

Delta Operations for Salmonids and Sturgeon (DOSS) Group
6/3/14

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.

Attendees

DWR: Farida Islam, Aaron Miller
FWS: Craig Anderson, Roger Guinee, Leigh Bartoo
NMFS: Barbara Rocco, Barb Byrne
Reclamation: Josh Israel, Michelle Palmer, Russ Yaworsky, Jason Hassrick
DFW: Krystal Acierto, Chris McKibbin
SWRCB: Scott Ligare
EPA: Erin Foresman
USGS: not present

Agenda

1. Agenda Review and Introductions
2. Fish Monitoring
3. Current Ops
4. SWG
5. RPA Implementation Review and DOSS Advice
6. Check-In on the Curtailment Notices

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 ⁴	Sacramento Trawls ¹	Mossdale Kodiak Trawl ²	GCID	Knights Landing RST	Tisdale RST	Beach Seines	Jersey Point
Sample Date	5/27, 29	5/27, 30	5/27-31	5/27-6/2	5/27-6/2	5/27-6/1	5/27-30	N/A
Total Catch	6	1	3	319	2	1	539	
FR	5	1	1 (98 mm)	319	1	1	1	
WR								
SR								
LFR								
Ad-Clipped Chinook	1							
DS								
Splittail							538	

Longfin								
SH (ad-clip)			2 (ad-clipped and sutured)					
SH (wild)					1			
W. Temp. (avg. °F)	68.2	72.5		61.7	71.3	67.5	72.1	
Flows (avg. cfs)					4,463	5,590		
Turbidity (avg. NTU)	36.7	7.5		1.5	6.9	9.1	44.7	
WR/LFR Avg. CPUE				1.92				
FR/SR Avg. CPUE					0.003	0.003		

Glenn-Colusa Irrigation District; RST = rotary screw trap

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

²Mossdale Trawls to be conducted by CDFW between 4/1 and 6/30; beginning 6/3, reducing sampling from 5 days to 3 days through the end of June.

Fish Salvage¹: DFW provided an update on fish salvage at CVP’s Tracy Fish Collection Facility (TFCF) and SWP’s Skinner Fish Collection Facility (SFCF) from 5/26–6/1. No Chinook salmon, steelhead, or sturgeon were salvaged during this period. Preliminary data for 6/2 show that no Chinook, steelhead, or sturgeon were salvaged.

¹Salvage 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.

DOSS Weekly Salvage Update
Reporting Period: May 26-June 2, 2014
Prepared by Bob Fujimura on June 2, 2014 1430
Preliminary Results - Subject to Revision

Criteria	19-May	20-May	21-May	22-May	23-May	24-May	25-May	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	0	0	0	0	0	0	→	0.00
Exports									
SWP daily export	403	217	372	310	248	338	403	↘	327
CVP daily export	1,609	1,607	1,685	1,606	1,606	1,606	1,604	→	1,618

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)
 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 = adipose fin missing;

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild					
Winter Run	0	0	→	192	338
Spring Run	0	0	→	484	346
Late Fall Run	0	0	→	0	0
Fall Run	0	0	↘	544	401
Unclassified	0	0	→	4	NC
Total	0	0		1,223	1,085
Hatchery					
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
Total	0	0		18	20

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	261
Hatchery	0	0	→	226	311
Total	0	0		411	572

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

Generated by Bob Fujimura on June 2, 2014

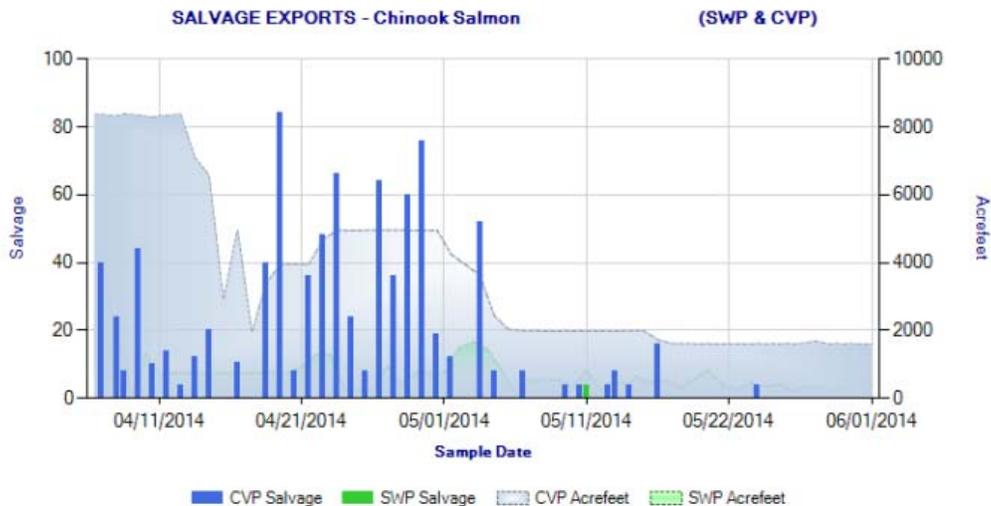


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during April 6 through June 1, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

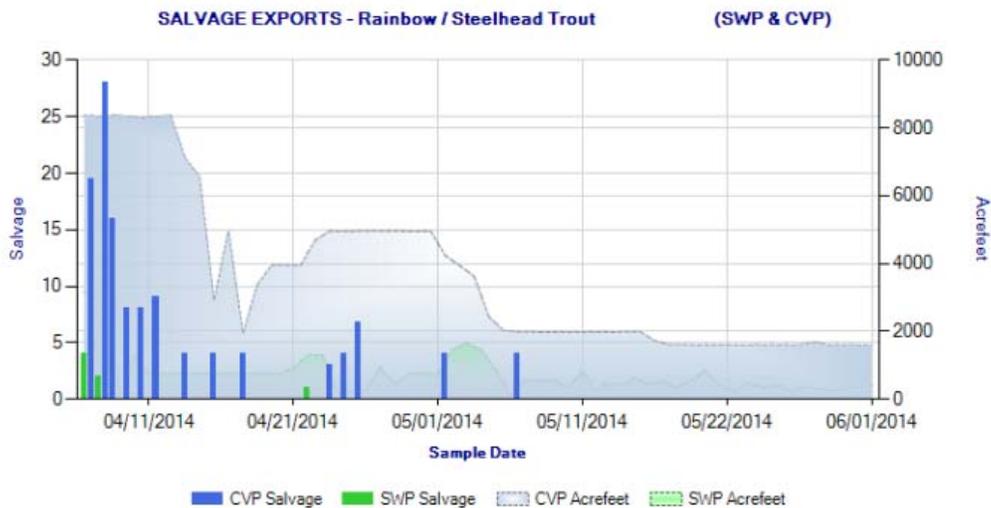


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during April 6 through June 2, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

Fish Distribution: Last week DOSS didn't update the YOY spring-run Chinook salmon estimate because Delta monitoring data were not yet available because of the Memorial Day holiday. This week, DOSS noted that neither the Chipps Island nor Sacramento trawls captured any spring-run-sized Chinook this past week. Spring-run Chinook are expected to move out of the Delta under current temperature conditions.

	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: same)		
<i>YOY spring-run Chinook salmon</i>	~0 (2 weeks ago: <1 to 2%)	<5% (2 weeks ago: <25%)	>95% (2 weeks ago: >75%*)

*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.

Recent Release Information: In previous meetings, DOSS discussed the capture of some sutured fish in the trawling at Mossdale. As a followup, Byrne (NMFS) checked with Pat Brandes (FWS) for the schedule of all water-year 2014 releases of Chinook or steelhead at Durham Ferry and provided DOSS with the following release information (number in parentheses indicate the number of fish released in that period):

Steelhead

- 3/25–29 (477)
- 4/24–27 (480)
- 5/21–24 (478)

Fall-run Chinook

- 4/16–20 (648)
- 4/30–5/4 (648)
- 5/15–19 (648)

6-Year Steelhead Study: Israel (Reclamation) plans to circulate a draft study plan for the water year 2015 implementation of the 6-year steelhead study to DOSS participants in October. DOSS input is valuable; therefore, if anyone has ideas about what he or she would like to see as part of the study for the next 2 years (the last of the study period), please contact Israel. The decisions are currently made by only a few people. Suggestions on how to better tailor the study, how to work with other agencies, or how to measure any other variables for interpreting the data, etc., would be helpful. It might also be helpful to hold a brown-bag discussion before the regular DOSS meetings begin again in fall to discuss any suggestions in detail.

Coded Wire Tags (CWTs): The following table presents the CWT releases and losses from 10/1/13 through 6/1/14.

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 ¹	Total Entering Delta	% Loss of Number Released ²	% Loss of Total Entering Delta ³	First Concern Level	Second Concern Level	Date of First Loss ⁴	Date of Last Loss ⁵
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 ⁶	Unread CWT Loss ⁷	Unknown Hatchery Loss ⁸	Acoustic Tag Loss ⁹	Number of Unassigned CWTs ¹⁰
SWP	0.00	0.00	0.00	0.00	0
CVP	3.01	0.00	0.00	0.00	0
TOTAL	3.01	0.00	0.00	0.00	0

SWP and CVP adipose-fin clipped Chinook lost from 10/1/2013 through 6/1/2014.

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

²% Loss of Number Released = (Confirmed Loss/Number Released)*100.

³% Loss of Total Entering Delta = (Confirmed Loss/Total Entering Delta)*100.

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

⁵Adipose-fin clipped Chinook was observed during fish count, but tag code could not be determined (e.g., damaged tag, lost tag, or Chinook released).

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

⁷CWT has been read, but hatchery release information not yet available.

⁸Adipose-fin clipped Chinook released due to presence of sutures.

⁹CWT 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.

¹⁰Information not yet available.

DWR-DES Revised 6/2/2014

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

Operations (6/3/14)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	400	Jones Pumping Plant	800 (outage beginning 6/8 for 3 weeks for secondary channel screen installation. State will pump CVP water during outage)
Reservoir Releases (cfs)			
Feather - Oroville	1,700	American - Nimbus	2,000
		Sacramento - Keswick	9,000
		Stanislaus - Goodwin	300 (a reduction to 250 cfs is scheduled for 6/4)
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	337	San Luis (CVP)	505
Oroville	1,723	Shasta	2,157
New Melones		Folsom	544
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	7,004
Outflow Index (cfs)	~3,400	San Joaquin River (cfs) at Vernalis	472
Total Delta Inflow (cfs)	~7,909	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs index method)	-1,900
X2 (km)	>81	OMR 14-day avg (cfs, index method)	-1,800
E/I (%)	13.0 (3-d avg)		

Factors Controlling Operations: Outflow is the primary factor controlling exports; salinity is a secondary controlling factor. The interior Delta is beginning to become more saline. Jersey

Point salinity is currently a concern; measured salinity was 2.1 mS/cm yesterday and the standard is 2.2 mS/cm. Three Mile Slough (the modified compliance location for the Emmaton standard) salinity was 1.9 mS/cm; the standard is 2.78mS/cm.

Wilkins Slough: Flows at Wilkins Slough are currently ~4,800–4,900 cfs.

OMR Index vs USGS Gage Measurements: A comparison of OMR computations was reported for the week ending 5/31. The 5-day and 14-day OMR indices were close to 600 cfs and 400 more negative, respectively, than those at calculated at the USGS gage for the same time period.

Curtailement Notices from SWRCB: Ligare (SWRCB) reported on the recent curtailement notices sent to all post-1914 appropriative water rights diverters in the Sacramento and San Joaquin watersheds (For the complete text of the curtailement notice, see: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/sac_curtailement_052714.pdf). The notices allow exceptions for health and safety issues and do not affect already-stored flows. Curtailements have not yet been imposed on pre-1914 water rights holders; however, SWRCB might curtail those diverters. Ligare clarified that the emergency regulations approved for Antelope, Deer, and Mill creeks are a different process from the curtailement notices.

RPA Actions:

- IV.1.2 (DCC gate operations): From May 21-June 15, the “DCC gates [are] closed for 14 days during this period, per 2006 WQCP, if NMFS determines it is necessary.” The DCC gates were closed on 5/27. Because of water quality concerns on the mainstem Sacramento, the DCC gates might not be opened on the coming weekend (6/7); that decision is expected to be made on Wednesday, 6/4.
- IV.2.1 (I:E ratio): As of 6/1, this action is no longer in effect.
- IV.2.3 (OMR flow management): This action is in effect until 6/15 or until the water temperature offramp condition is met (*i.e.*, 7 consecutive days of water temperature of >72°F at Mossdale during June). Mossdale temperatures exceeded 72°F on 6/1 and 6/2. NMFS will send an email to the operators if the offramp condition is met. 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 6/2 and agreed that given current operations and conditions, there was no need to suggest any change in operations for delta smelt. FWS reported that the management season for larval and juvenile delta smelt (Action 3 of the USFWS BiOp) will end 6/30, or when the temperature offramp is met (*i.e.*, when 3 consecutive days at 25°C [77°F] are recorded at Clifton Court Forebay). For longfin smelt, the management season is also coming to a close. Previous SWG meeting notes are available at: http://www.fws.gov/sfbaydelta/cvp-swp/smelt_working_group.cfm.

DOSS Advice to WOMT and NMFS: None.

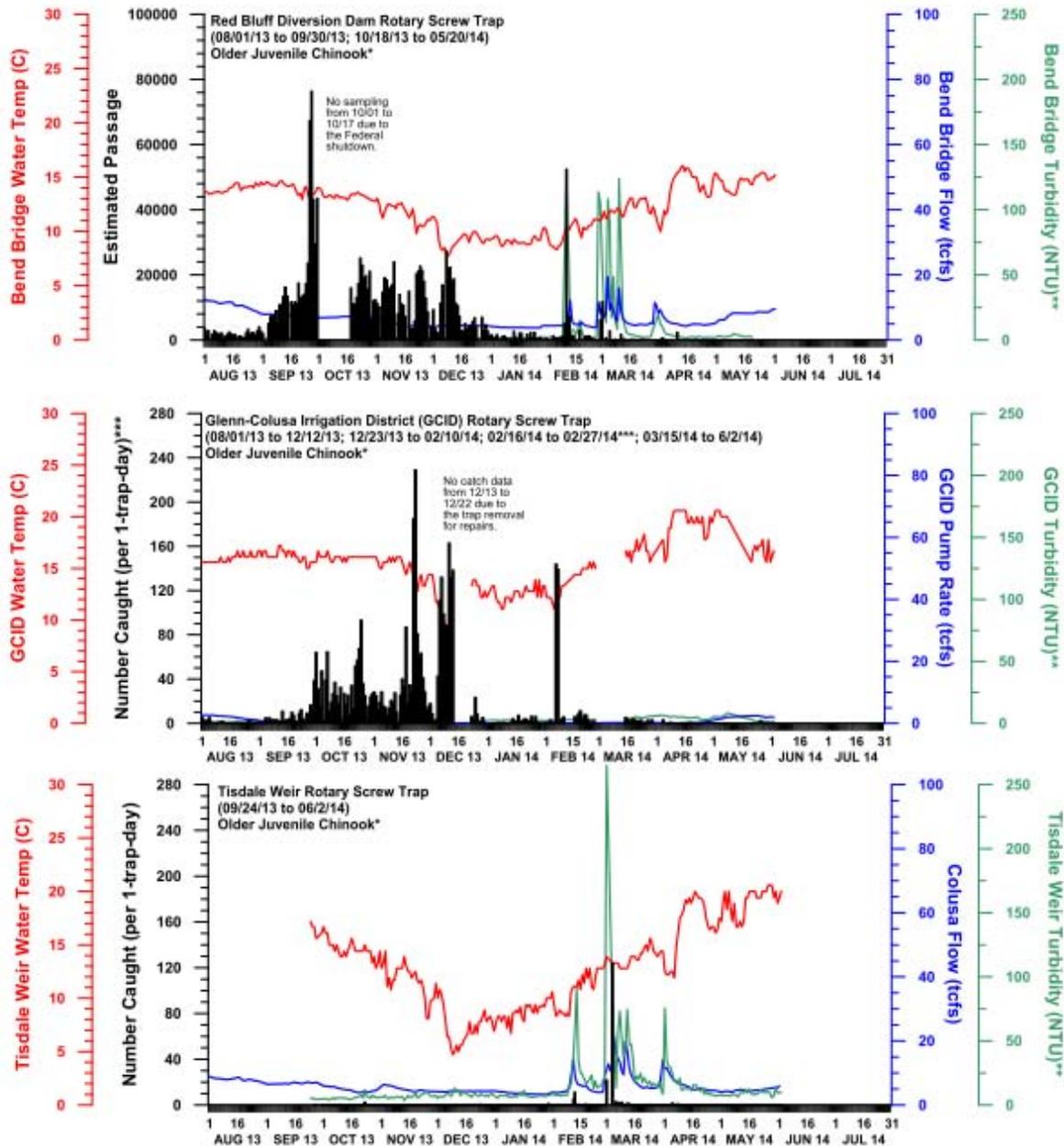
Summer DOSS Schedule and Preparation of the DOSS Annual Report: Weekly DOSS meetings will end once the OMR action ends, and we will transition to drafting the annual report

(with *ad hoc* DOSS meetings, if needed). To help with annual report planning, Rocco (NMFS) and Byrne (NMFS) will draft a table of contents for this year's annual report that tentatively identifies those DOSS participants who will be asked to participate in writing specific report sections. It was suggested that the annual report discuss any differences in monitoring protocols this year, particularly those that may have limited sampling or related to drought conditions and constraints.

Next Meeting: The next scheduled conference call will be on 6/10 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 2 June 2014

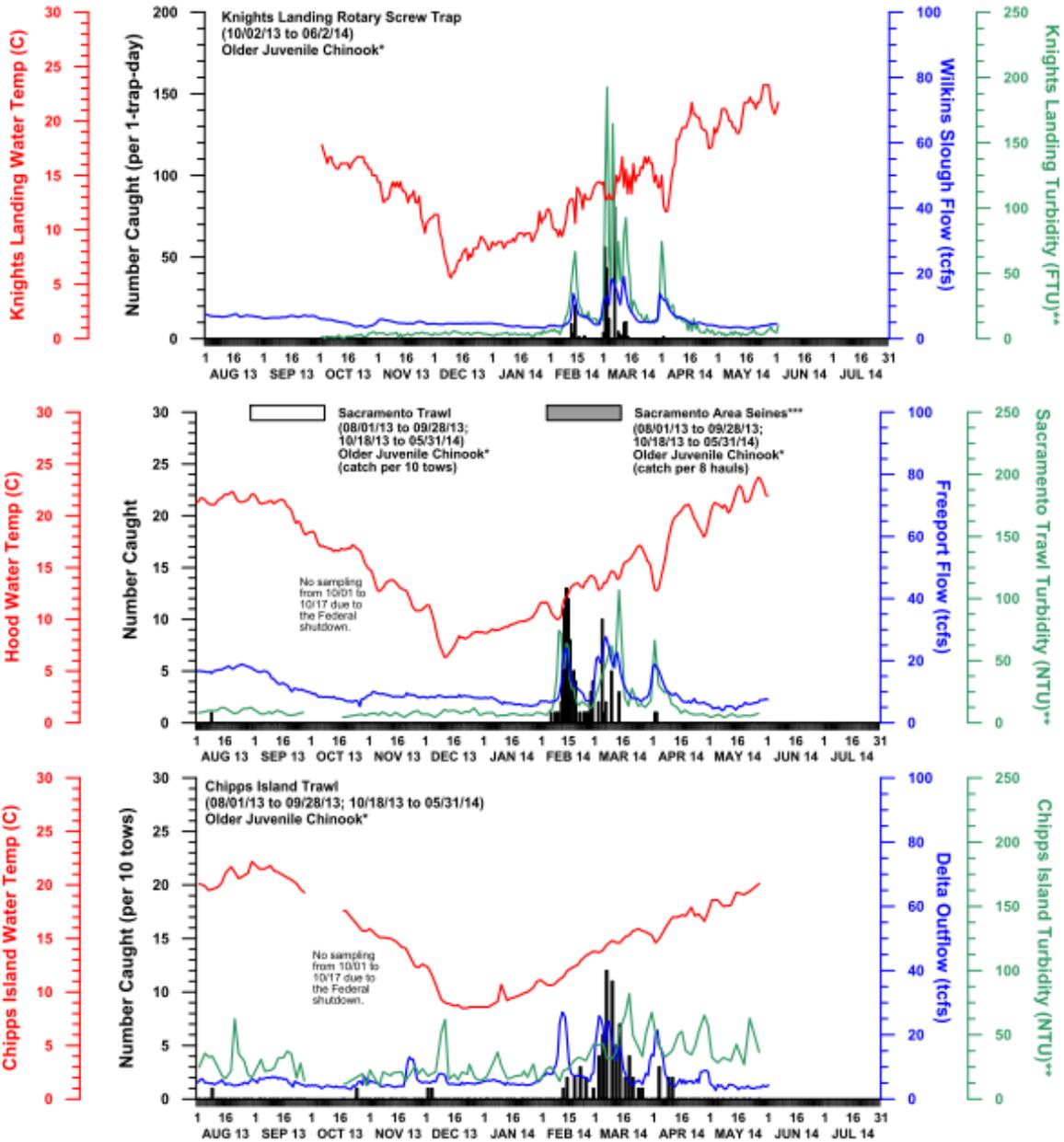
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

*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 2 JUNE 2014

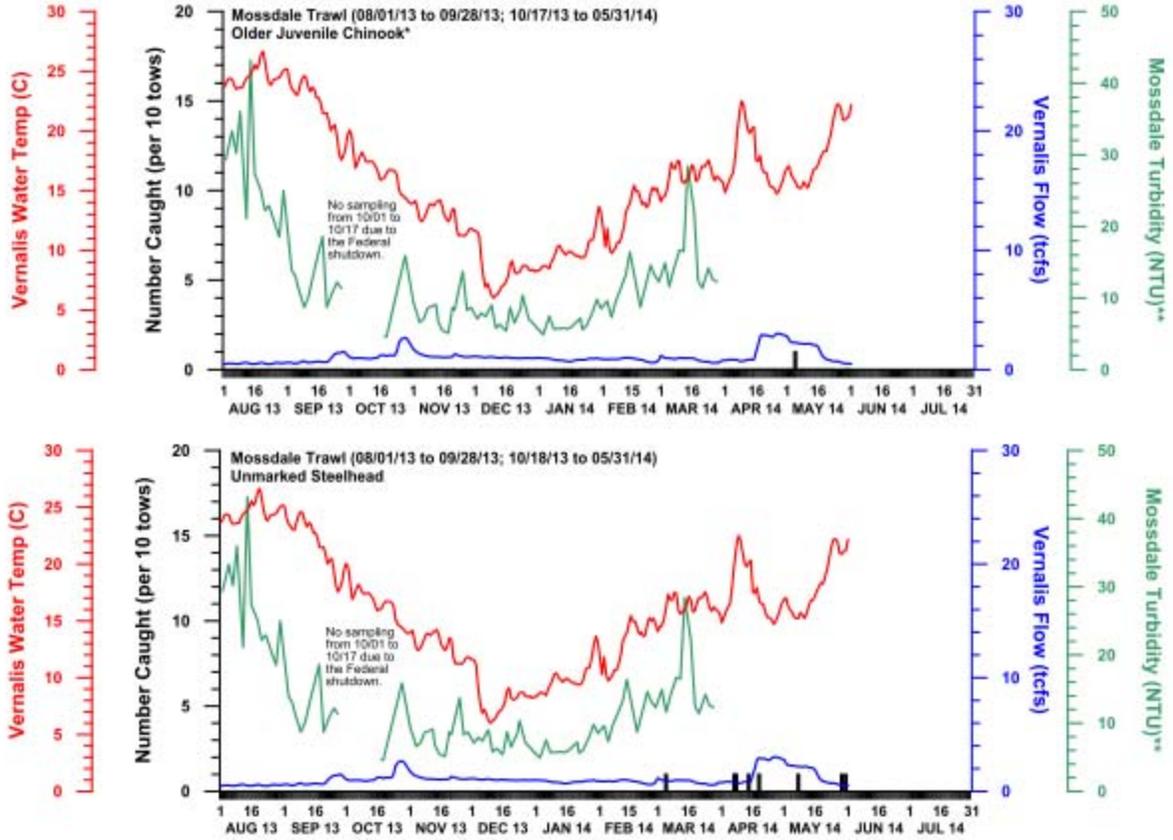
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*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



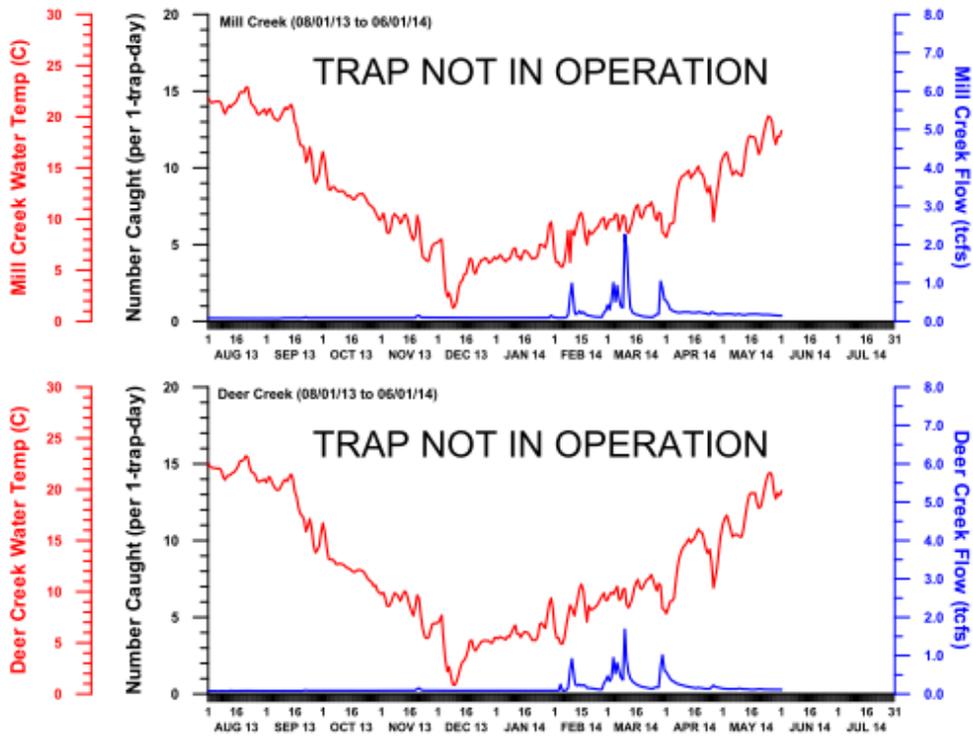
DWR-DES 2 JUNE 2014

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.

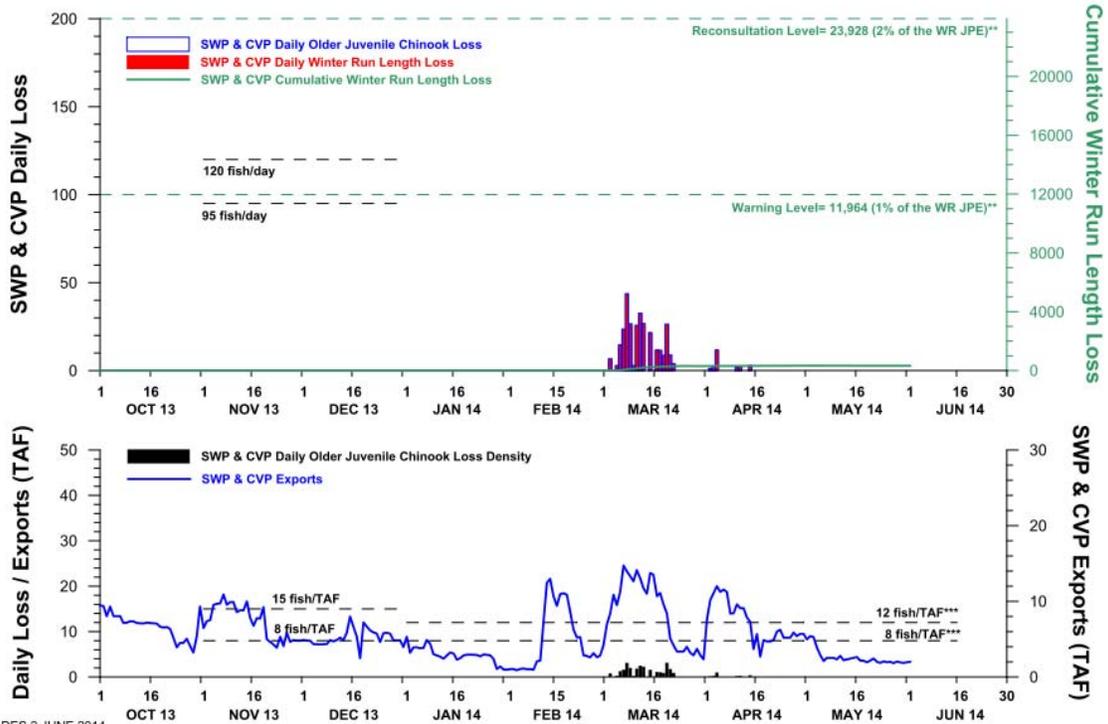
**Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured unless data are missing for more than five days.

WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



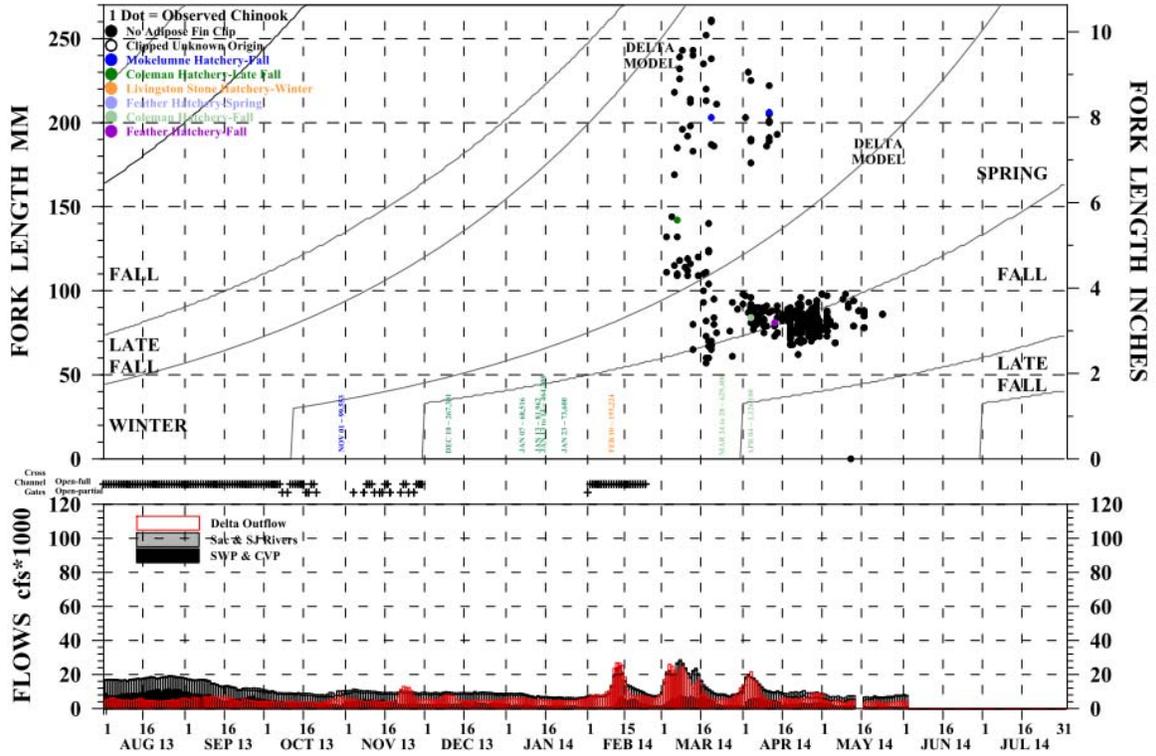
DWR-DES 2 JUNE 2014
Preliminary data from CDEC; subject to revision.

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



DWR-DES 2 JUNE 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.

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



DWR-DES 2 JUNE 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.