-day OMR index of -2,500 cfs for 7 consecutive days IF the Winter-Run Chinook salmon Machine Learning Model predicts that an OMR index of -2,500 cfs would shift the model output to a classification of CHNWR absence with a minimum probability of absence prediction of 0.559 for 1 of 30 sub-models for any of the 7 most recent prediction days The JPE has not yet been calculated for WY 2025; therefore, threshold values are not yet available but natural-origin winter-run loss is still being tracked until these thresholds are determined.

- The ITP hatchery-origin Chinook salmon Annual Loss Threshold for this year is loss of clipped CWT winter-run Chinook salmon from the CVP and SWP greater than or equal to 0.12% of the winter-run Chinook salmon hatchery-origin JPE (loss \geq N/A). If the 50% and 75% thresholds are exceeded, the same process will occur as what occurs for the natural-origin winter-run Chinook salmon (as discussed in above bullet).
- The JPE has not yet been calculated for WY 2025 and hatchery-origin winter-run Chinook salmon have not been released yet in WY 2025; therefore, threshold values are not yet available for hatchery-origin or natural-origin winter-run Chinook salmon.

Weekly Fish and Water Operations Outlook, Current Operations

- SaMT reviewed and updated the Outlook document. The updated Outlook document will be shared with SaMT via SharePoint link by close of business (COB) 11/27/24. Additional details and operations context shared at the 11/26/24 meeting include:
 - Feather River flows are at 1,750 cfs with the possibility of some variance due to forecasted storm later in the week.
 - Sacramento River flows at Freeport are 49,000 cfs and may vary with the recent precipitation.
 - San Joaquin River at Vernalis flows were approximately 1,400 cfs as of 11/25/24.
 - Delta Outflow is at 49,300 cfs.
 - Clifton Court Forebay (CCF) exports are scheduled to be 6,680 cfs with the possibility of decreasing if first flush is triggered on 12/1/24 to target an OMRI of -2,000 cfs.
 - QWEST is in the range of +3,300 cfs and will range from +4,000 cfs to -5,000 cfs.
 - Rio Vista flows are expected to range between 18,000 cfs and 42,000 cfs.
 - The controlling factor is U.S. Army Corps of Engineers (USACE) permits.
 - SWP share of San Luis Reservoir storage is approximately 712 TAF.
 - CVP share of San Luis Reservoir storage is approximately 379 TAF.
 - Jones Pumping Plant is pumping at a rate of 4,000 cfs. If first flush is triggered, exports will be decreased to approximately 1,500-1,600 cfs.
- Questions on Operations:
 - CDFW asked about the USACE controlling exports and if this is because DWR is at operational capacity and cannot pump additional water.
 - DWR said they are in an excess condition and with the USACE permit, they can only pump up to 6,680 cfs.

- SaMT estimates of the current distribution of listed Chinook salmon and CCV steelhead, as a percentage of each population, are based on recent monitoring data and historical migration timing patterns. Estimates this week are based on YOY winter-run and YOY spring-run as well as natural origin steelhead at the real-time monitoring locations. These estimates are reported in the final Assessment document, available on the [Delta Monitoring Workgroup](#) webpage.

Table 1. Fish Distribution Table

Location	Yet to Enter Delta	In the Delta	Exited the Delta
Young-of-year (YOY) winter-run Chinook salmon	Current: 85-90% Last week: 98-99%	Current: 10-15% Last week: 1-2%	Current: 0% Last week: 0%
YOY spring-run Chinook salmon	Current: 99-100% Last week: 100%	Current: 0-1% Last week: 0%	Current: 0% Last week: 0%
YOY hatchery winter-run Chinook salmon	Current: N/A Last week: N/A	Current: N/A Last week: N/A	Current: N/A Last week: N/A
Natural origin steelhead	Current: 100% Last week: 100%	Current: 0% Last week: 0%	Current: 0% Last week: 0%

Justification for Fish Distribution Figures

- YOY winter-run Chinook salmon
 - USFWS noted that the DATCall data did not include all winter-run that were caught on 11/25/24 due to the report not being sent out yet for that week. Does SaMT want to include the 25 that were caught at the Sacramento Trawl and the 3 caught on Sacramento Seines?
 - CDFW clarified that typically, whatever data is available is used to determine the distribution estimates.
 - USFWS, CDFW, and DWR all expressed support for increasing the amount of winter-run in the Delta to 10-15% due to seasonal timing, winter-run observed in real-time monitoring stations, and recent hydrology events.
- YOY spring-run Chinook salmon
 - NMFS shared that none have been observed, and the historical data shows only 0.5% are typically in the Delta by this time.
 - CDFW shared that they have only been observed at Upper Sacramento River RST locations so far this season.
 - USFWS reported that the Sacramento Trawl caught 1 spring-run on 11/25/24.
 - SaMT agreed to increase the percentage of spring-run in the Delta to 0-1%.
- YOY hatchery winter-run Chinook salmon
 - N/A

- Natural origin steelhead
 - N/A

Part 2: Open Discussion on Species Status

American River Updates

- During the previous week, 1,242 carcasses were observed in the American River. The seasonal carcass total stands at 1,735.
- 11% of carcasses were pre-spawn mortalities, 77% were spawned, and 9% were partially spawned.
 - During the previous week, American River temperatures averaged 56.9°F.

Salvage Update

- CDFW salvaged the first Chinook salmon of WY 2025 on 11/19/24 at the CVP facility. The fish was unclipped and was genetically confirmed as fall-run.
- Questions on Salvage
 - DWR asked: Regarding the weekly salvage summaries that SaMT receives, once CDFW has genetically identified the fish run, do they immediately change the fish to the appropriate run column, or wait until the end of the season?
 - CDFW replied that it is a manual edit and therefore it is changed once staff become available, assuming it is just a few edits. If there are thousands of edits, such as in April and May, it can take longer to make updates. In this case, it won't be reflected in next week's results; it will just be lumped into the fall-run category going forward.

Hatchery and Collection Facility Operations

- The Tracy Fish Collection Facility reported a missed count on 11/21/24 at 04:00 due to an issue with the central screen which was quickly repaired.
- The CVP facility conducted their CO2 predator flush on 11/19/24.

Part 3. Live Edit Assessments

ITP Risk Assessment

- SaMT reviewed the draft ITP Risk Assessment.
- The final ITP Risk Assessment can be found on CDFW's [Water Project Operations webpage](#).

Part 4. Additional Considerations/Discussion

Presentation: Genetic Assessment of *O. mykiss* Sampled at the Central Valley Delta Water Projects

- Devon Pearse (Pearse), Research Geneticist at Southwest Fisheries Science Center, shared preliminary results from the first year of these projects that were initiated with Reclamation to analyze samples from the salvage facilities. Specifically, results shared are of steelhead *O. mykiss*, using different genetic tools.
- The CVP and SWP salvage facilities are being managed to limit loss of steelhead and other salmonids. Natural origin Central Valley steelhead are separated into two loss-limit periods: *before* and *after* April 1, in order to protect San Joaquin River fish that historically appear in the trawls later than Sacramento River fish.
- These projects involve the use of genetic analyses of juvenile *O. mykiss* collected at the salvage facilities in order to better understand the impacts of water export operations on *O. mykiss* populations in the Central Valley.
- Central Valley *O. mykiss* make up a diverse set of populations. Simultaneously, there's a decreased biocomplexity within Central Valley steelhead. Through streamlining and efficiency, four Central Valley hatcheries are producing very similar fish in age and size. There is a mix of hatchery and wild juveniles migrating through the Delta.
 - The four hatcheries are: Coleman, Feather River, Nimbus, and Mokelumne River.
- Hatchery steelhead are, in theory, all adipose fin-clipped, but the researchers are investigating with genetic analysis to see how well their assignment to hatchery parents aligns with whether or not they've been ad-clipped.
- Pearse noted that Nimbus Hatchery steelhead are not part of the Central Steelhead DPS.
- Project Objectives
 - Discriminate between hatchery and wild juveniles using parentage-based tagging
 - Are adipose fin clips reliable?
 - Which hatcheries salvaged the most juveniles?
 - Identify source populations of wild/natural origin juveniles using Genetic Stock Identification (GSI)
 - Provides information about non-hatchery origin juveniles.
- Researchers used both archival (2014-2020) and 2024 salvage samples.
 - Archival sample results
 - Ad-clipped steelhead were very similar to hatchery assignment rates in a 2024 study by Goetz, et al.

- 2024 sample results
 - WY 2024 was notable due to the high loss of steelhead, a majority of which were not ad-clipped (62%). There was concern about from where these unclipped fish were coming, if they were wild-origin or unclipped hatchery fish.
 - Approximately 1,200 fish were received from the CVP and SWP facilities.
 - Of the 453 ad-clipped fish, 420 (93%) were assigned to parents; 33 (7%) were unassigned.
 - Of the 729 unclipped fish, 42 (6%) were assigned to parents; 687 (94%) were unassigned.
- Combined results of Parentage-Based Tagging (PBT) and GSI:
 - 97% PBT/GSI concordance for hatchery-origin samples
 - 668 fish that were not assigned to parents were assigned with GSI as:
 - Battle Creek/Coleman Hatchery – 18
 - Yuba River – 206
 - Feather River/Hatchery – 34
 - Deer Creek – 16
 - Putah Creek – 1
 - American River/Nimbus Hatchery – 284
 - Mokelumne River/Hatchery – 41
 - Calaveras River - 68
- Conclusions and Future Direction
 - There is significant variation in salvage patterns across years.
 - 2024 showed an increase in numbers of salvaged steelhead.
 - Plan to focus on expanding the GSI population baseline to improve accuracy.
 - Continue PBT to identify hatchery-origin steelhead.
- Questions
 - CDFW asked: For assigning parental-based tags to differentiate between wild and hatchery-produced steelhead, is there a chance some of those were hatchery-produced but the parents weren't in the assay?
 - Pearse confirmed that probability always exists. that the ad-clipped fish showed a variable rate of fish that didn't assign to any parents. Those rates are subject to a variety of factors. If we had any missing samples,

that would contribute to it. If we did and had trouble genotyping due to missing data or other issues, that parent is no longer in there, it will contribute to the rate of individuals not assigned to the hatchery. The rates we're seeing are in the 20-25% range are similar to looking at just hatchery broodstock. Missing data and parents along with limitations of the power of the markers combine to give you some portion of juveniles that are just not assigned to parents.

- Reclamation commented that they're seeing hatchery fish occasionally travel up into the tributaries. How might that affect the genetics on wild fish if they are the result of or progeny of hatchery fish.
 - Pearse clarified that those would be hatchery fish that are spawning in the wild so the offspring that they produce are going to be unclipped, wild fish. They won't contribute to the PBT analysis because we don't have those parent samples. For the GSI, over the long term, there could be a fair amount of mixing between hatchery parents that are spawning in the wild. For example, the Lower American River population is essentially Nimbus Hatchery fish. When we have been able to obtain samples from "wild" fish in the LAR, as far as GSI goes, they're very similar to Nimbus broodstock...There's a fair amount of straying from hatchery fish spawning in the wild. Over the long term, it could affect the population structure there.

Items to Raise to WOMT

- N/A

Next SaMT Meeting

- The next SaMT Meeting is scheduled for Tuesday, 12/3/24 at 9 a.m.

Action Item

- Kearns & West to share Pearse's presentation slides with SaMT.