

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**3/11/14**

**Objective:** Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: [http://www.westcoast.fisheries.noaa.gov/central\\_valley/water\\_operations/doss.html](http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html).

**Attendees**

**DWR:** Dan Yamanaka, Kevin Reece, Farida Islam, Aaron Miller, Mike Ford, James Gleim,  
**FWS:** Leigh Bartoo, Roger Guinee, Craig Anderson  
**NMFS:** Barbara Rocco, Jeff Stuart, Barb Byrne, Garwin Yip  
**Reclamation:** Josh Israel, Russ Yaworsky  
**DFW:** Colin Purdy, Bob Fujimura, Chris McKibbin, Krystal Acierto  
**SWRCB:** Scott Ligare  
**EPA:** Erin Foresman  
**USGS:** not present

**Agenda**

1. Agenda review and introductions
2. Fish Monitoring
3. Current Ops
4. SWG
5. Review Current and Upcoming RPA Actions
6. DOSS Advice?

**Fish Monitoring:** The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. See also: <http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

Location	Chippis Is. Midwater Trawl	Sacramento Trawls	Mossdale Kodiak Trawl	GCID <sup>1</sup>	Knights Landing RST <sup>2</sup>	Tisdale RST <sup>3</sup>	Beach Seines	Jersey Point
Sample Date	3/5, 7	3/5, 7	3/5, 7	N/A	3/7-9	3/6-9	3/6-7	3/5-8
Total Catch	38	3409	1		15,045	10,056	1,606	76
FR		3296			14,750	9,936	1,583	32
WR	17	13			27	5	4	
SR	3	80			250	115	10	2
LFR								
Ad-Clipped Chinook	6	6			13	9	2	
DS	1	6					6	42
Splittail	1							

<b>Longfin</b>	1							
<b>SH (ad-clip)</b>	7	8			14	8	1	
<b>SH (wild)</b>	2		1		9			
<b>W. Temp. (avg. °F)</b>	57.6	55.8	60.8		57.0	55.4	57.6	57.7
<b>Flows (avg. cfs)</b>					16,020	12,414		
<b>Turbidity (avg. NTU)</b>	36.6	84.0	12.8		82.1	46.1	55.9	17.4
<b>WR/LFR Avg. CPUE</b>					0.18	0.078		
<b>FR/SR Avg. CPUE</b>					321.8	143.6		

CPUE = catch per unit of effort reported as the average fish/hour over reported sampling dates; ACT = acoustic tag; GCID = Glenn-Colusa Irrigation District; RST = rotary screw trap

<sup>1</sup>The trap cone was raised on 2/27 because of high flows and heavy debris. Sampling will not continue until further notice

<sup>2</sup>3/6: In-river debris prevented sampling.

<sup>3</sup>3/6: daylight hours only; 3/9: RL counter was broken; fixed now.

**Lower American River Rotary Screw Trap (RST) at Watt Avenue:** There were 28,251 non-ad-clipped Chinook caught from 3/5 through 3/9, of which 28,207 were fall run, 42 spring run, and 2 winter run. Over the same period, 36 wild steelhead, 262 marked Chinook, and 4 ad-clipped steelhead were caught. A pulse flow from Nimbus Dam took place beginning on the evening of 3/5 and concluded 24 hours later. Catch of steelhead fry and Chinook juveniles increased in response to the pulse on 3/5, suggesting that providing a pulse did result in some additional movement out of the American River, which might be an advantage to steelhead fry as well as to salmon fry given the expected poor in-river conditions.

Coincident with the pulse flow, there was also a moderate-intensity but short-term rain event. The two events mobilized a large amount of organic matter and trash that were collected by the RSTs on the morning of 3/6. The Chinook salmon run assignments in the spreadsheet are based on length-at-date criteria. The application of these criteria on the American River may overestimate the number of spring-run Chinook that are caught (*i.e.*, many of the spring-run Chinook listed in the spreadsheet could be reclassified as fall-run Chinook after the field season and data/genetics analyses are complete. The Water Forum will provide the information on any adjustment to the length-at-date criteria when available; Purdy (DFW) and Byrne (NMFS) will follow up as well.

**Spring Kodiak Trawl:** The spring Kodiak trawls targeting delta smelt are in the water as of 3/10. There were 15 non-ad-clipped juvenile Chinook caught that were within the fall- and spring-run size ranges. Most were caught in the lower San Joaquin River stations.

**Fish Distribution:** DOSS agreed at last week's meeting that 75% of the young-of-year (YOY) winter run and yearling spring run would have entered the Delta by the end of last week and that approximately 10% of the YOY winter run and yearling spring run would have exited the Delta at Chipps Island by that time. DOSS updated that estimate to indicate that <25% of YOY winter run and yearling spring run are believed to have exited the Delta at Chipps Island. Last week, DOSS also agreed that approximately 25% of the YOY spring run would have entered the Delta and <5% would have exited by the end of last week; DOSS believes this estimate is still appropriate.

**Fish Salvage<sup>1</sup>:** Fujimura (DFW) provided an update on fish salvage at SWP and CVP. From 3/3 through 3/9, wild and hatchery steelhead continued to be salvaged at the CVP and SWP fish salvage facilities. The loss densities of wild steelhead on non-zero salvage days ranged from 0.3 to 1.9 fish/TAF, which did not trip any OMR triggers. The season total of wild steelhead is 64. Thirty-two hatchery steelhead were also salvaged during this reporting period. Older juvenile Chinook in the winter-run size range were salvaged at both facilities for the first time this season. Fifty-three non-ad-clipped and 4 ad-clipped Chinook were salvaged. No sturgeon were salvaged during the same period.

Preliminary data for 3/10 show no salmonids salvaged at SWP and no green sturgeon at either facility; clipped steelhead and non-ad-clipped winter-run-sized Chinook were salvaged at the CVP. The preliminary loss density for non-ad-clipped older juveniles is 0.23 older juveniles/TAF for that day.

Observations of the Tracy Fish Collection Facility (TFCF): The secondary channel was shut down for cleaning twice per day on 3/4, 3/5, and 3/9. The facilities announced that they are planning to dewater the secondary channel for 2 hours/day on 3/12, 3/13, and 3/14 for work related to the installation of traveling screens. The actual amount of time the secondary channel is closed will be written on the salvage data sheets.

Closing the secondary channel for cleaning or construction work usually means water exports without fish salvage operations because Reclamation does not typically stop water pumping at the Jones Pumping Plant during secondary channel shutdowns. Currently, CVP is salvaging listed Chinook and steelhead, and juvenile and adult longfin smelt and adult delta smelt can be salvaged at any time now. TFCF will try to minimize the amount of time the secondary channel is dewatered. If a fish count is missed because of a temporary shutdown, specifically for the pre-installation of the Hydrolok secondary fish screen lasting 2 or more hours, an interim “fill-in” method to estimate potential salvage/loss will be applied to estimate daily loss densities for specific salmonid races and/or stocks for the purposes of managing OMR per Action IV.2.3 of the NMFS BiOp.

Bypass #4 was inoperable for approximately 18 hours from 3/4 to 3/5.

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<sup>1</sup>Salvage data reported in this section represent the total estimated and expanded salvage based on the number of fish observed at the fish collection facility. For example, if one steelhead is observed in the typical ½-hour sampling period within a 2-hour operation period, the single steelhead is expanded to a salvage of four.

Generated by Bob Fujimura on March 10, 2014

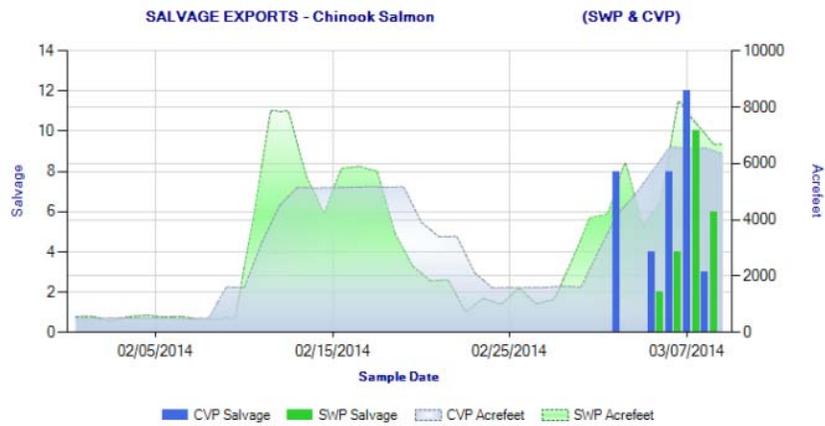


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during February 1 through March 9, 2013. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

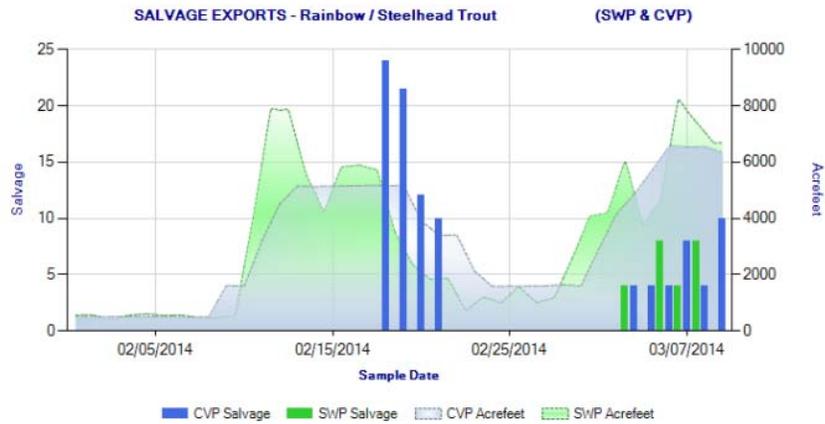


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during February 1 through March 9, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

**DOSS Weekly Salvage Update**  
**Reporting Period: March 3-9, 2014**  
 Prepared by Bob Fujimura on March 10, 2014 1830  
 Preliminary Results -Subject to Revision

Criteria	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0.80	0	0.30	1.31	1.60	3.13	2.00	↗	1.3
Wild steelhead	0	1.85	0	1.54	1.36	0	0.31	↗	0.7
<b>Exports</b>									
SWP daily export	4,222	6,000	3,797	4,661	8,185	7,432	6,990	↗	5,898
CVP daily export	4,136	4,853	5,695	6,570	6,540	6,547	6,338	↗	5,811

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present  
 Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)

**Chinook Salmon Weekly/Season Salvage and Loss**  
 Combined salvage and loss for both CVP and SWP fish facilities  
 Race determined by size at date of capture; hatchery = adipose fin missing;

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
<b>Wild</b>					
Winter Run	53	118	↗	53	118
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
<b>Total</b>	<b>53</b>	<b>118</b>		<b>53</b>	<b>118</b>
<b>Hatchery</b>					
Winter Run	4	3	↗	4	3
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
<b>Total</b>	<b>4</b>	<b>3</b>		<b>4</b>	<b>3</b>

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

**Steelhead Weekly/Season Salvage and Loss**  
 Combined salvage and loss for both CVP and SWP fish facilities

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild	26	61	↗	54	95
Hatchery	32	66	↗	76	95
<b>Total</b>	<b>58</b>	<b>127</b>		<b>130</b>	<b>190</b>

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.68

**Operations (3/11/14)**

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	3,500 (flows will decrease throughout week to target an OMR of -5,000 cfs)	Jones Pumping Plant	3,300 (flows will be reduced later this week for OMR flow compliance)
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	800	American - Nimbus	500
		Sacramento - Keswick	2,700
		Stanislaus - Goodwin	450 (flows will be increased at noon today to 550 cfs for Vernalis EC)

Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	343	San Luis (CVP)	426 (43)
Oroville	1,562	Shasta	1,981
New Melones		Folsom	381
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	19,937
Outflow Index (cfs)	~13,900	San Joaquin River (cfs) at Vernalis	998
Total Delta Inflow (cfs)	~21,728	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs)	
X2 (km)	72	OMR 14-day avg (cfs)	
E/I (%)	27 (3-d avg)		

**Factors controlling operations:** OMR is currently controlling export operations and will likely continue to control through the weekend, after which outflow or the E:I ratio might become controlling. Using the existing BiOp flexibility (the 14-d average of OMR cannot be more negative than the limit in effect [currently, -5,000 cfs]; the 5-day average of OMR cannot be >25% more negative than the limit in effect [currently, -6,250 cfs based on a -5,000 cfs limit]), the targeted daily OMR flow index over the weekend was -6,000 cfs; this will drop to -5,000 cfs this week. Forecasts do not show a high chance of precipitation this week. Operators can meet the 11,400 cfs D-1641 outflow requirement at Chipps Island for this week and possibly through next week by using carryover days.

A discrepancy was noted between the Geological Survey gage at Fair Oaks (AFO on CDEC) and the Nimbus release data (NAT on CDEC). The operators explained that outflow data (partially calculated) reported for the NAT station includes releases to the hatchery and Folsom South Canal. The AFO data should be representative of the NAT data minus the hatchery and Folsom South Canal flows.

**Real-Time Drought Operations Team (RT DOT):** A meeting was held last Friday (3/7) and again yesterday (3/10). Yip (NMFS) provided an overview of the subjects discussed by RTDOT:

- OMR Index Project, which allows compliance to the NMFS and FWS OMR requirements to be measured using a calculated OMR index instead of actual measured flows at the Old River and Middle River USGS gages.
- potential flexibility in the inflow averaging period (3-d vs. 14-d) used to calculate the E:I ratios for D-1641 compliance
- potential flexibility in the averaging period used to measure compliance with the outflow standard in D-1641
- potential that any outflow reduction might worsen water quality and trigger DCC opening per the DCC operations trigger table
- potential installation of drought barriers for operation as early as May 1

**RPA Actions:**

- IV.1.1 (monitoring and alerts for DCC gate operations): No alerts tripped in the past week. (Special case: see NMFS determination.)
- IV.1.2 (DCC gate operations): DCC gates are closed.

- IV.2.3 (OMR flow management): The -5,000 cfs OMR limit is in effect; no triggers have been exceeded. Compliance will use index initially set for 1 year and not measured gage data. The current requirement is that OMR be no more negative than -5,000 cfs, as measured on a 14-day average using the index method. OMR data are available on the Reclamation CVO website: <https://www.usbr.gov/mp/cvo/index.html>

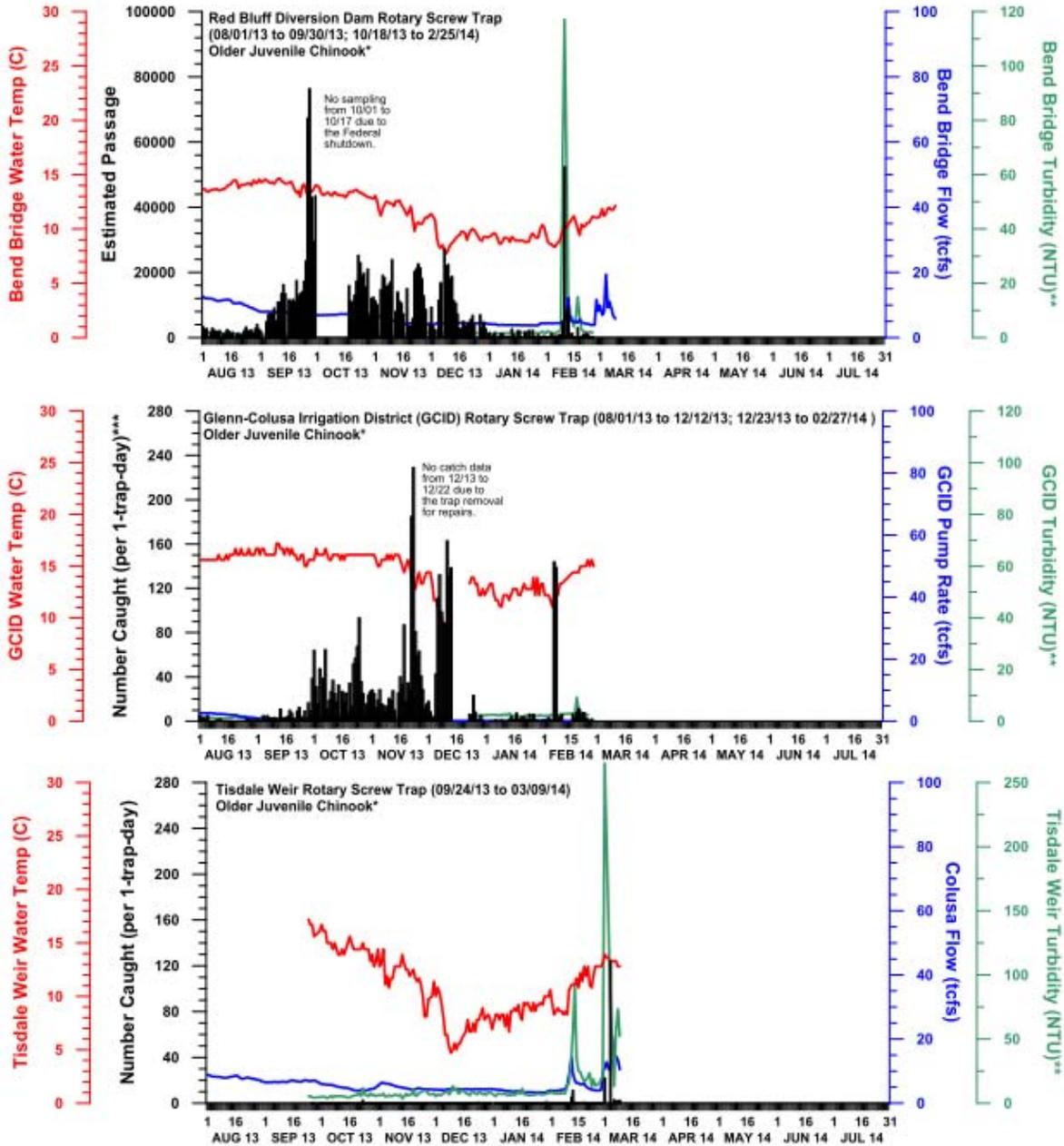
**Smelt Working Group (SWG):** SWG met on 3/10; there were no recommendations to change operations to lower the risk of entrainment of delta smelt. The larval survey picked up eight delta smelt (5–6 mm). SWG also discussed the index method for OMR and the drought. SWG will continue to monitor larval delta smelt. Previous meeting notes are available at: [http://www.fws.gov/sfbaydelta/cvp-swp/smelt\\_working\\_group.cfm](http://www.fws.gov/sfbaydelta/cvp-swp/smelt_working_group.cfm).

**DOSS Advice to WOMT and NMFS:** None.

**Next Meeting:** The next scheduled conference call will be on 3/18 at 9:00 a.m. Given the complex nature of the drought and operations discussions, DOSS members should plan to meet from 9:00 to 10:30 a.m. to allow for discussion of drought-related issues as well as the standard agenda.

Below are graphs provided by DWR for Chinook salmon and steelhead observed at monitoring locations in the Sacramento and San Joaquin rivers and Delta. For additional graphs, please visit the DWR website at: <http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

## NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 10 MARCH 2014

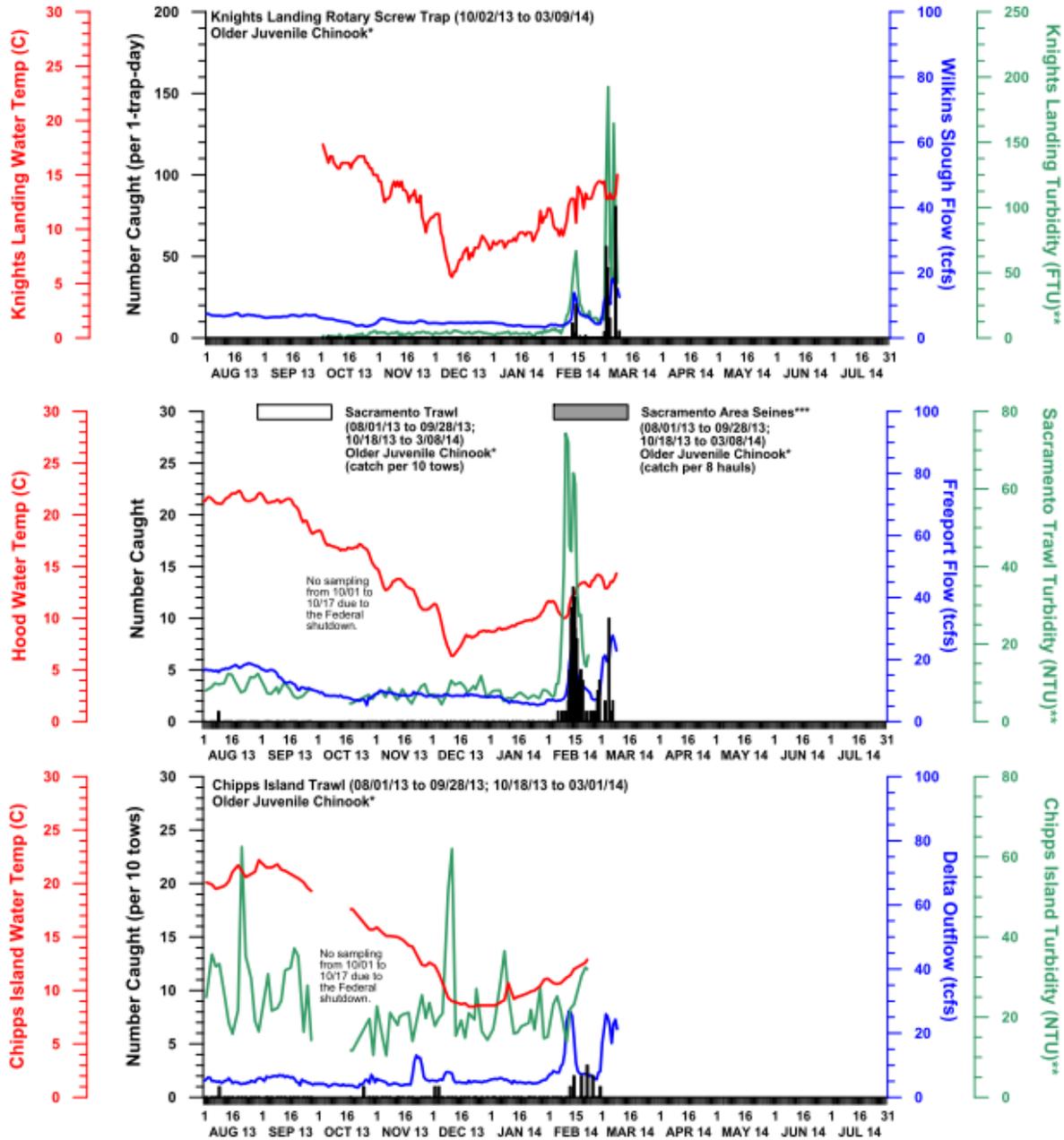
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

\*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher model) for which a race is assigned on a given sampling date.

\*\*Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured.

\*\*\*GCID: The trap cone was raised on February 27, 2014 due to high flows and heavy debris. Sampling will not continue until further notice.

# NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER AND CHIPPS ISLAND



DWR-DES 10 MARCH 2014

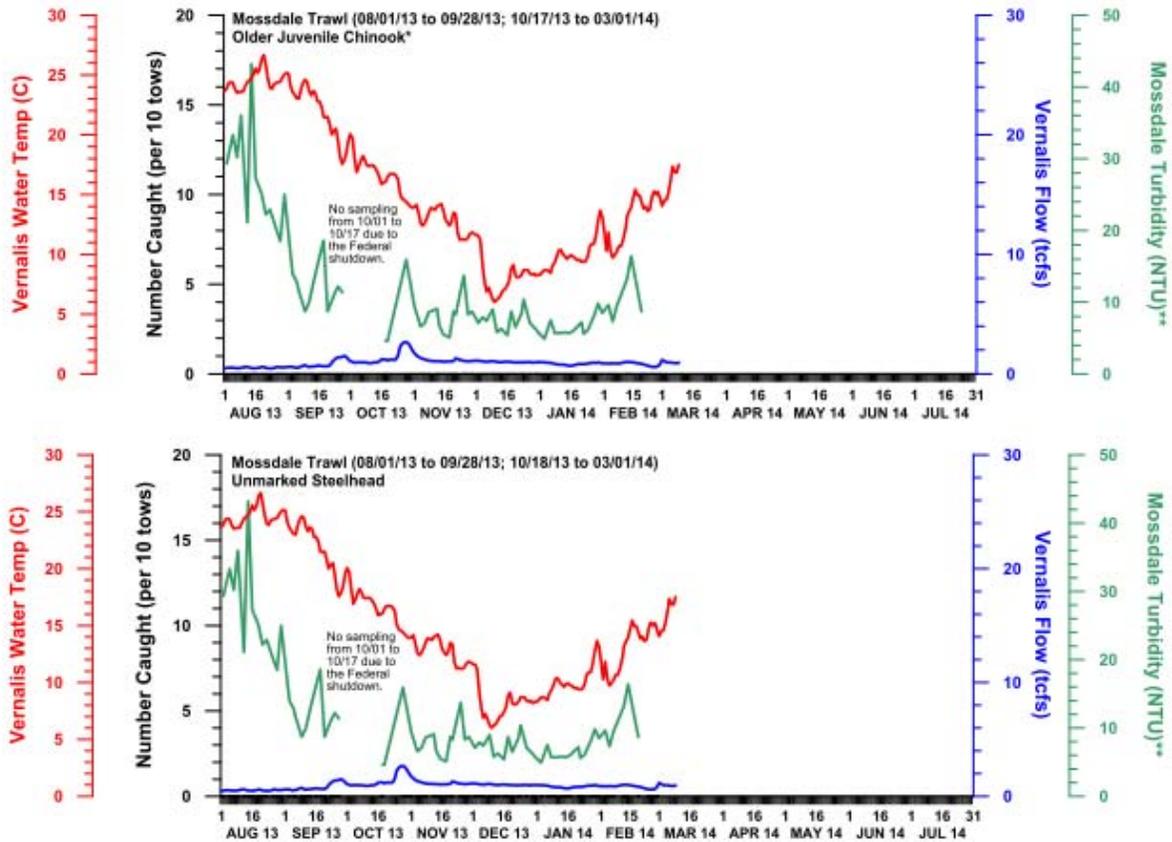
Preliminary data from DFW, FWS, and CDEC; subject to revision.

\*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher Model) for which a race is assigned on a given sampling date.

\*\*Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured. Knights Landing turbidity measured in FTU, which should be roughly equivalent to NTU.

\*\*\*Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

## NUMBER OF UNMARKED OLDER JUVENILE CHINOOK AND STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER



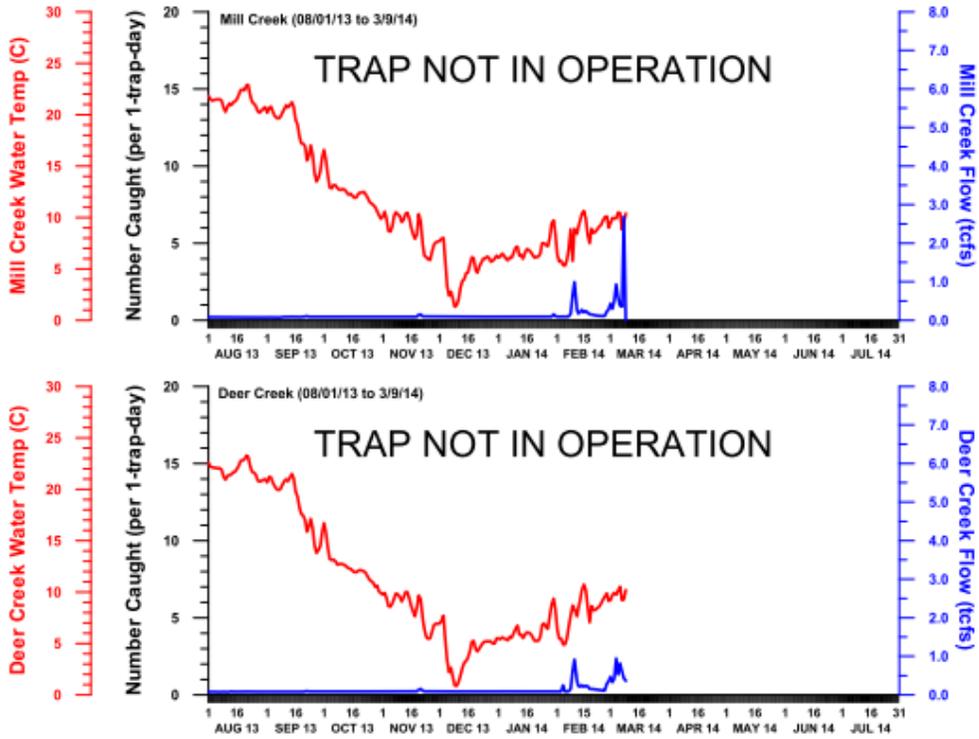
DWR-DES 10 MARCH 2014

Preliminary data from FWS and CDEC; subject to revision.

\*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher model) for which a race is assigned on a given sampling date.

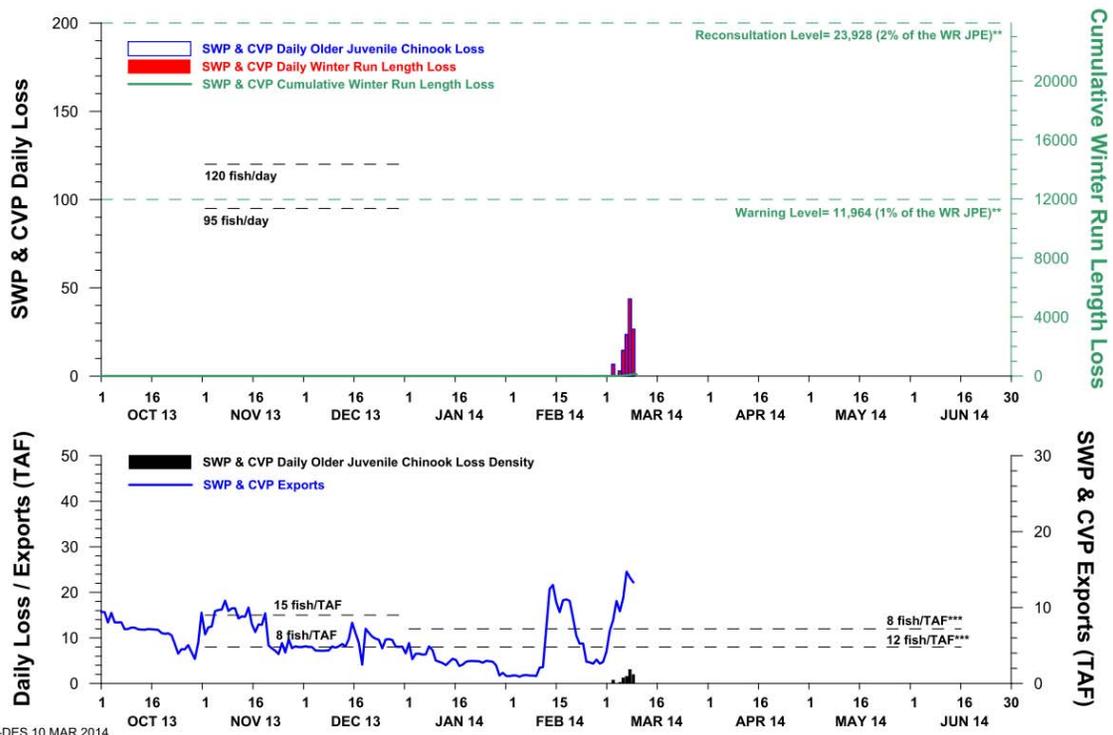
\*\*Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured.

# WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



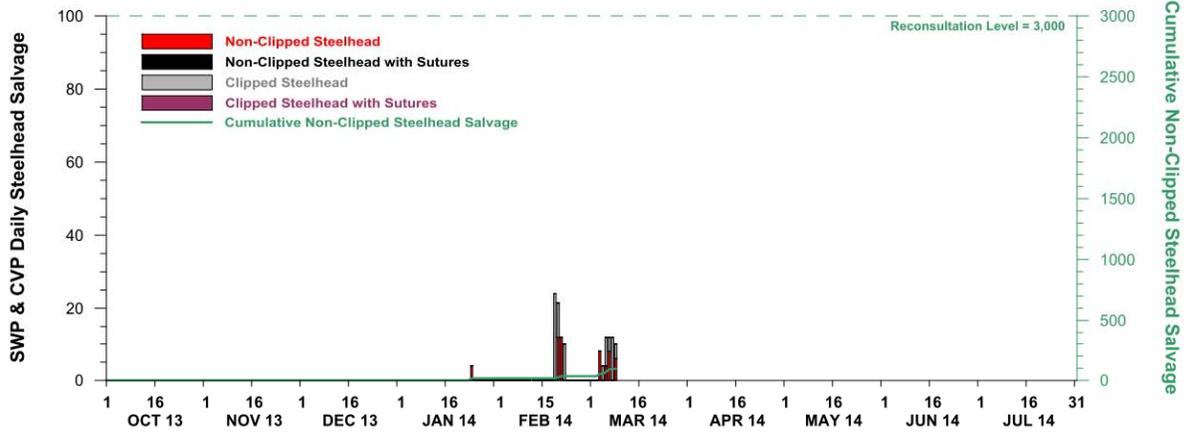
DWR-DES 10 MARCH 2014  
Preliminary data from CDEC; subject to revision.

## NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2013 THROUGH 09 MAR 2014



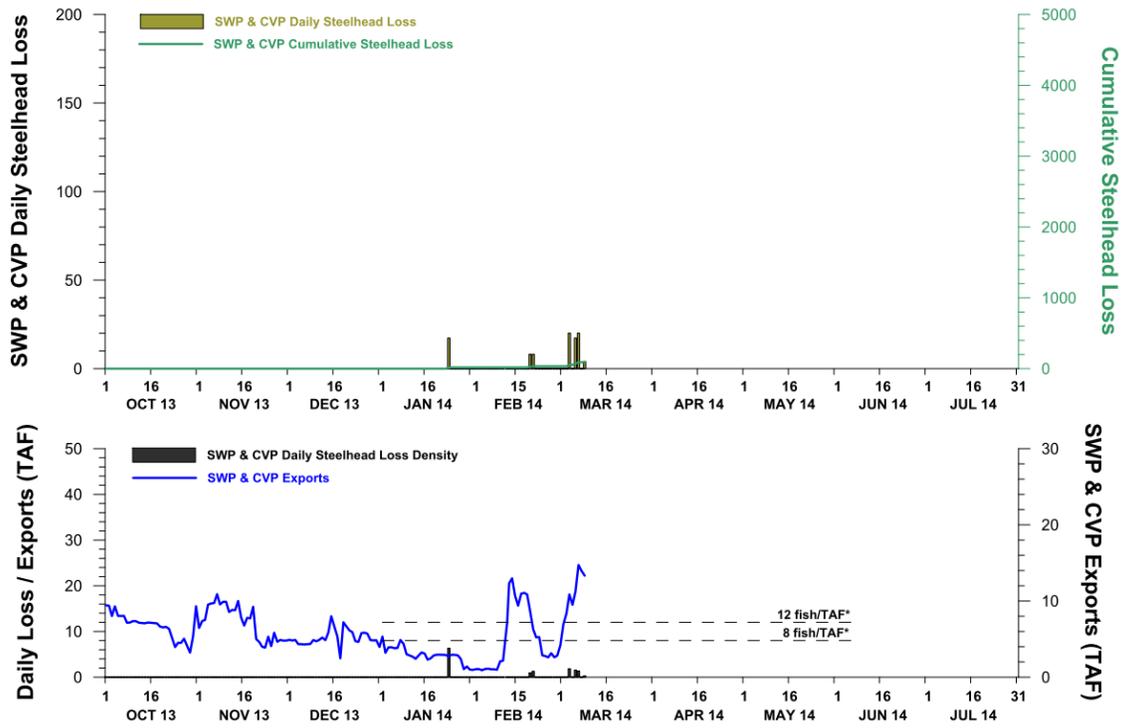
DWR-DES 10 MAR 2014  
 Preliminary data from DFW; subject to revision.  
 \*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Delta model) for which a race is assigned on a given sampling date.  
 \*\*Based on the final juvenile production estimate (JPE), which comes out to 1,196,387 non-clipped winter run (WR) Chinook entering the Delta during water year 2014.  
 \*\*\*Used to roughly estimate whether the daily loss is greater than 8 fish/TAF multiplied by the volume exported in TAF or 12 fish/TAF multiplied by the volume exported in TAF. The daily JPE based older juvenile Chinook loss density triggers of 11.96 fish/TAF (first stage) and 23.93 fish/TAF (second stage) are not controlling this water year.

## STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2013 THROUGH 09 MARCH 2014



DWR-DES 10 MARCH 2014  
Preliminary data from DFW; subject to revision.

## NON-CLIPPED STEELHEAD LOSS AT THE DELTA FISH FACILITIES 01 OCT 2013 THROUGH 9 MARCH 2014



DWR-DES 10 MARCH 2014

Preliminary data from DFW; subject to revision.

\*Used to roughly estimate whether the daily loss is greater than 8 fish/TAF multiplied by the volume exported in TAF or 12 fish/TAF multiplied by the volume exported in TAF.