

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**4/1/14**

**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, Aaron Miller, James Gleim, Mike Ford, Farida Islam  
**FWS:** Craig Anderson  
**NMFS:** Barbara Rocco  
**Reclamation:** Josh Israel, Russ Yaworsky, Dave VanRijn  
**DFW:** Colin Purdy, Bob Fujimura, Chris McKibbin, Krystal Acierito  
**SWRCB:** Scott Ligare  
**EPA:** Erin Foresman  
**USGS:** not present

**Agenda**

1. Agenda review and introductions
2. Fish Monitoring
3. Current Ops
4. SWG
5. 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
<b>Sample Date</b>	3/24, 26, 28	3/24, 26, 28	3/24, 26, 28	3/25–29	3/25–30	3/25–31	3/25, 27, 28	3/25–29
<b>Total Catch</b>	<b>125</b>	<b>174</b>	<b>0</b>	<b>134</b>	<b>57</b>	<b>235</b>	<b>224</b>	<b>27</b>
<b>FR</b>	9	159		77	46	207	220	11
<b>WR</b>	2			6				
<b>SR</b>	75	13		51	11	25	4	6
<b>LFR</b>								
<b>Ad-Clipped Chinook</b>	29	1 (100 mm)						
<b>DS</b>	2 (72 & 81 mm)							10 (61–72 mm)
<b>Splittail</b>	1 (290 mm)	1 (300 mm)						

<b>Longfin</b>	5 (74–83 mm)							
<b>SH (ad-clip)</b>						1		
<b>SH (wild)</b>	2					2		
<b>W. Temp. (avg. °F)</b>	60.3	61.3	62.8	62.0	59.9	57.9	65.8	60.8
<b>Flows (avg. cfs)</b>					5513.7	6573.0		
<b>Turbidity (avg. NTU)</b>	48.3	14.3	13.1	4.73	13.2	15.0	20.6	16.4
<b>WR/LFR Avg. CPUE</b>				1.11				
<b>FR/SR Avg. CPUE</b>					0.317	0.297		

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>3/26: The revolution counter was malfunctioning when staff arrived for trap check. The total hours fished is an estimate. 3/30: The cone was raised @ 08:00 on 3/30 because of high flows and heavy debris. Daily trap operations will not continue until further notice.

<sup>2</sup>Daylight hours only. Heavy debris. 3/21: Night sampling effort. On 3/31, catch increased with increase in flows.

<sup>3</sup>3/29 & 3/30, fishing daylight hours only. 3/31: River right trap cone revolution counter broken.

**Fish Salvage:** Fujimura (DFW) provided an update on fish salvage at the CVP’s Tracy Fish Collection Facility (TFCF) and the SWP’s Skinner Fish Collection Facility (SFCF) from 3/24–3/30. All data from 3/28 are highly preliminary. The number of salvaged wild and hatchery steelhead last week decreased compared to the previous week.

Wild steelhead were salvaged in the first 2 out of the 7 reporting days for a combined total of 10 steelhead salvaged at the fish facilities. The estimated daily combined loss density ranged from 0 to 5.1 fish/TAF and did not exceed the first-stage loss criterion (8 fish/TAF). The season total loss of salvaged wild steelhead is 199. Four hatchery steelhead were also salvaged during the reporting period. No winter-run-sized non-adclipped Chinook salmon (CS) were salvaged last week. Twelve spring-run-sized and four fall-run-sized non-adclipped CS were salvaged. No ad-clipped CS were salvaged and no sturgeon were observed last week. Preliminary results for yesterday (3/31) indicate that no CS or green sturgeon were salvaged. A few hatchery and wild steelhead were salvaged at TFCF.

TFCF had one construction-related 2-hour outage per day last week; other similar outages are planned for this week. Specifically, installation of the secondary traveling screen at TFCF will require that the secondary channel be closed at 10:00 a.m. for 2 hours/day on 4/1, 4/2, 4/3, and 4/4. The actual amount of time the channel is closed will be reported on the salvage data sheets. The goal is to minimize the amount of time the secondary channel is dewatered.

Generated by Bob Fujimura on March 29, 2014

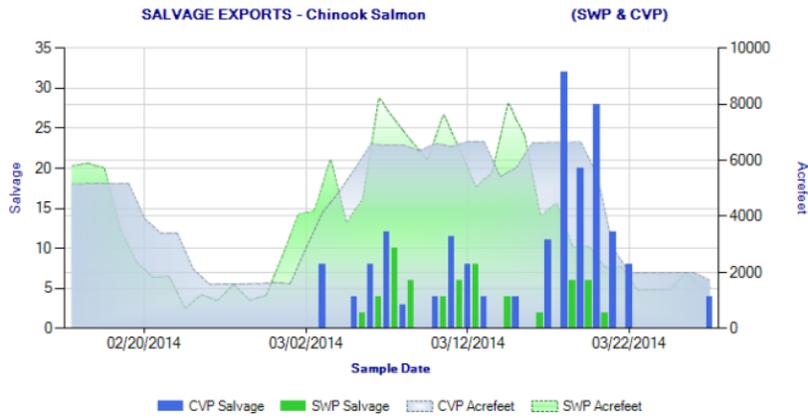


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during February 16 through March 27, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

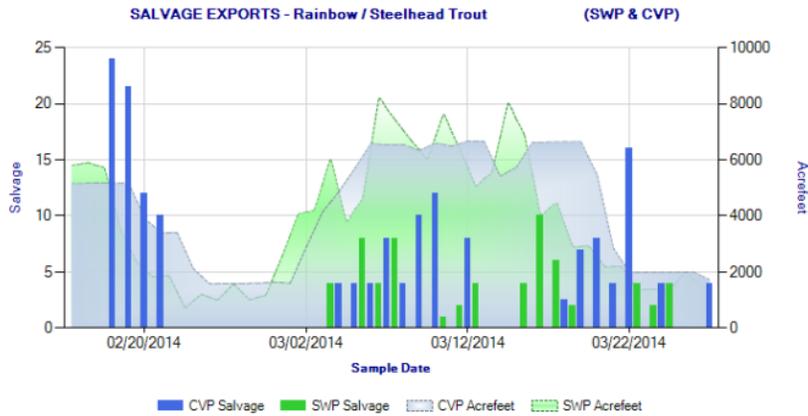


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during February 16 through March 27, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

**Preliminary Results -Subject to Revision**

Criteria	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0	0	0	0	0	↘	
Wild steelhead	3.39	5.14	0	0	0	0	0	↘	1.2
<b>Exports</b>									
SWP daily export	1,381	1,381	2,008	1,475	1,290	835	1,290	↘	1,380
CVP daily export	1,979	1,991	1,992	1,718	1,588	1,595	1,597	↘	1,780

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)  
 \*Value includes the latest interpretation of a NMFS/USBR interim procedure to estimate loss due to secondary channel construction outage.

**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	0	0	↘	157	299
Spring Run	12	9	↘	69	76
Late Fall Run	0	0	↘	0	0
Fall Run	4	3	↘	24	16
Unclassified	0	0	↘	0	0
<b>Total</b>	<b>16</b>	<b>11</b>		<b>250</b>	<b>391</b>
<b>Hatchery</b>					
Winter Run	0	0	↘	6	12
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>0</b>	<b>0</b>		<b>6</b>	<b>12</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	10	29	↘	94	199
Hatchery	4	3	↘	140	205
<b>Total</b>	<b>14</b>	<b>32</b>		<b>234</b>	<b>404</b>

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

**Fish Distribution:** The recent and upcoming storms will most likely move the remainder of Chinook in the Sacramento River into the Delta. There have not been a lot of winter run moving past Chipps Island this past week, possibly a result of lower water temperatures at Chipps. It will be interesting to see whether a pulse of spring run will come through with the increase in flows from the current storms. The catch at Knights Landing went from 0 last week to 14 yesterday, with sizes between 73 and 86 mm. We expect a large amount of spring run coming through the system with the latest storm.

DOSS continues to track the movement of fish through the monitoring stations to be able to help consider various conceptual models about how and why fish are moving through the system and out of the Delta. Many of those who are involved in fish modeling and monitoring have different opinions on the percentages of fish moving through the system, where they hold over, why they move, etc., and this information is helpful for all to be able to discuss and model the movement, especially given the current drought conditions and sporadic storm pulses. DOSS is the only forum for this type of weekly discussion.

Based on the information provided in the monitoring reports, DOSS agreed with the suggestion to leave the young-of-year (YOY) winter-run and yearling spring-run distribution estimates as is for this week, but updated the estimated distribution of YOU spring run. Large quantities of

YOY spring run are being seen daily at Red Bluff Diversion Dam (RBDD), even though flows are declining, indicating that there are still a fair number of YOY spring run upstream of RBDD, but also a fair number moving down. An increase in spring run was also reported at the Chipps Island trawl (75 this week vs 10 last week).

	Yet to Enter Delta	In the Delta	Exited the Delta Past Chipps Island
<i>Young-of-year winter-run Chinook salmon</i>	~10–15%	~60–70%	~20–25%
<i>Yearling spring-run Chinook salmon</i>	Most yearling spring run have most likely exited the Delta.		
<i>Young-of-year spring-run Chinook salmon</i>	~40–60%	~30–60%	~5–10%

### Operations (4/1/14)

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	700	Jones Pumping Plant	800 (will increase to 4,200 cfs beginning at 10:00 a.m. today; combined with state exports, total will be 4,900 cfs)
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	800	American - Nimbus	500
		Sacramento - Keswick	3,250
		Stanislaus - Goodwin	200
<b>Reservoir Storage (in TAF, % of capacity)</b>			
San Luis (SWP)	388	San Luis (CVP)	468 (48)
Oroville	1,716	Shasta	2,199
New Melones		Folsom	436
<b>Delta Operations</b>			
DCC	Closed	Sacramento River at Freeport (cfs)	12,044
Outflow Index (cfs)	~15,300	San Joaquin River (cfs) at Vernalis	794
Total Delta Inflow (cfs)	~13,657	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs index method)	-1,500
X2 (km)	81	OMR 14-day avg (cfs, index method)	-2,300
E/I (%)	14.8 (14-d avg)		

**6-Year Study:** Israel (Reclamation) provided an update on the 6-Year Study. FWS tagged 480 steelhead smolts at the Mokelumne River Hatchery on Tuesday through Thursday (3e/25–3/27); 478 were released from 2/26 through 2/28 from Durham Ferry; this is the first of three scheduled releases. Coleman National Fish Hatchery is conducting health evaluations and has sampled steelhead for parasites and diseases, and these fish are not released because they are sacrificed for the health assessments. Ambient conditions for steelhead were flows of 560 cfs at Vernalis

on 3/27 and up to 700–800 cfs now, but Vernalis flows are expected to stay fairly low and will be below what we normally see in April. There will also be fairly high exports over the next 10 days. It will take 14–21 days for the fish to move from Durham Ferry to Chipps Island.

The next releases will be in roughly 3–4 weeks (the 3<sup>rd</sup> week in April and on or about May 19). Durham Ferry is upstream and to the south of the confluence with Old River. The Head of Old River barrier (HORB) is supposed to be operable by 4/9 or 4/10 and it has a significant influence on steelhead entrainment into the Old River corridor; however, it is difficult to quantify barrier effects exactly because we don't have both conditions—barrier in or out—within the same year. No participant on the call knew whether the 2014 HORB would include operable culverts or perhaps flap gates<sup>1</sup>.

**Action IV.2.1, I:E Ratio:** In response a proposal from Reclamation and DWR NMFS has reviewed and approved projects' request to relax the 1:1 Vernalis inflow-to-export ratio (RPA Action IV.2.1) and increase exports to capture the natural and abandoned flows resulting from the recent storms. This is a temporary adjustment until a formal decision is made on the drought operations and contingency plan currently being reviewed. For the complete text and response, please see:

[http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/2014\\_03\\_31\\_bor\\_request\\_and\\_nmfs\\_concurrence\\_on\\_april\\_1\\_operations.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/2014_03_31_bor_request_and_nmfs_concurrence_on_april_1_operations.pdf).

**RPA Actions:**

- IV.1.2 (DCC gate operations): DCC gates are closed.
- IV.2.1 I:E ratio: See 3/31/14 e-mail exchange between Reclamation and NMFS: [http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/2014\\_03\\_31\\_bor\\_request\\_and\\_nmfs\\_concurrence\\_on\\_april\\_1\\_operations.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/2014_03_31_bor_request_and_nmfs_concurrence_on_april_1_operations.pdf) IV.2.3 (OMR flow management):
- IV.2.3 (OMR flow management): 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 did not meet before the DOSS meeting because of the 3/31 state holiday but is scheduled to meet today. 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.

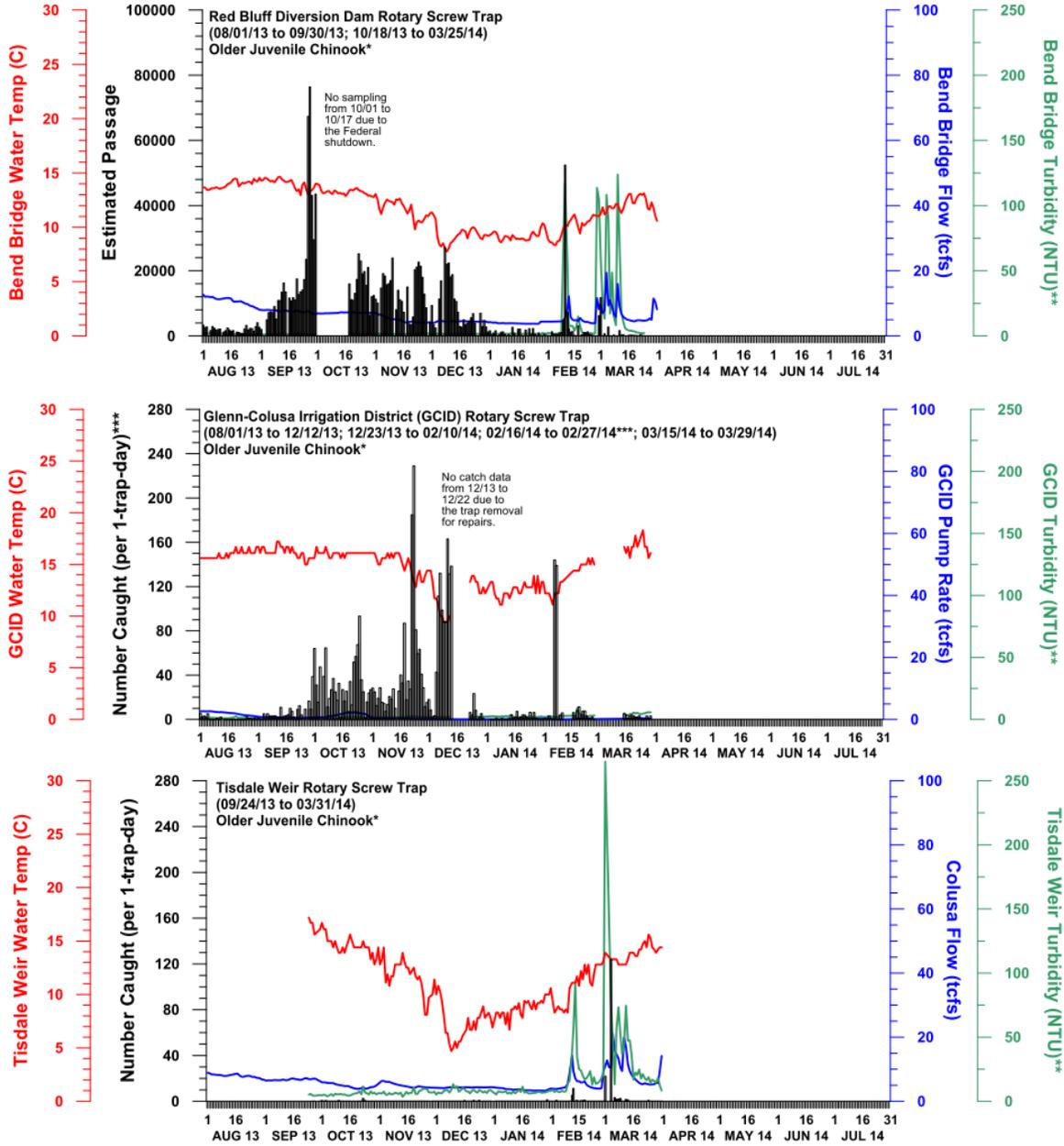
**Next Meeting:** The next scheduled conference call will be on 4/8 at 9:00 a.m.

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<sup>1</sup> NMFS will look into proposed barrier design and report back to DOSS.

Although these graphs were not distributed to DOSS before the 4/1 call, they were distributed to DOSS before the notes were finalized; therefore, they are included here rather than as a separate addendum. The graphs are provided by DWR for Chinook salmon and steelhead observed at monitoring locations in the Sacramento and San Joaquin rivers and Delta. The complete set of graphs is posted on the DWR website: <http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

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



DWR-DES 1 APRIL 2014

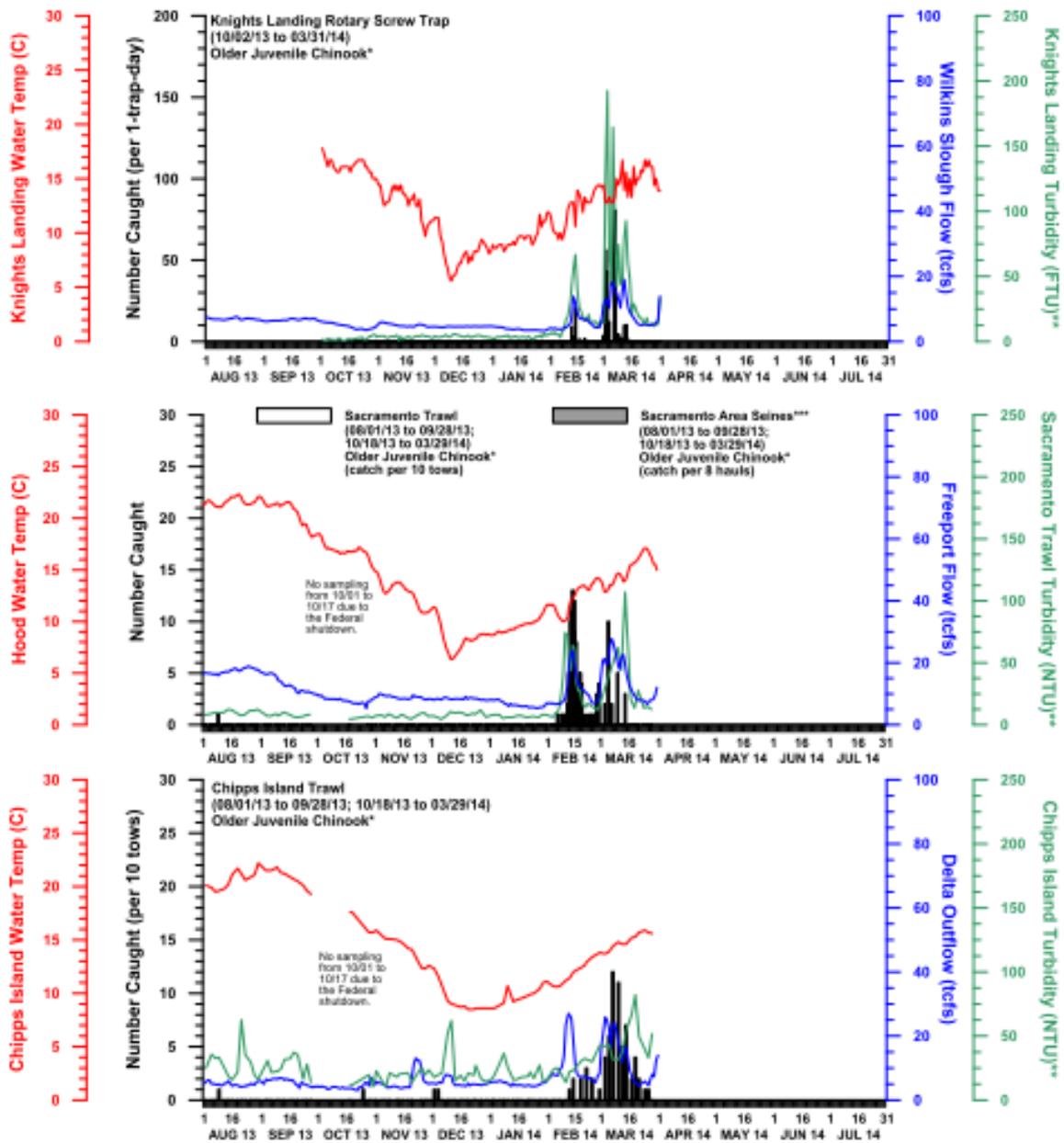
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

\*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 unless data are missing for more than five days.

\*\*\*No catch data at GCID from 2/28 to 3/14 since trap cone was raised due to high flow and debris.

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



DWR-DES 1 APRIL 2014

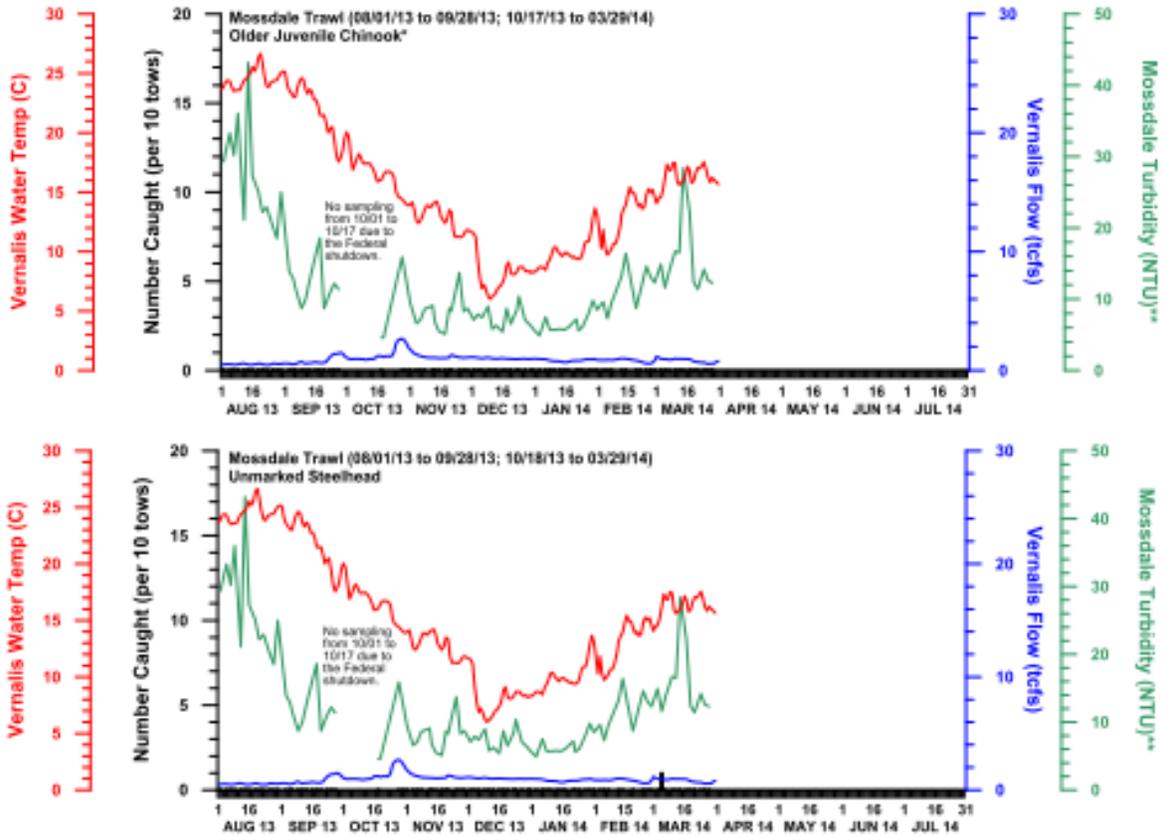
Preliminary data from DFW, FWS, and CDEC; subject to revision.

\*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 unless data are missing for more than five days. 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



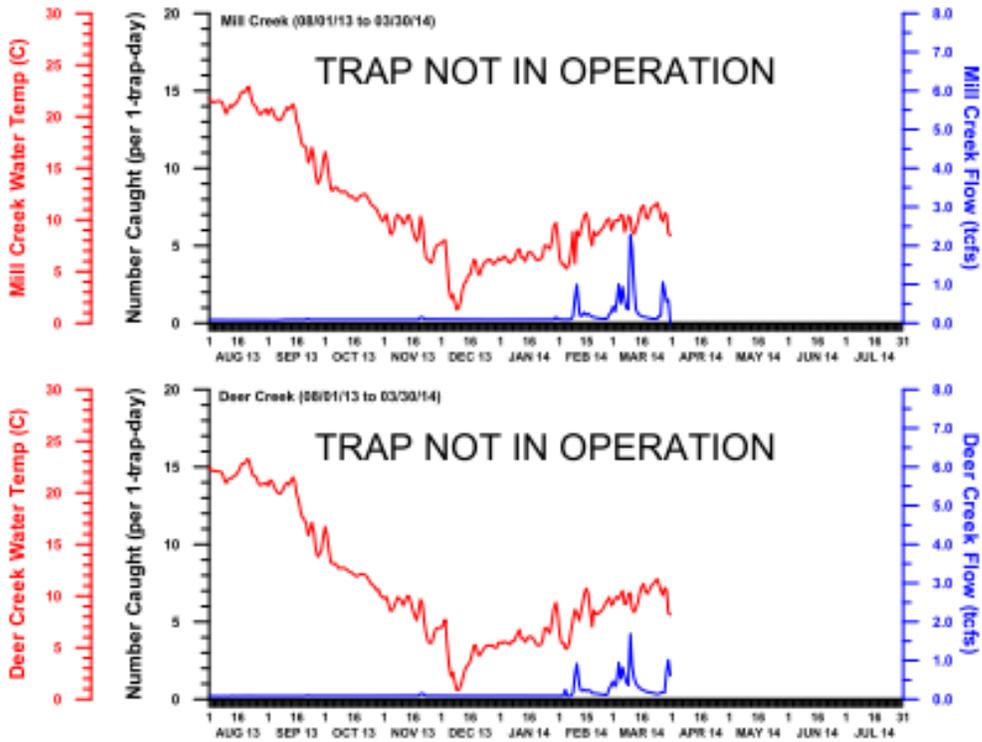
DWR-DES 1 APRIL 2014

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 unless data are missing for more than five days.

## WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



DWR-DES 1 APRIL 2014  
Preliminary data from CDEC; subject to revision.