

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**4/8/14**

**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:** James Gleim, Mike Ford, Farida Islam, Rhiannon Mulligan, Aaron Miller  
**FWS:** Leigh Bartoo, Roger Guinee, Craig Anderson  
**NMFS:** Barbara Rocco, Barb Byrne  
**Reclamation:** Josh Israel, Russ Yaworsky  
**DFW:** Colin Purdy, Bob Fujimura, Chris McKibbin, Krystal Acierto  
**SWRCB, EPA, 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 <sup>1</sup>	Mossdale Kodiak Trawl <sup>2</sup>	GCID <sup>3</sup>	Knights Landing RST	Tisdale RST	Beach Seines	Jersey Point
<b>Sample Date</b>	4/2, 4	4/2, 4	4/1-5	4/4-7	4/1-6	4/1-7	4/1-4	4/1-5
<b>Total Catch</b>	<b>381</b>	<b>238</b>	<b>6</b>	<b>1,297</b>	<b>1,043</b>	<b>651</b>	<b>274</b>	<b>141</b>
<b>FR</b>	37	136		774	854	603	236	9
<b>WR</b>	3	3		3	1	1		
<b>SR</b>	259	97		520	180	43	29	19
<b>LFR</b>						4	1	
<b>Ad-Clipped Chinook</b>	73 (1 ACT & 72 AC)		5	42			2	1
<b>DS</b>	2 (69 & 84 mm)	2 (64 & 69 mm)					6 (66-81 mm)	111 (55-76 mm)
<b>Splittail</b>	2 (222 & 288 mm)							1 (288 mm)
<b>Longfin</b>	2 (73 & 76							

	mm)							
	2		1 (not AC but sutures visible; no FL taken)		3			
<b>SH (ad-clip)</b>								
<b>SH (wild)</b>	1				5			
<b>W. Temp. (avg. °F)</b>	58.8	54.3		62.8	55.3	54.8	56.3	59.0
<b>Flows (avg. cfs)</b>					10,362	94137		
<b>Turbidity (avg. NTU)</b>	45.7	45.8		13.0	40.1	29.5	27.7	22.1
<b>WR/LFR Avg. CPUE</b>				14.1	0.008	0.015		
<b>FR/SR Avg. CPUE</b>					8.51	2.61		

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

<sup>1</sup>Sacramento Trawls changed gear type from a Kodiak trawl arrangement to a midwater trawl arrangement on 4/3.

<sup>2</sup>Mossdale Trawls to be conducted by CDFW between 4/1 and 6/30.

<sup>3</sup>The trap cone was raised at 08:00 on 3/30 because of high flows and heavy debris and resumed on 4/4.

**Sacramento Trawls Changes in Gear or Procedures that Affected the Data over Time:** As noted in footnote 1 of the fish monitoring table above, the Sacramento Trawls changed gear type from a Kodiak trawl arrangement to a midwater trawl arrangement on 4/3. According to the Delta Juvenile Fish Monitoring Program metadata document (p. 19; document available from: <http://www.fws.gov/stockton/jfmp/>): “Boat trawls conducted at Sherwood Harbor change from a Kodiak trawl, which uses two boats and a larger net (12.5 m<sup>2</sup> face area) to a midwater trawl, which uses one boat and a smaller net (5.1 m<sup>2</sup> face area) usually from 4/1 to 9/30 in accordance with historical sampling methods and to reduce operating costs. The Kodiak trawl is more efficient in capturing the larger and less-abundant salmon races and is used from 10/1 through 3/31. During high water or high debris events, the midwater trawl is used during these months instead of the Kodiak trawl for fish health and safety reasons.”

**Lower American River at Watt Ave (4/1 and 4/2):** There were 1,730 Chinook (1,657 fall run [1,618 live; 39 dead], 73 spring run [70 live; 3 dead]), and 10 wild and 4 marked steelhead caught in the rotary screw trap at Watt Ave.

**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 3/31 through 4/6. The salvage of wild steelhead and non-clipped juvenile Chinook salmon increased at TFCF last week concurrent with increased exports. Juvenile Chinook salmon were mostly in the spring- or winter-run size range. No sturgeon have been salvaged this season.

Wild steelhead were salvaged 5 of the 7 days for a total of 36. On non-zero salvage days, loss densities ranged from 0.2 to 1.2 fish/TAF, which did not exceed the first-stage loss criterion of 8 fish/TAF. The season-to-date loss of wild steelhead is 223. From 3/31 to 4/6, there were 44 hatchery steelhead salvaged. Twenty-four non-clipped winter run were salvaged for a daily loss density of from 0.1 to 1.0 fish/TAF, which did not exceed the first-stage loss criterion. There were 122 non-clipped and 4 clipped spring run salvaged. No sturgeon were observed last week. Preliminary results for 4/7 indicate moderate numbers of wild and spring-run-size fish were salvaged at TFCF and a few were salvaged at SFCF.

It was noted that on 4/6 at the Tracy Fish Collection Facility, one fish salvaged was identified as a Chinook but was actually a steelhead. The operators did not notice the sutures; the fish was ad-clipped and was sacrificed instead of being released. Israel (Reclamation) is hoping to get the tag back because the steelhead is almost certainly one of the fish released for the 6-year steelhead survival study. The operators have been instructed to release these fish.

Although there has been an increase in Chinook salvage, the loss densities (in fish/TAF) have not increased, indicating that salvage has increased proportionally with exports. DOSS does not believe the Chinook observed recently are (yet) the unmarked component of the 4/4/14 fall-run production release.

TFCF maintenance. Some of the Hydrolox contract work scheduled for April will be postponed until May or June; therefore, the Jones Pumping Plant will not be shut down on 4/14 and the secondary channel will remain functional. Once a firm date has been scheduled for this work, more information will be distributed. Outage for Banks Pumping Plant will also be delayed.

**DOSS Weekly Salvage Update**  
**Reporting Period: March 31-April 6, 2014**  
 Prepared by Bob Fujimura on April 7, 2014 2100  
 Preliminary Results - Subject to Revision

Criteria	31-Mar	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0.13	0.23	0.97	0	0	↗	0.19
Wild steelhead	1.16	0	0.27	0	0.23	0.48	0.91	↘	0.44
<b>Exports</b>									
SWP daily export	744	2,179	1,841	2,699	3,638	2,928	3,183	↗	2,459
CVP daily export	1,595	5,447	8,341	8,412	8,367	8,328	8,362	↗	6,979

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	24	16	↗	181	330
Spring Run	122	70	↗	189	146
Late Fall Run	0	0	→	0	0
Fall Run	0	0	↘	24	25
Unclassified	0	0	→	0	0
<b>Total</b>	<b>146</b>	<b>86</b>		<b>394</b>	<b>501</b>
<b>Hatchery</b>					
Winter Run	0	0	→	6	12
Spring Run	4	2	↗	4	2
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>2</b>		<b>10</b>	<b>14</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	36	24	↗	130	223
Hatchery	44	66	↗	184	271
<b>Total</b>	<b>80</b>	<b>90</b>		<b>314</b>	<b>494</b>

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

Generated by Bob Fujimura on April 7, 2014



Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during February 23 through April 6, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

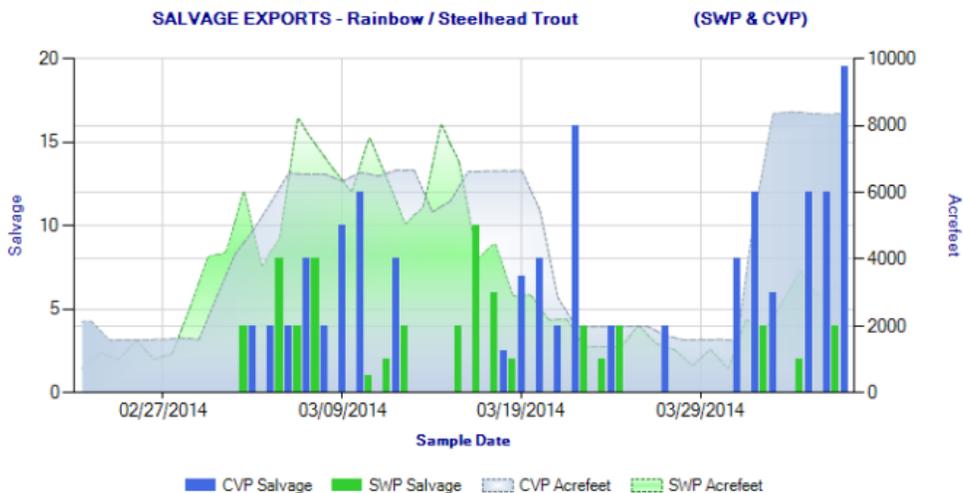


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during February 23 through April 6, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

**Fish Distribution:** Based on the information provided in the monitoring reports, DOSS agreed that the yearling spring-run estimates have not changed over the last week, but updated the estimated distribution of young-of-year (YOY) winter run and YOY spring run. Temperatures at Chipps Island have decreased, which might spur outmigration; the release of millions of hatchery fall run in Battle Creek, a tributary of the Sacramento River, might cause a “Pied Piper” effect

and YOY spring run might move out with the hatchery fish. It was also noted that many of the spring-run-sized fish captured in the beach seines were captured in the “Central Delta” seining locations between the Delta Cross Channel and Antioch.

	Yet to Enter Delta	In the Delta	Exited the Delta Past Chipps Island
<i>Young-of-year (YOY) winter-run Chinook salmon</i>	~5–10% (last week: ~10–15%)	~60–70% (same as last week)	~25–35% (last week: ~20–25%)
<i>Yearling spring-run Chinook salmon</i>	Most yearling spring run have most likely exited the Delta.		
<i>YOY spring-run Chinook salmon</i>	~30–50% (last week: ~40–60%)	~40–60% (last week: ~30–60%)	~5–10% (same as last week*)

\*Although more than 300 spring-run-sized fish were seen in the Chipps Island Trawl, ~100 tagged Chinook (not identified to race by size; coded wire tags will be read) were also caught, which is very close to the 3:1 unmarked:marked ratio of the fall-run production release. Because DOSS believes that most of these Chinook could be from the 2.5 million fall-run Chinook salmon released at Rio Vista on 3/25/14, DOSS did not increase its estimate of YOY spring run having exited the Delta.

**Planned Production Releases:** CDFW reported that the “barge study” releases of 100% marked fall-run Chinook from the Feather River Hatchery are being done today as follows: 100,000 fish will be released at Rio Vista, 100,000 fish will be released at the Golden Gate Bridge, and 100,000 fish will be barged from Rio Vista to the Golden Gate Bridge. Survival of these release groups will be compared. This study has been conducted in previous years at a location more upstream of Sacramento, but the low flows this year prevented the barge from being able to reach that location.

**Operations (4/8/14)**

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	700	Jones Pumping Plant	4,200
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	800	American - Nimbus	500
		Sacramento - Keswick	3,250
		Stanislaus - Goodwin	400 (will increase on 4/8 to 600 for Vernalis EC requirements)
<b>Reservoir Storage (in TAF, % of capacity)</b>			
San Luis (SWP)	395	San Luis (CVP)	517
Oroville	1,781	Shasta	2,313
New Melones		Folsom	474
<b>Delta Operations</b>			
DCC	Closed (expected to remain closed through end of April)	Sacramento River at Freeport (cfs)	12,083

Outflow Index (cfs)	6,500	San Joaquin River (cfs) at Vernalis	816 (will increase as Goodwin releases increase)
Total Delta Inflow (cfs)	~13,608	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs index method)	-5,000
X2 (km)	74 (Chipps)	OMR 14-day avg (cfs, index method)	-3,200
E/I (%)	33.9 (3-d avg)		

**Controlling Operations:** Export operations are transitioning from being controlled by OMR to being controlled by E/I on the 3-day inflow average. There most likely will be 2 days of E/I controlling, and then the controlling factor will most likely go back to OMR on 4/10. The operators are currently meeting the Chipps Island salinity requirement and have met 7 “Chipps days” so far in April. The total number of Chipps days required for April (without any modification to D-1641) is 25 days; we’re at the end of the neap tide period now so the difference between the high and low tides are the least at this point.

**OMR Reporting:** NMFS’ letter approving the OMR Index Demonstration Project required 5- and 14-day running averages of the OMR index values and OMR gage data to be reported weekly to DOSS. DOSS briefly discussed what types of reporting/comparisons would be useful. NMFS suggested that a comparison of the past 7–10 days of index vs. gage data on the daily, 5-day, and 14-day averaging periods would be useful, even if some of the most recent days might not yet have gage data available. NMFS also suggested that the “mismatch” of the OMR index vs. gage data could be summarized as an average and maximum deviation over the past week for which data are available.

**Pulse Flows on San Joaquin River:** The actions relating to the San Joaquin River pulse flows will be included in the Drought Operations Plan expected to be finalized today. The Stanislaus Operations Group might be consulted on the specifics later today.

**DCC:** There is currently no need for opening the DCC gates. The gates are likely to remain closed for another 2 weeks.

**Drought Planning Update:** NMFS has not yet received the official final drought operations plan. The expectation is that the final plan and the agency responses will be out by close of business today or early tomorrow. One element of the proposed plan is to shift exports to the CVP export facility to avoid higher mortality at Clifton Court Forebay. The NMFS response letter will be posted to the water operations page ([http://www.westcoast.fisheries.noaa.gov/central\\_valley/water\\_operations/](http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/)). The plan will be discussed on next week’s DOSS call.

**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): 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 4/7. Given projected OMR flows for this week, SWG did not find it necessary to be more restrictive for the protection of delta smelt. Current exports were also sufficient to protect longfin smelt from entrainment. Previous SWG 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).

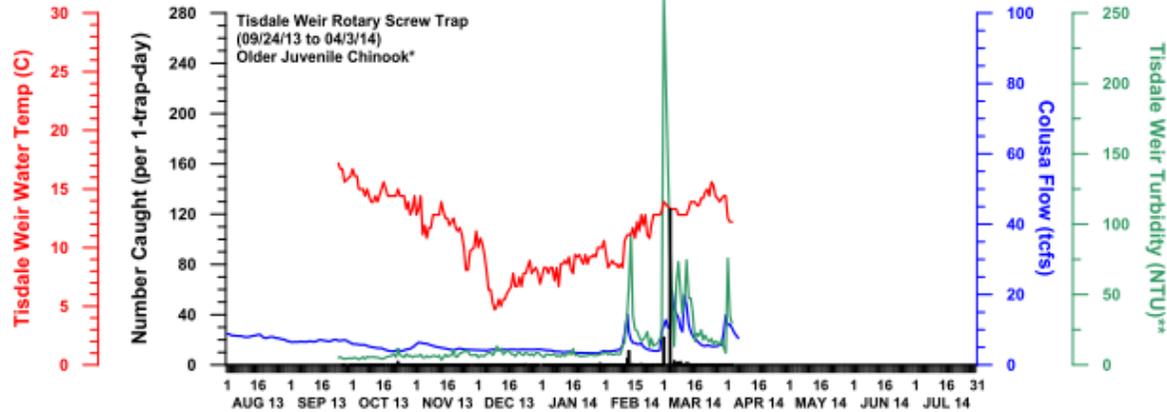
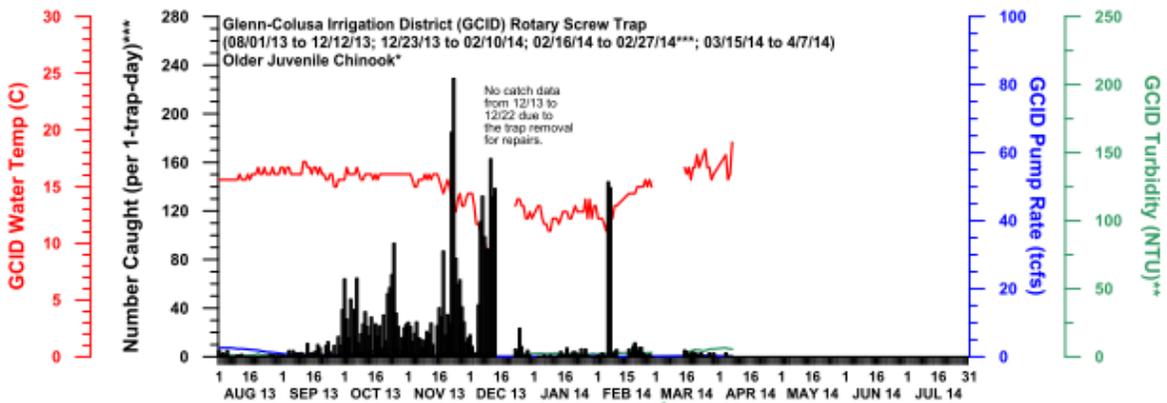
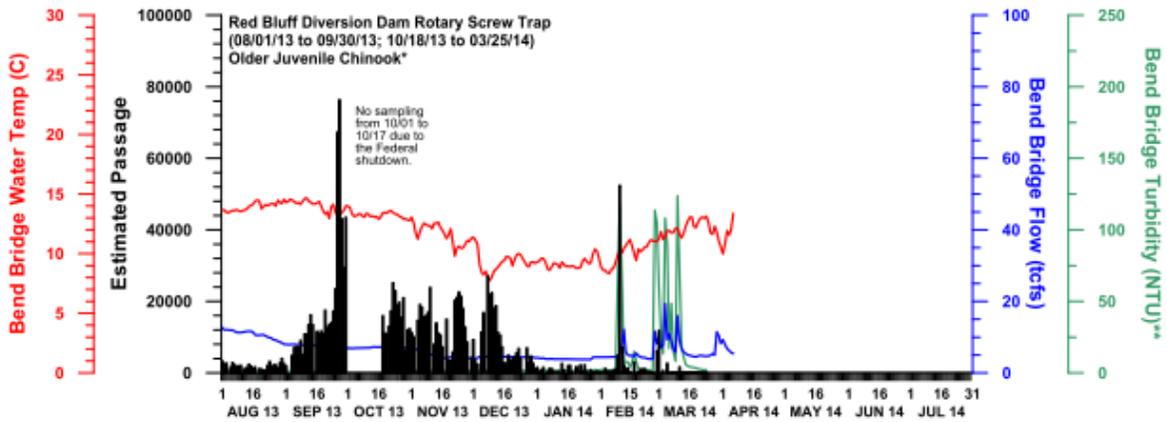
**Winter-Run Chinook Life Cycle:** There will be a webinar presentation in the Stanford Room at the Federal Building on 4/15 from 11:00 a.m. to 1:15 p.m. More information will be provided to the group within the next week.

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

**Next Meeting:** The next scheduled conference call will be on 4/15 at 9:00 a.m.

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 7 APRIL 2014

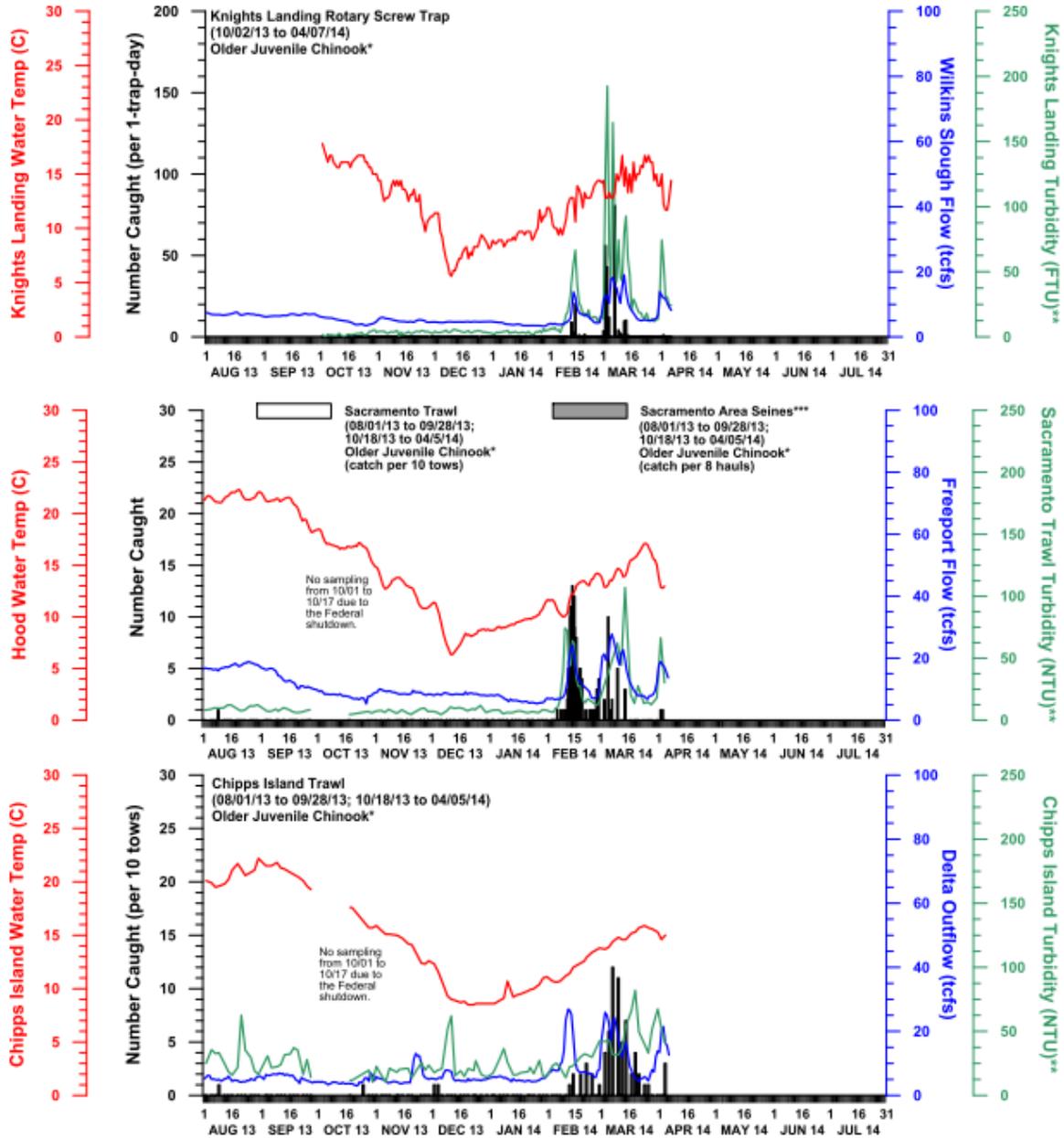
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

\*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 7 APRIL 2014

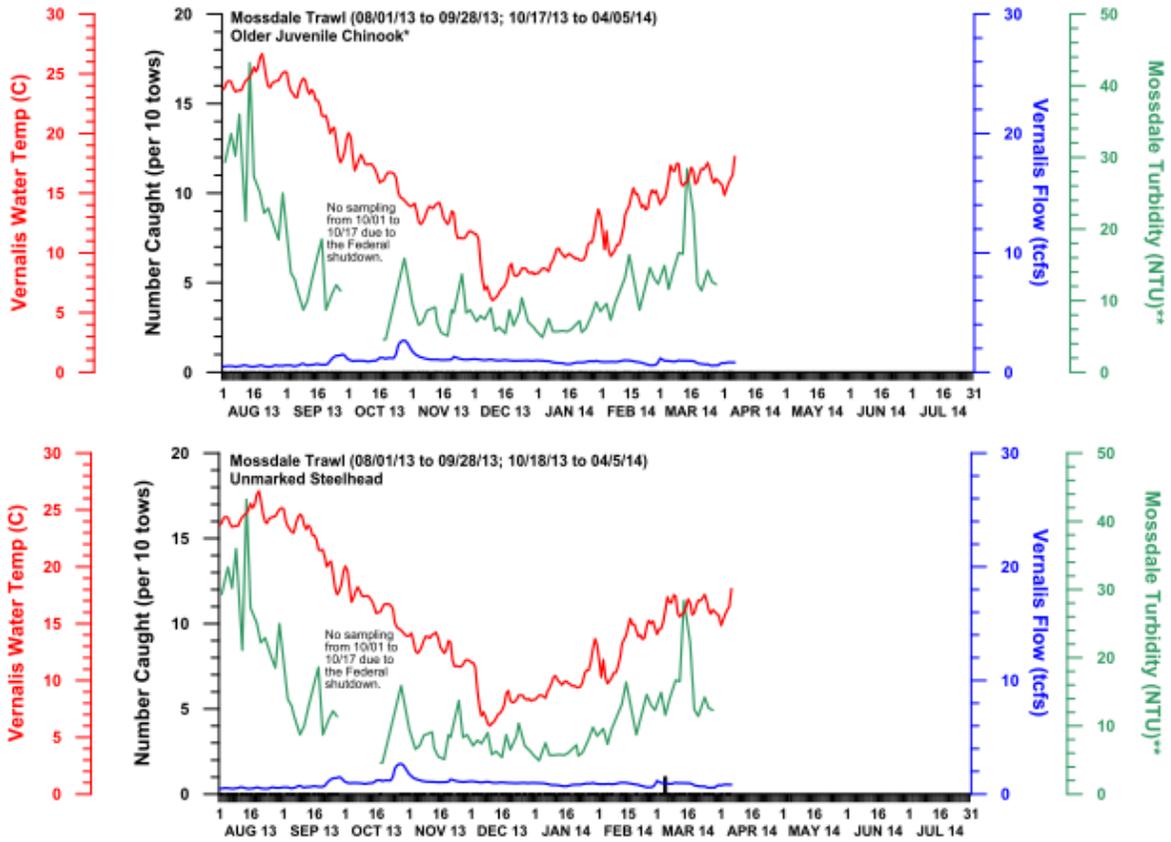
Preliminary data from DFW, FWS, and CDEC; subject to revision.

\*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



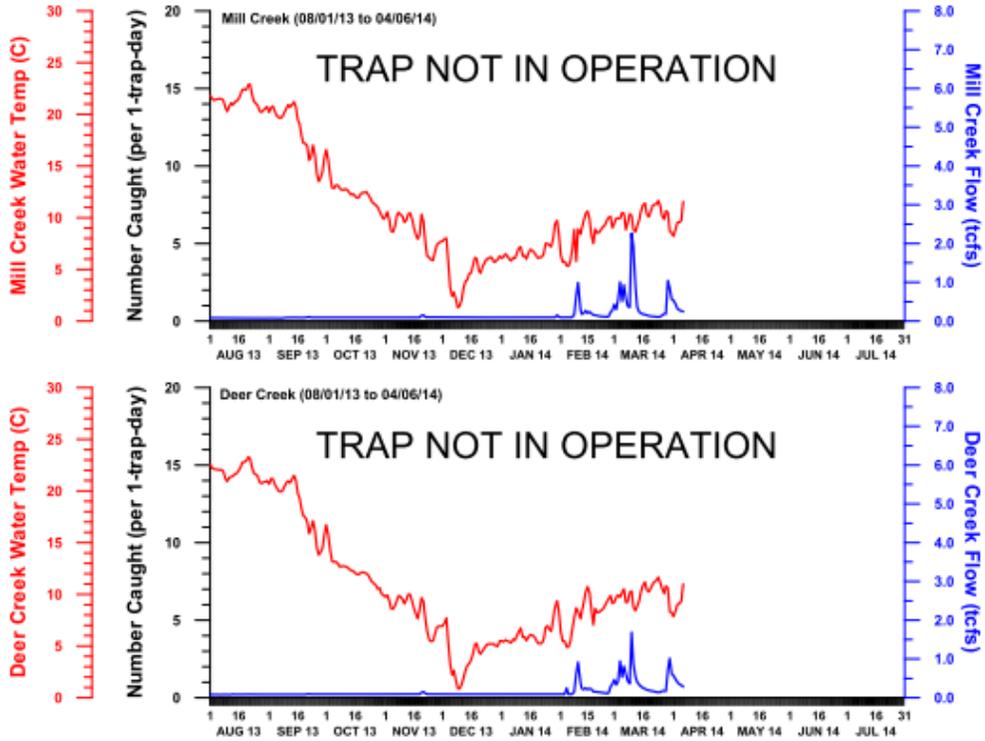
DWR-DES 7 APRIL 2014

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.

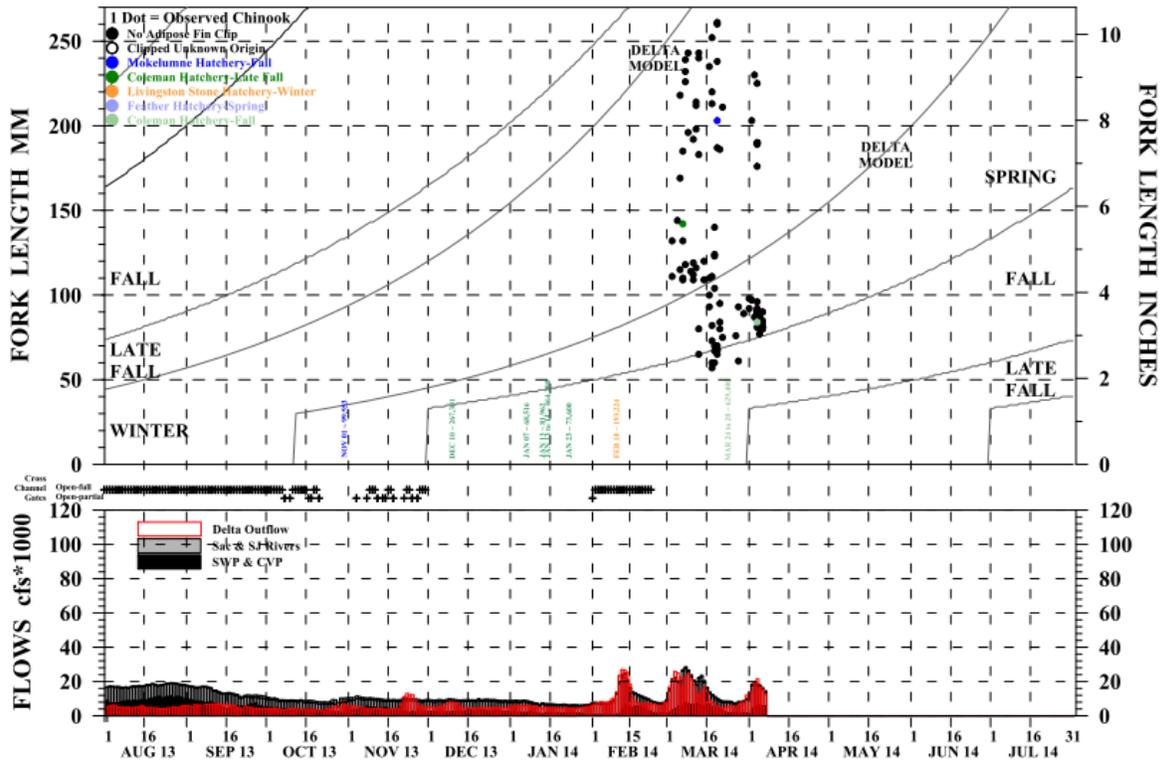
\*\*Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured unless data are missing for more than five days.

# WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



DWR-DES 7 APRIL 2014  
Preliminary data from CDEC; subject to revision.

# OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2013 THROUGH 04/06/2014



DWR-DES 7 APRIL 2014  
 Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.  
 \*Chinook outside of the length-at-date criteria (Delta model) are not reported.