

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**5/20/14**

**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:** Farida Islam, Aaron Miller, Rhiannon Mulligan, Kevin Reece, Dan Yamanaka, Mike Ford  
**FWS:** Craig Anderson, Roger Guinee  
**NMFS:** Barbara Rocco, Barb Byrne, Jeff Stuart  
**Reclamation:** David van Rijn, Josh Israel, Michelle Palmer  
**DFW:** Bob Fujimura, Krystal Acierito, Colin Purdy, Chris McKibbin  
**SWRCB, EPA, USGS:** not present

**Agenda**

1. Agenda review and introductions
2. Fish Monitoring
3. Current Ops
4. SWG
5. RPA Implementation review and 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>	5/15	5/13, 16	5/13, 15, 16, 17	n/a	5/13–18	5/14–19	5/13–15	n/a
<b>Total Catch</b>	<b>11</b>	<b>24</b>	<b>110</b>		<b>5</b>	<b>9</b>	<b>47</b>	
<b>FR</b>	8	22	107		5	7	19	
<b>WR</b>								
<b>SR</b>		2						
<b>LFR</b>							1	
<b>Ad-Clipped Chinook</b>	2		3 (sutures)					
<b>DS</b>								
<b>Splittail</b>							28	
<b>Longfin</b>	1 (78 mm)							
<b>SH (ad-clip)</b>								
<b>SH (wild)</b>						1		

<b>W. Temp. (avg. °F)</b>	66.7	69.8			70.0	68.0	68.5	
<b>Flows (avg. cfs)</b>					3,265	4,432		
<b>Turbidity (avg. NTU)</b>	42.6	24.0			3.8	10.1	10.2	
<b>WR/LFR Avg. CPUE</b>						0.003		
<b>FR/SR Avg. CPUE</b>					0.017	0.026		

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>5/20/2014: No data has been received since 5/8/14 as the traps were pulled due to damage in the panels. As of 5/20 at 9:00 a.m., the traps were lowered and sampling will continue.

**Mossdale:** There were three sutured Chinook captured at Mossdale this past week. These could have been from the recent FWS Chinook releases at Durham Ferry that ended 5/17. Byrne will check with Pat Brandes (FWS) on the various Chinook release dates and numbers.

**Nimbus:** The Nimbus Fish Hatchery has released/will release 50,000 young-of-year double-tagged (with both adipose and ventral fin clips) steelhead on 5/9–10, 5/24–25, and 6/10–6/11. A small-scale mark-and-recapture study has been conducted at the Watt Avenue rotary screw trap (RST) location in which approximately 1,000 steelhead were marked and released at different locations upstream. From the first release of 50,000, only one showed up at the RST; monitoring is being conducted to try to determine where the released fish are going because it was expected that a greater fraction of the released fish would show up in the RST catch.

As part of the discussion on American River monitoring, a comment was made that it would be useful to coordinate with the field crews running the Sacramento trawls or beach seines to track uniquely marked American River fish (*e.g.*, the recent hatchery releases) beyond the RSTs on the American River to determine whether and when fish move out of the system. This coordination is believed to not yet have happened.

**Red Bluff Diversion Dam:** The next biweekly report is expected this week; Byrne (NMFS) will distribute the report to DOSS.

**Sampling Protocols:** Current protocols dictate that fish handling cease when water temperatures reach 72°F and that RST operation stops completely when temperatures are consistently ≥74°F over several days. This normally happens in late June or early July; however, water temperatures are a bit higher earlier this year because of drought conditions and low flows.

**Fish Salvage<sup>1</sup>:** DFW provided an update on fish salvage at CVP’s Tracy Fish Collection Facility (TFCF) and SWP’s Skinner Fish Collection Facility (SFCF) from 5/12 through 5/18. Salvage of fall-run-sized non-clipped juvenile Chinook (28) increased slightly compared to that of the previous week. The number of spring-run-sized non-clipped juvenile Chinook (0) decreased compared to that of the previous week. No ad-clipped Chinook were salvaged. No steelhead were salvaged during the reporting period; the season total loss of salvaged wild steelhead is still 261. No sturgeon have been observed this season.

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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.

Preliminary salvage results from 5/18 indicate that no salmonids or sturgeon were salvaged.

On 5/12, a TFCF operator lost a larval fish sample and a Chinook juvenile before taking a fish-length measurement. SWP did not operate Banks pumping plant from 5/13 through 5/15, although Clifton Court Forebay took in ~200 cfs/day during that period. CVP will undergo an outage from approximately 6/8 through 6/28 for installation of traveling screens in the secondary channel.

Monday, 5/26, is a state and federal holiday; therefore, there will most likely not be any salvage data or DAT graphs available before DOSS' 5/27 meeting.

**DOSS Weekly Salvage Update**  
**Reporting Period: May 12-18, 2014**  
 Prepared by Bob Fujimura on May 19, 2014 2000  
 Preliminary Results - Subject to Revision

Criteria	5-May	6-May	7-May	8-May	9-May	10-May	11-May	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	0	0	0	0	0	0	↘	0.00
<b>Exports</b>									
SWP daily export	241	0	0	0	646	455	523	↘	266
CVP daily export	1,981	1,980	1,984	1,987	1,989	1,725	1,612	↘	1,894

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

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
<b>Wild</b>					
Winter Run	0	0	→	192	338
Spring Run	0	0	↘	484	346
Late Fall Run	0	0	↘	0	0
Fall Run	28	23	↘	540	398
Unclassified	4	NC	↘	4	NC
<b>Total</b>	<b>32</b>	<b>23</b>		<b>1,219</b>	<b>1,082</b>
<b>Hatchery</b>					
Winter Run	0	0	→	6	12
Spring Run	0	0	→	12	8
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>18</b>	<b>20</b>

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time  
 Highlighted values include the latest interpretation of a NMFS/USBR interim procedure to estimate loss due to secondary channel construction outage.  
 NC = can not be calculated

**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	0	0	↘	185	281
Hatchery	0	0	→	226	311
<b>Total</b>	<b>0</b>	<b>0</b>		<b>411</b>	<b>572</b>

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

Generated by Bob Fujimura on May 19, 2014



Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during March 30 through May 18, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

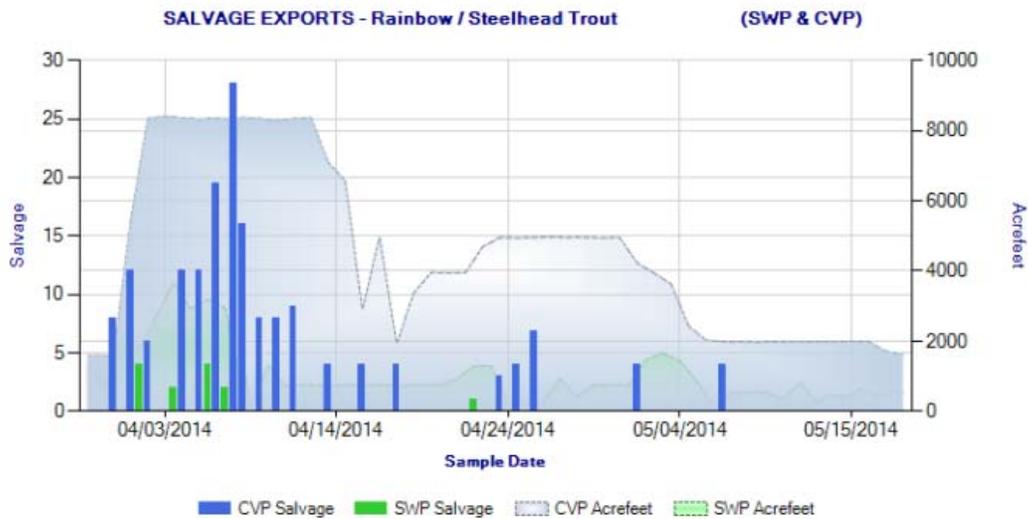


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during March 30 through May 18, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

**Coded Wire Tags (CWTs):** The following table presents the CWT releases and losses from 10/1/13 through 5/18/14.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2013/2014

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released <sup>1</sup>	Total Entering Delta	% Loss of Number Released <sup>2</sup>	% Loss of Total Entering Delta <sup>3</sup>	First Concern Level	Second Concern Level	Date of First Loss <sup>4</sup>	Date of Last Loss <sup>4</sup>
11/1/2013	F	Mokelumne River Hatchery	Mokelumne River Hatchery	Production	8.90	99,553	n/a	0.009	n/a	n/a	n/a	3/20/2014	4/11/2014
12/10/2013	LF	Coleman NFH	Battle Creek	Production	0.00	267,301	n/a	0.000	n/a	n/a	n/a	*	*
1/7/2014	LF	Coleman NFH	Battle Creek	Spring Surrogate	0.00	68,516	n/a	0.000	n/a	0.5%	1.0%	*	*
1/13/2014	LF	Coleman NFH	Battle Creek	Spring Surrogate	0.00	81,962	n/a	0.000	n/a	0.5%	1.0%	*	*
1/13 to 1/14/2014	LF	Coleman NFH	Battle Creek	Production	2.88	464,300	n/a	0.001	n/a	n/a	n/a	3/7/2014	3/7/2014
1/23/2014	LF	Coleman NFH	Battle Creek	Spring Surrogate	0.00	73,600	n/a	0.000	n/a	0.5%	1.0%	*	*
2/10/2014	W	Livingston Stone NFH	Caldwell Park	Production	0.00	193,224	30,880	0.000	0.000	0.5%	1.0%	*	*
3/24 to 3/28/2014	F	Coleman NFH	Rio Vista net pens	Production	2.33	629,400	n/a	0.0004	n/a	n/a	n/a	4/4/2014	4/4/2014
2/28/14 to TBA	F	**	Hills Ferry Barrier/Fremont Ford Bridge	Experimental/SJRRP	2.33	**	n/a	**	**	n/a	n/a	4/13/2014	4/13/2014
4/17 to 4/18/14	S	Feather River Hatchery	Hills Ferry Barrier	Production	0	54,000	n/a	0	**	n/a	n/a	*	*

UNCONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2013/2014

Facility	Unknown CWT Loss <sup>5</sup>	Unread CWT Loss <sup>6</sup>	Unknown Hatchery Loss <sup>7</sup>	Acoustic Tag Loss <sup>8</sup>	Number of Unassigned CWTs <sup>9</sup>
SWP	0.00	0.00	0.00	0.00	0
CVP	3.01	0.00	0.00	0.00	0
<b>TOTAL</b>	<b>3.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0</b>

SWP and CVP adipose-fin clipped Chinook lost from 10/1/2013 through 5/18/2014.

<sup>1</sup>Number released with the adipose-fin clipped and a coded-wire tag (CWT).

<sup>2</sup>% Loss of Number Released = (Confirmed Loss/Number Released)\*100.

<sup>3</sup>% Loss of Total Entering Delta = (Confirmed Loss/Total Entering Delta)\*100.

<sup>4</sup>Date of first and last loss accounts for all CWT loss even those from special studies where salvage and loss=0.

<sup>5</sup>Adipose-fin clipped Chinook was observed during fish count, but tag code could not be determined (e.g., damaged tag, lost tag, no tag, or Chinook released).

<sup>6</sup>Adipose-fin clipped Chinook was collected during fish count and has not been processed yet.

<sup>7</sup>CWT has been read, but hatchery release information not yet available.

<sup>8</sup>Adipose-fin clipped Chinook released due to presence of sutures.

<sup>9</sup>CWT cannot currently be assigned to a salvage record with certainty since the CWT was lost and then found. CWT may be assigned to a salvage record if new information is available.

\*\* Information not yet available.

DWR-DES Revised 5/19/2014

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

**Fish Distribution:** With river-water temperature increasing, DOSS expects that juvenile salmonids are being cued to emigrate. Young-of-year (YOY) spring-run Chinook estimates have been conservative (in the upstream direction), but DOSS expects spring-run distribution to shift downstream markedly over the next week—perhaps such that >90% of spring-run YOY will have exited the Delta. In general, we expected more juveniles all winter, but river survival seems to be low this year.

Several DOSS members commented that these estimates of fish distribution are valuable and suggested that they continue with these in the future. Any guidance we can provide based on our estimates this year will be very helpful; we might also ask that other watershed-specific technical teams consider providing estimates of fish movement out of “their” watershed. Anyone with suggestions on how to standardize/improve the structure for presenting these fish distribution estimates should share those ideas with DOSS participants.

There was a proposal to the drought monitoring planning groups who worked on the Drought Operations Plan (DOP) to look at the DOSS information and monitoring information to evaluate hypotheses in the DOP’s biological review on salmonids regarding the potential effects of the drought. Proposers requested that the monitoring planning groups let them know of their decision so that meetings can be scheduled during summer. Participants include members of DOSS. One topic the proposal might address is to review new summaries of information (*i.e.*, distributional) to assess whether this information in its form or another form might be useful for assessing risks to salmonids more quickly. The idea of a DOSS subgroup to review the categories of distributional results was also discussed as another approach for improving the utility of distributional information.

	Yet to Enter Delta	In the Delta	Exited the Delta Past Chipps Island
<i>Young-of-year (YOY) winter-run Chinook salmon</i>	Most YOY winter-run have most likely exited the Delta (last week: same)		
<i>Yearling spring-run Chinook salmon</i>	All yearling spring run have most likely exited the Delta. (last week: most yearling spring run have most likely exited the Delta)		
<i>YOY spring-run Chinook salmon</i>	<1 to 2% (last week: <5%)	<25% (last week: 25–50%)	>75% (last week: >50%*)

\*DOSS believes that many of spring-run-sized Chinook in the monitoring data are from the millions of fall-run hatchery fish in the system. DOSS has kept this in mind when estimating YOY spring-run distribution.

**Fish Releases:** Releases at Durham Ferry of acoustically tagged steelhead from the Mokelumne Hatchery for the 6-year study will begin Wednesday, 5/21, and continue for 3 days. Over the 3-day period, 480 fish will be released: 160/day over six 4-hour releases, resulting in ~23–27 fish per release every 4 hours. If anyone is interested in attending to watch the operations, please notify Josh Israel (Reclamation).

#### Operations (5/20/14)

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	200 (will possibly increase to meet South Bay demands; will evaluate this week)	Jones Pumping Plant	800
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	1,700	American - Nimbus	1,750
		Sacramento - Keswick	7,500 (will increase on 5/22 to 8,000)
		Stanislaus - Goodwin	600 (will decrease to 500 on 5/22)
<b>Reservoir Storage (in TAF, % of capacity)</b>			
San Luis (SWP)	362	San Luis (CVP)	547
Oroville	1,792	Shasta	2,289
New Melones		Folsom	566
<b>Delta Operations</b>			
DCC	Closed	Sacramento River at Freeport (cfs)	5,665
Outflow Index (cfs)	~3,400	San Joaquin River (cfs) at Vernalis	987 (continuing to drop)
Total Delta Inflow (cfs)	~7,213	OMR (daily) (cfs)	-1,600
Water Temperature (°F)		OMR 5-day avg (cfs index method)	
X2 (km)	81	OMR 14-day avg (cfs, index method)	
E/I (%)	11.5 (14-d avg)		

**Factors Controlling Operations:** Jersey Point salinity is ~1.2 mS/cm; however, the salinity could decrease this week with the neap tides. Salinity, more than outflow, is controlling

operations; the I:E ratio is not controlling. It was noted also that the gage at Tracy shows high salinity because very little flows are coming through Old River and there is an accumulation of salts at the gage location from local agricultural practices (*e.g.*, drainage problems). The projects are looking at ways to address this chronic salinity issue. One option is to move the compliance location from the Old River location at Tracy. Salinity at Vernalis, Middle River, and Grant Line are in compliance.

**DCC Gates:** From 5/21 to 6/15, the “DCC gates [are] closed for 14 days during this period, per 2006 WQCP, if NMFS determines it is necessary.” Although usual operations during this period are to open the gates on weekends (convenient for recreational boaters), because of water quality concerns on the mainstem Sacramento River, it is uncertain whether the DCC gates will be opened over the Memorial Day weekend.

**Weather Forecast:** No changes are predicted for the Sacramento Valley. Temperatures will continue to be in the 90s throughout the weekend.

**OMR Index vs USGS Gage Measurements:** A comparison of OMR computations for 5/13 was reported. The 5-day OMR index average was -1,642 cfs; the 14-day OMR index average was -2,077 cfs. The USGS gage 5-day average ending 5/13 was -1,102 cfs; the 14-day average was -1,545 cfs. The OMR index average continues to be ~500 cfs more negative than the USGS average.

**RPA Actions:**

- IV.1.2 (DCC gate operations): DCC gates are closed.
- IV.2.1 I:E ratio: Per the Drought Operations Plan, because we are past the San Joaquin River pulse period, and there is currently no natural or abandoned flow in the Delta, the 1:1 I:E ratio is in effect. This action is not currently controlling exports.
- IV.2.3 (OMR flow management): OMR flow is to 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 5/19. Given the current hydrology and fish distributions, there was no need to change operations to protect delta or longfin smelt. Populations appear to be away from vulnerable areas; there has been no salvage over the past week. 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).

**Drought Workshops:** SWRCB is conducting a public workshop on drought activities today and tomorrow. The agenda item on potential curtailments is scheduled to begin at 9 a.m. on Wednesday, 5/21.

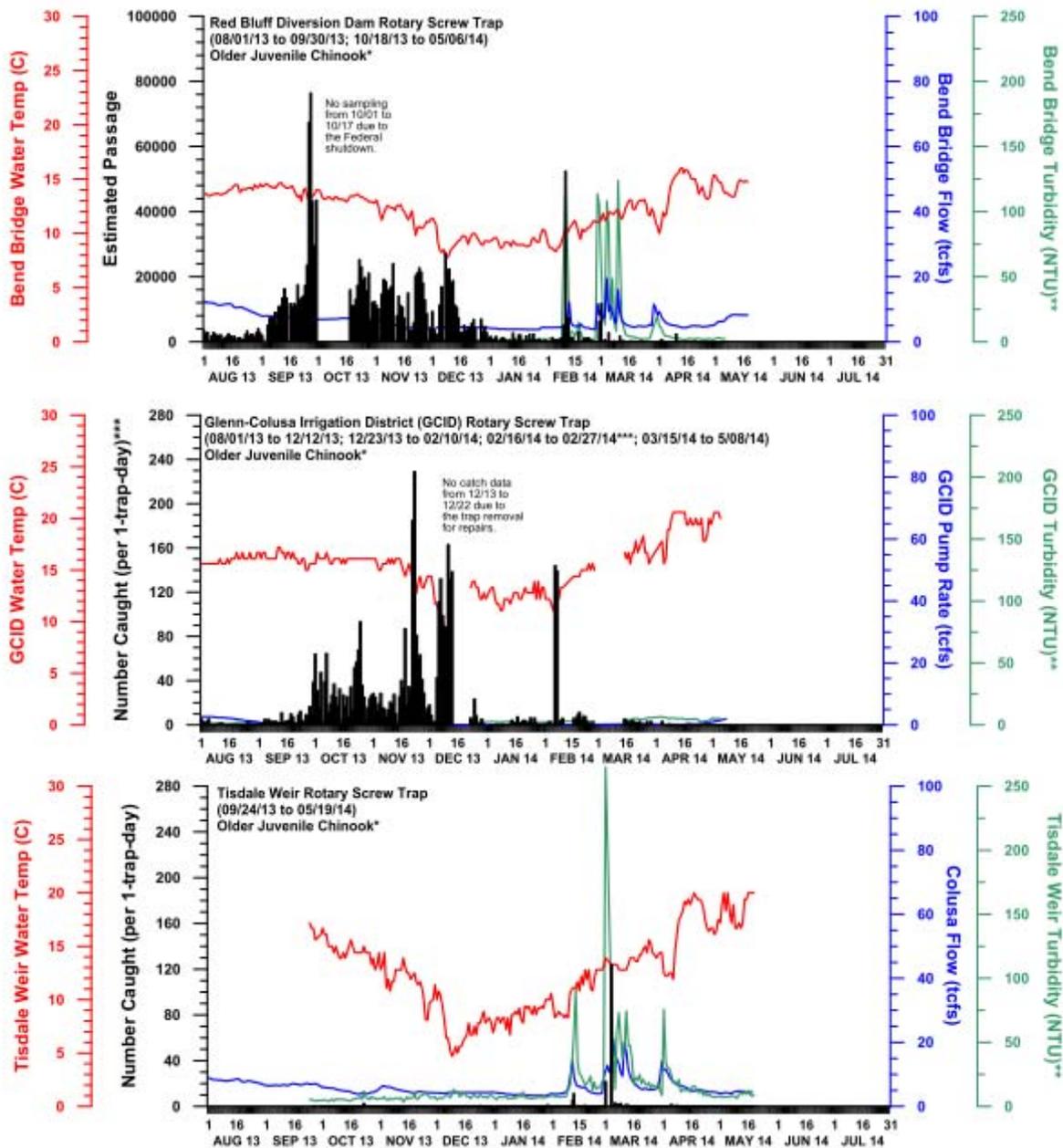
**DOSS Advice to WOMT and NMFS:** None.

**DOSS Schedule:** DOSS suggested conducting its last meeting of the water year on 6/17, after which it will shift to annual report activities, but this will be discussed more in early June. Byrne will send out a Doodle Poll for an end-of-year DOSS lunch (tentative).

**Next Meeting:** The next scheduled conference call will be on 5/27 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: <http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

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



DWR-DES 19 MAY 2014

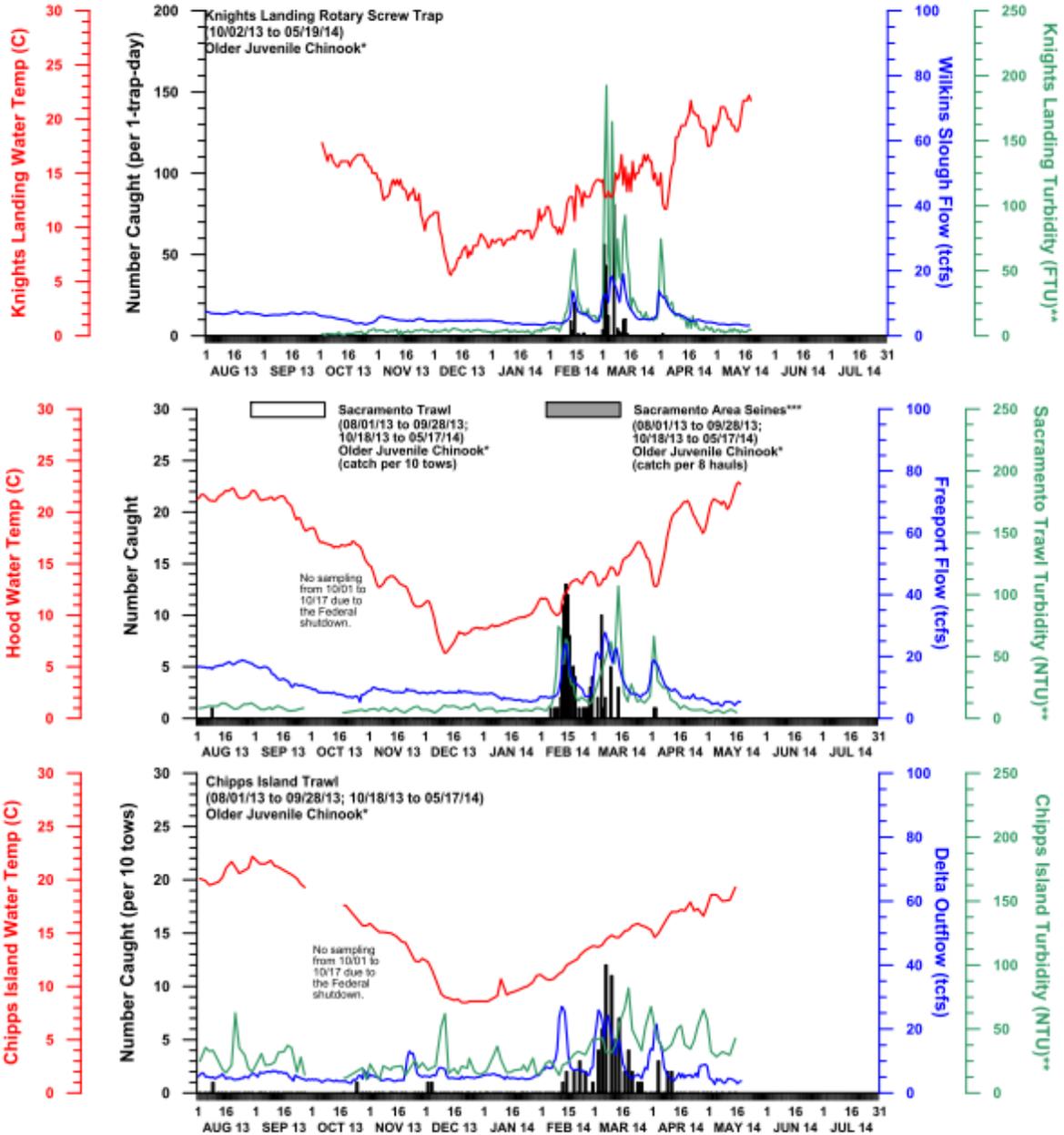
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

\*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 19 MAY 2014

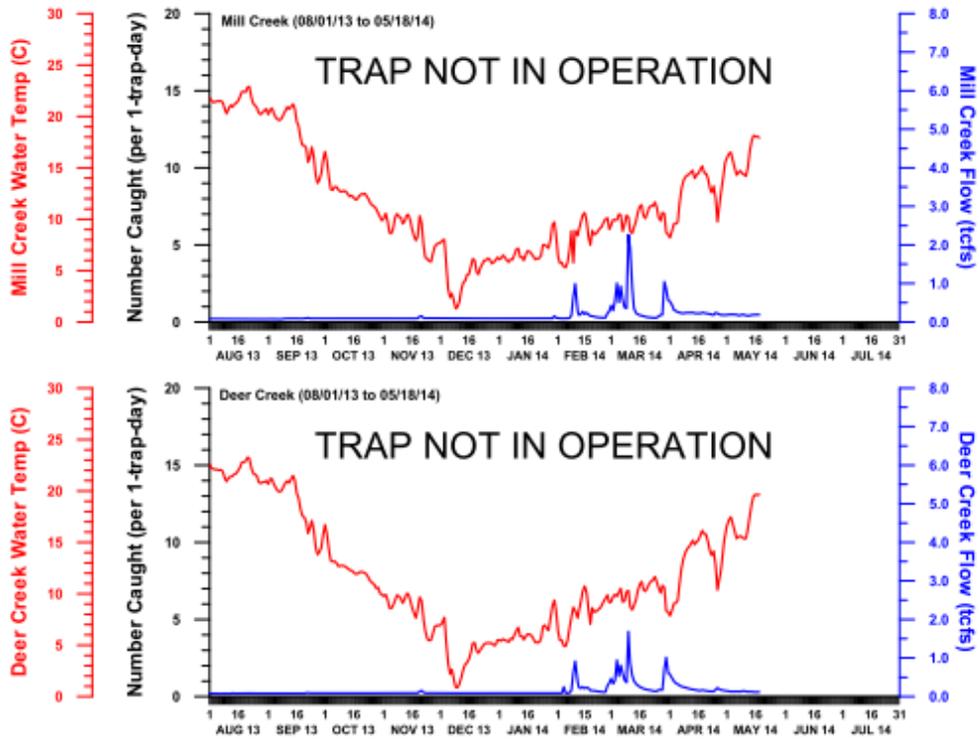
Preliminary data from DFW, FWS, and CDEC; subject to revision.

\*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.

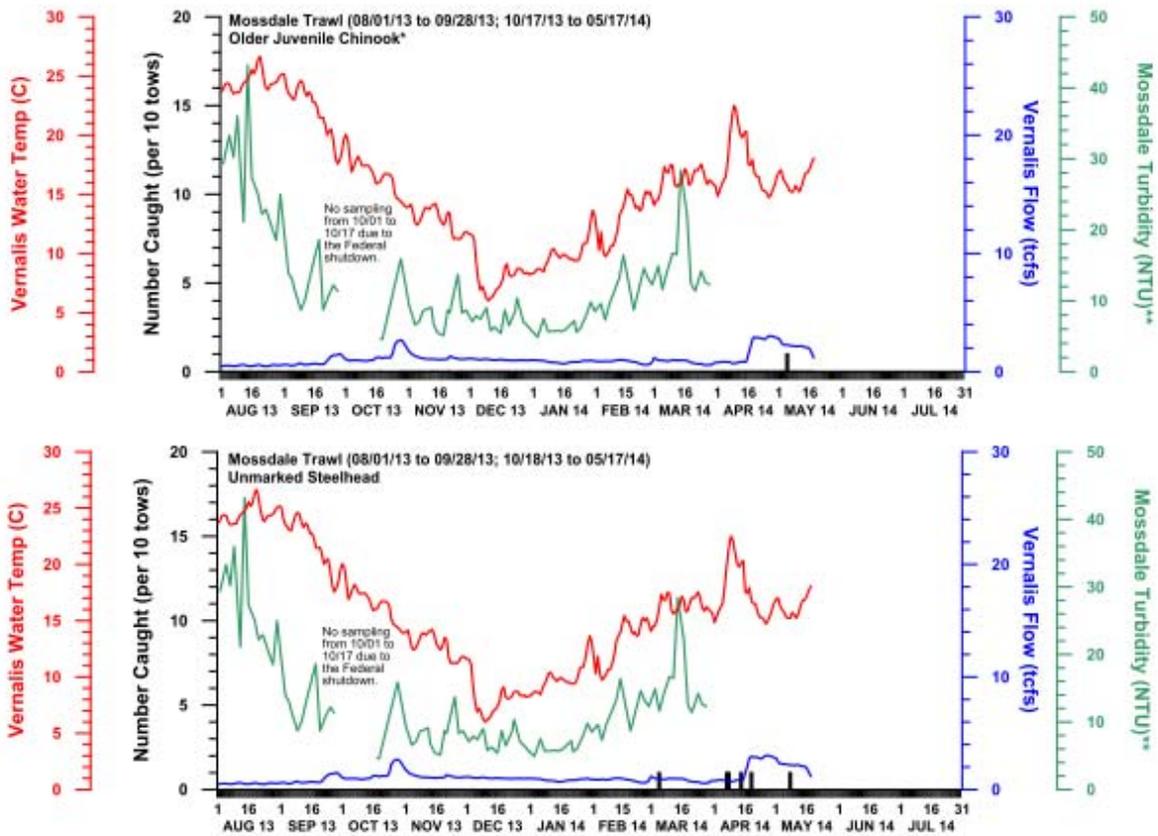
\*\*\*Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

# WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



DWR-DES 19 MAY 2014  
Preliminary data from CDEC; subject to revision.

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



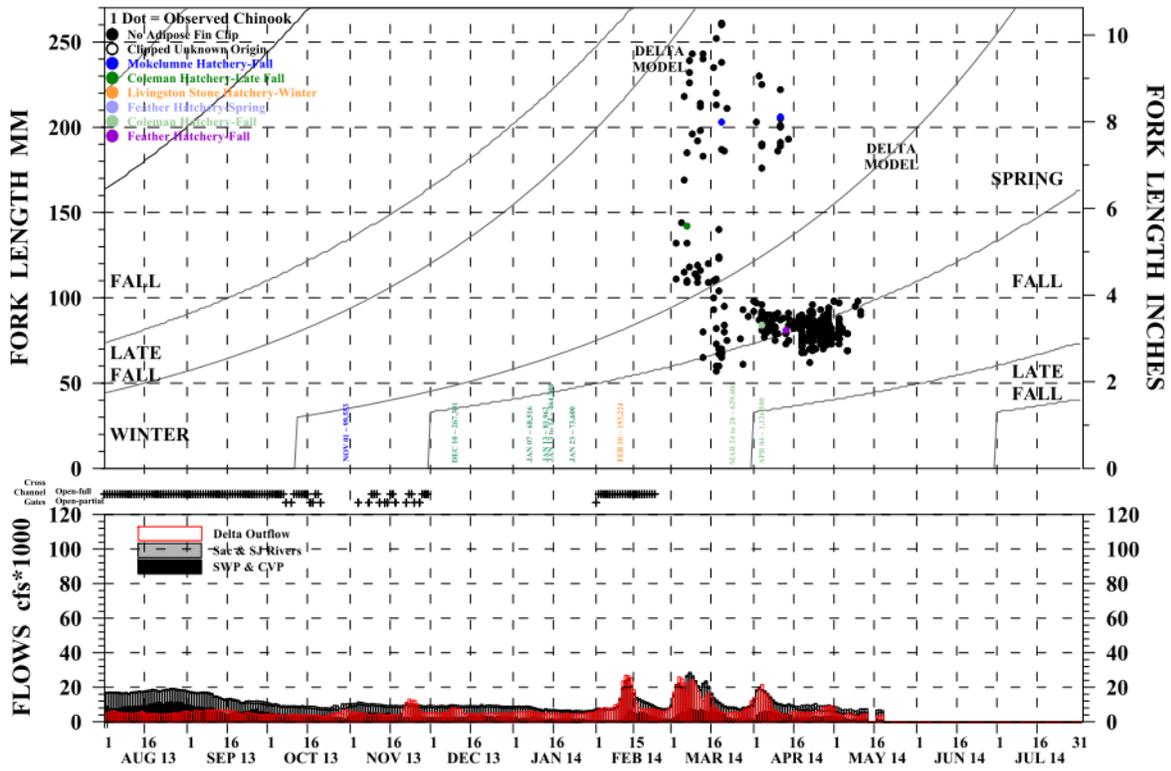
DWR-DES 19 MAY 2014

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.

# OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2013 THROUGH 05/18/2014



DWR-DES 19 MAY 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.