

Delta Operations for Salmonids and Sturgeon (DOSS) Group
5/27/14

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, Mike Ford, Harry Spanglet
FWS: Craig Anderson, Roger Guinee, Leigh Bartoo
NMFS: Barbara Rocco, Barb Byrne, Jeff Stuart
Reclamation: Josh Israel, Michelle Palmer, Russ Yaworsky
DFW: Bob Fujimura, Krystal Acierto, Chris McKibbin
SWRCB: Scott Ligare
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: Note: Given the Memorial Day holiday on 5/26, not all data were received before the DOSS meeting. Data will be provided with the final DOSS notes. 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 ^{1,4}	Mossdale Kodiak Trawl ²	GCID ³	Knights Landing RST	Tisdale RST	Beach Seines ⁴	Jersey Point
Sample Date	5/19, 22	5/20, 23	5/13–25	5/21–26	5/20–22	5/20–24	5/19, 21, 23	N/A
Total Catch	309	3	376	535	0	4	283	
FR	186	3	373	524		3		
WR								
SR	47			9				
LFR				2				
Ad-Clipped Chinook	74		3 (with sutures)					
DS							13 (26-34 mm)	
Splittail							270	

Longfin								
SH (ad-clip)								
SH (wild)	2					1		
W. Temp. (avg. °F)	66.6	70.0		62.2	70.7	67.6	68.5	
Flows (avg. cfs)					3613	4744		
Turbidity (avg. NTU)	42.0	5.7		2.2	3.6	10.5	16.4	
WR/LFR Avg. CPUE				3.92		0.002		
FR/SR Avg. CPUE						0.013		

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

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.

³5/22: heavy debris caused trap to stop overnight.

⁴Data received after DOSS call.

Red Bluff Diversion Dam (5/7–5/20): The preliminary estimates of passage by brood year and run for unmarked juvenile Chinook and steelhead as sampled by rotary screw traps were provided for 5/7–5/20. There were 68 winter-run, 12,394 spring-run, 409,945 fall-run, and 2,174 late-fall-run Chinook for brood year 2013 and 4,001 steelhead from brood year 2014 estimated to have passed during the reporting period.

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 5/19–5/25. Salmonid salvage continued to decrease from the previous week. There were four fall-run-sized non-clipped Chinook salvaged at TFCF. No steelhead or sturgeon were salvaged. The preliminary salvage for 5/26 was zero at both facilities for salmonids and sturgeon.

Mossdale: There were three sutured Chinook captured at Mossdale reported on last week’s call. Stuart (NMFS) checked with Brandes (FWS), who said that the monitoring stations should have acoustic tag receivers to read the tags and identify those sutured fish. No information on acoustic tag identification was provided in the Mossdale trawl reporting sheets; Byrne (NMFS) will check with DFW about the acoustic information.

Follow-up on American River monitoring discussion from 5/20 DOSS call: Stuart contacted FWS for information on the marked fish from the pulse flow in April on the American River and will provide that information to DOSS when available.

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 19-25, 2014
Prepared by Bob Fujimura on May 26, 2014 1920
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	339	555	839	403	248	465	341	↘	456
CVP daily export	1,610	1,607	1,601	1,603	1,605	1,607	1,607	↘	1,606

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
Wild					
Winter Run	0	0	→	192	338
Spring Run	0	0	→	484	346
Late Fall Run	0	0	→	0	0
Fall Run	4	3	↘	544	401
Unclassified	0	0	↘	4	NC
Total	4	3		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 May 25, 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 22, 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 22, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

Fish Distribution: Because the most recent week of Delta monitoring data, which includes catch at the Sacramento trawl sampling location at Sherwood Harbor south of Sacramento (near the upstream Delta boundary on the Sacramento side) and at the Chipps Island trawl sampling location (at the western boundary of the Delta), was not available, DOSS members did not make an estimate this week about the distribution of young-of-year (YOY) spring-run Chinook

salmon, although the group's expectation is that the distribution has most likely shifted downstream over the past week.

	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>	<i>No estimate made (last week: <1 to 2%)</i>	<i>No estimate made (last week: <25%)</i>	<i>No estimate made (last week: >75%*)</i>

*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.

Coded Wire Tags (CWTs): The following table presents the CWT releases and losses from 10/1/13 through 5/26/14.

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/SURRP	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 ⁷	Acoustic Tag Loss ⁸	Number of Unassigned CWTs ⁹
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 5/26/2014.

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, no 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.

** Information not yet available.

DWR-DES Revised 5/27/2014

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

Operations (5/27/14)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	300 (increased from 200 cfs last week for South Bay water demands)	Jones Pumping Plant	800

Reservoir Releases (cfs)			
Feather - Oroville	1,700	American - Nimbus	1,750 (will increase to 2,000 cfs on 5/28 for Delta outflow)
		Sacramento - Keswick	8,000
		Stanislaus - Goodwin	400
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	348	San Luis (CVP)	525 (54)
Oroville	1,758	Shasta	2,227
New Melones		Folsom	557
Delta Operations			
DCC	Opened on 5/23 for holiday weekend and will close at 10:00 a.m. today	Sacramento River at Freeport (cfs)	6,430
Outflow Index (cfs)	~3,500	San Joaquin River (cfs) at Vernalis	692 (will decrease today with recent Goodwin reduction)
Total Delta Inflow (cfs)	~7,649	OMR (daily) (cfs)	~1,700 (reported to be the average for all three averaging periods)
Water Temperature (°F)		OMR 5-day avg (cfs index method)	
X2 (km)	>81	OMR 14-day avg (cfs, index method)	
E/I (%)	13.9 (14-d avg)		

South Bay Demands: Byron Bethany Irrigation District diverts water directly from Clifton Court Forebay (yesterday's diversion was ~50 cfs) and South Bay demands are satisfied by a diversion from the California aqueduct between Bethany Reservoir and San Luis Reservoir.

Factors Controlling Operations: In June, the outflow standard changes to 4,000 cfs on a 14-day average. The current daily outflow is approximately 3,500 cfs. The current controlling factors are management of general seasonal salinity and Delta outflow in consideration of the upcoming change in the outflow standard for June.

Delta Cross Channel (DCC) Gates: The DCC gates might not reopen this weekend because of salinity concerns on the Sacramento River side of the Delta. A decision will be made tomorrow, 5/28. Although operations are controlled by general concerns about salinity intrusion, not a specific compliance location, the operators did provide updates on western Delta salinity. In terms of electrical conductivity, Three Mile Slough (the modified compliance location for the Emmaton standard in D-1641) was 1.6 $\mu\text{S}/\text{cm}$ and Jersey Point was 1.3 $\mu\text{S}/\text{cm}$ yesterday. With the upcoming spring tide, there is concern that that the Sacramento side of the Delta will become more saline and get closer to the 2.78 $\mu\text{S}/\text{cm}$ criterion at Three Mile Slough.

OMR Index vs USGS Gage Measurements: A comparison of OMR computations was reported. The 5-day and 14-day OMR indices were both reported to be ~-1,700 cfs. Over the most recent week of available data, the OMR 5-day index average was ~250 cfs more negative than the USGS average; the 14-day average was ~400 cfs more negative than the USGS gage.

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 opened at 10 a.m. on Friday, 5/23, and closed at 10 a.m. on Tuesday, 5/27.

Usual operations during this period are to open the gates on weekends. Because of water quality concerns on the mainstem Sacramento, the DCC gates might not be opened on the coming weekend (5/31–6/1); that decision is expected to be made on Wednesday, 5/28.

- 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 will meet at 10:00 a.m. today. Previous SWG meeting notes are available at: http://www.fws.gov/sfbaydelta/cvp-swp/smelt_working_group.cfm.

SWRCB Workshop: Guinee (FWS) provided some brief highlights of the recent SWRCB workshop².

DOSS Advice to WOMT and NMFS: None.

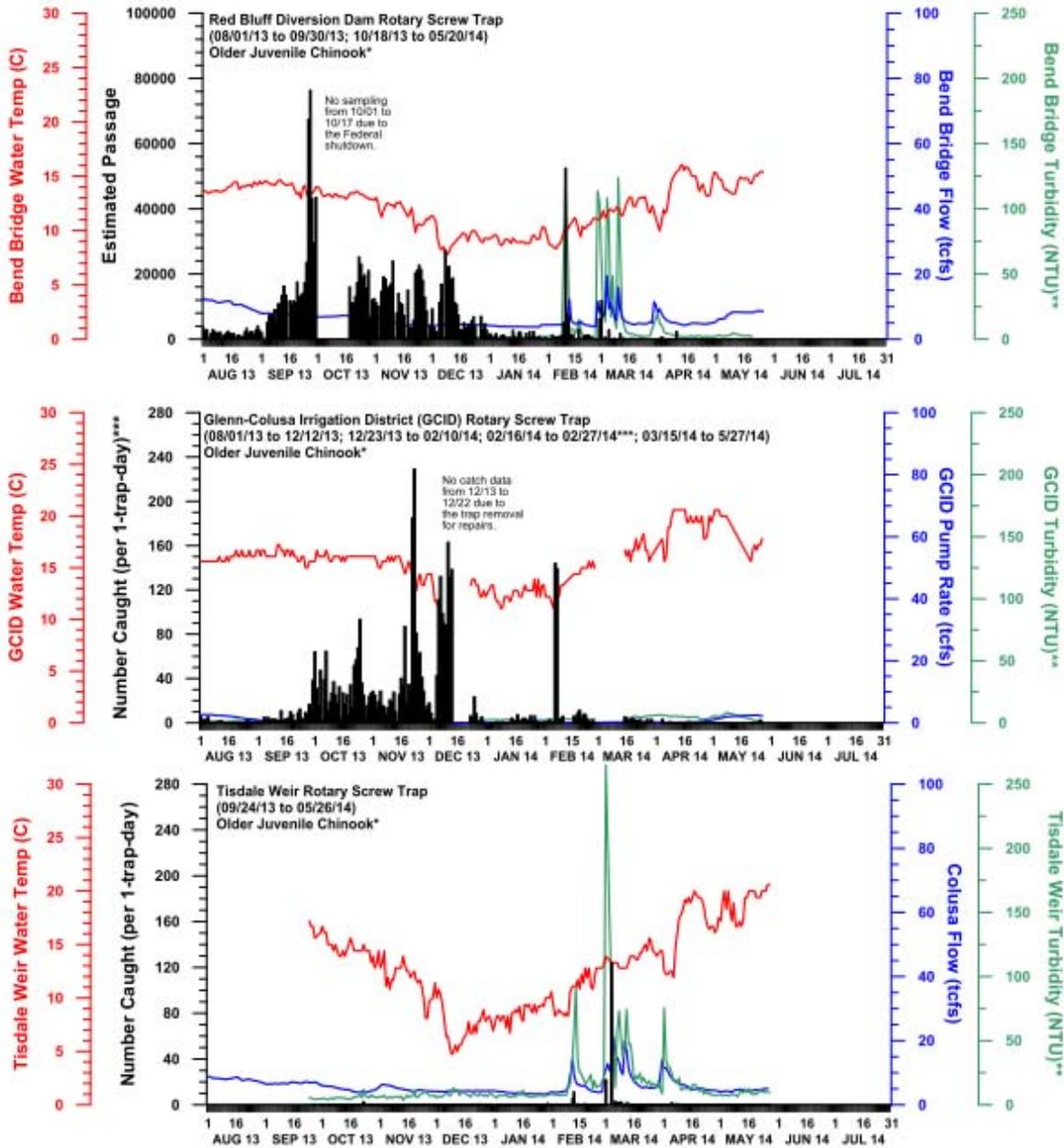
Next Meeting: The next scheduled conference call will be on 6/3 at 9:00 a.m.

²After the DOSS call, Byrne (NMFS) forwarded the following link to information on the recent SWRCB submittal to the Office of Administrative Law regarding curtailment of diversions on Mill Creek, Deer Creek, and Antelope Creek:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/mill_deer_antelope_creeks.shtml.

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 27 MAY 2014

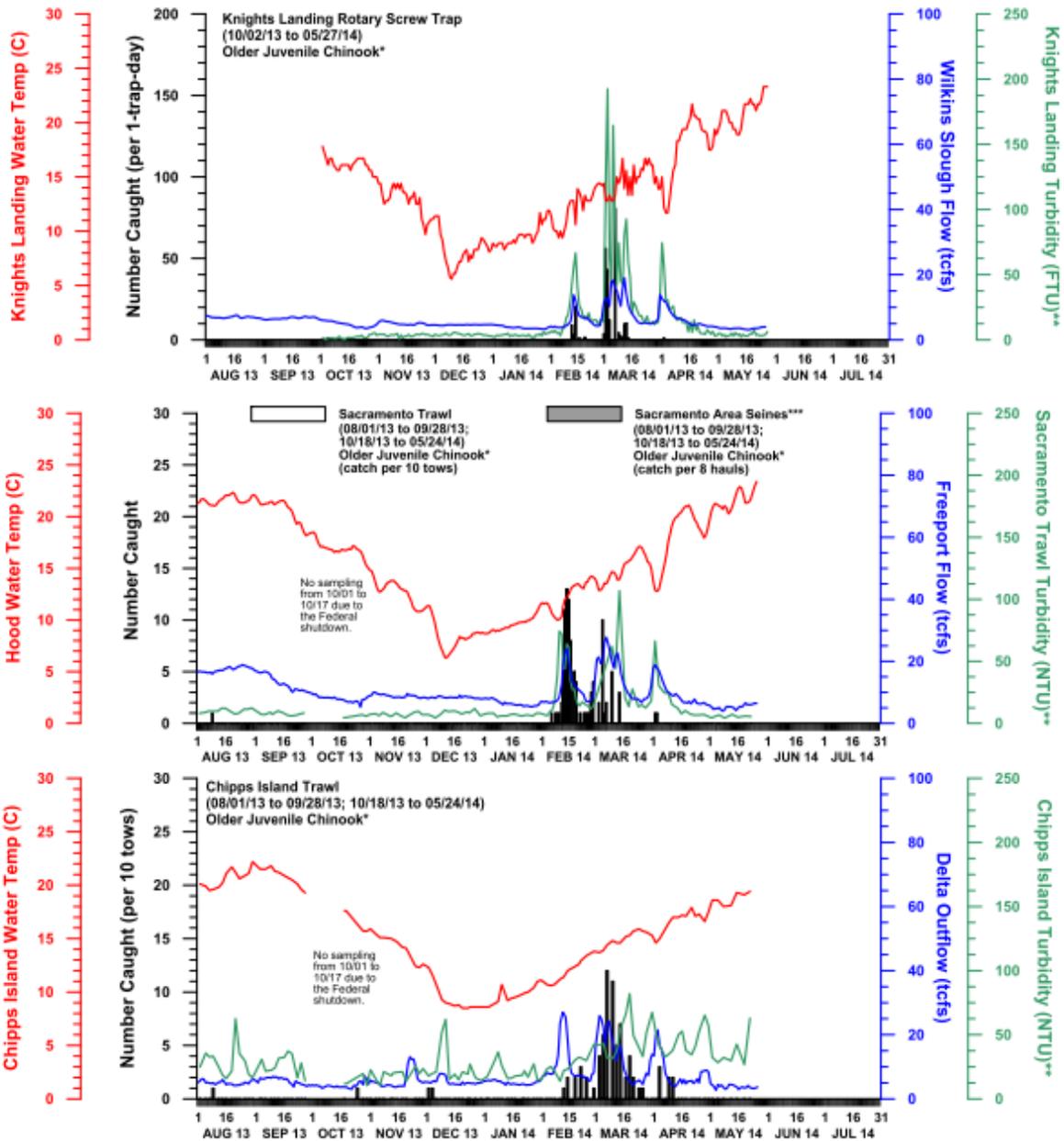
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

*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 27 MAY 2014

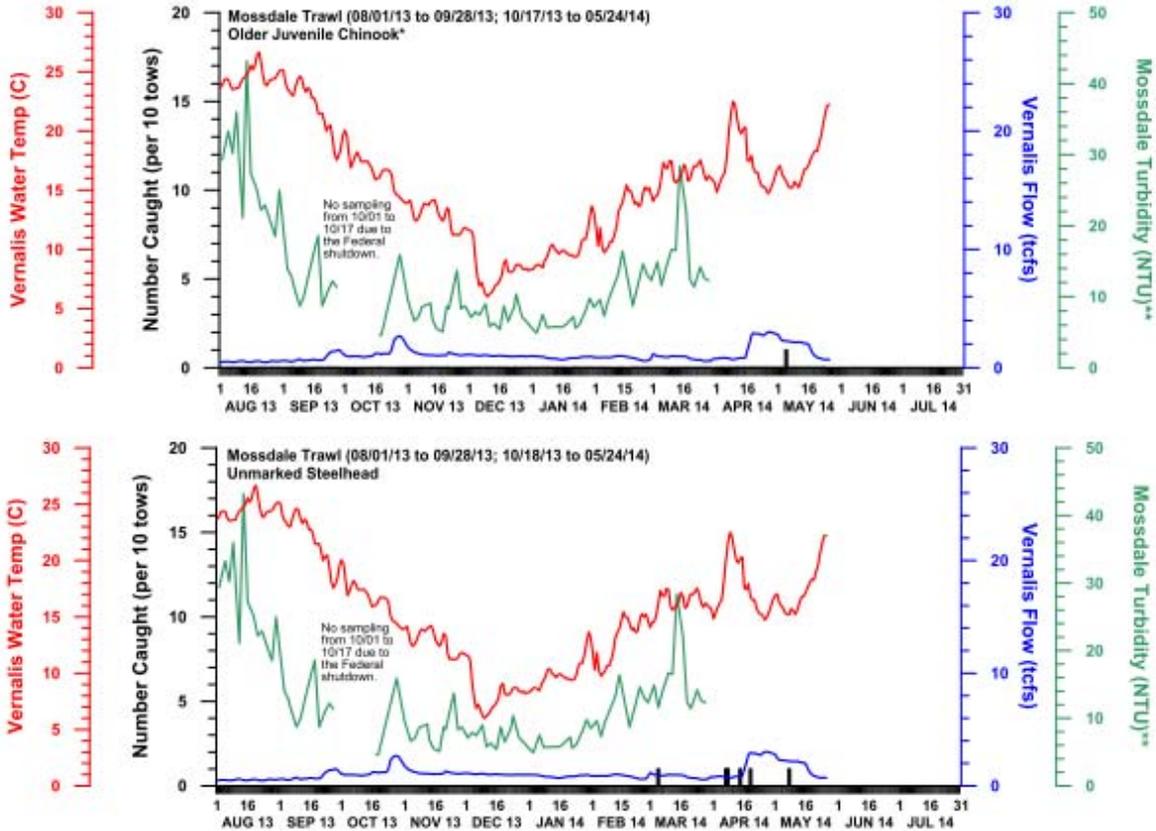
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*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.

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



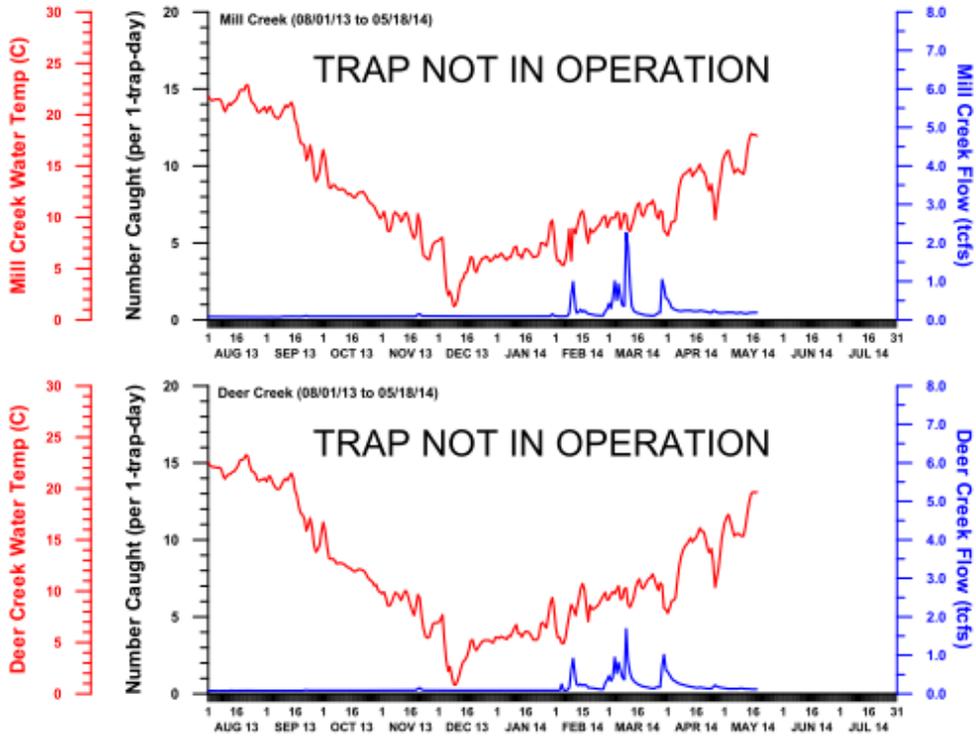
DWR-DES 27 MAY 2014

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.

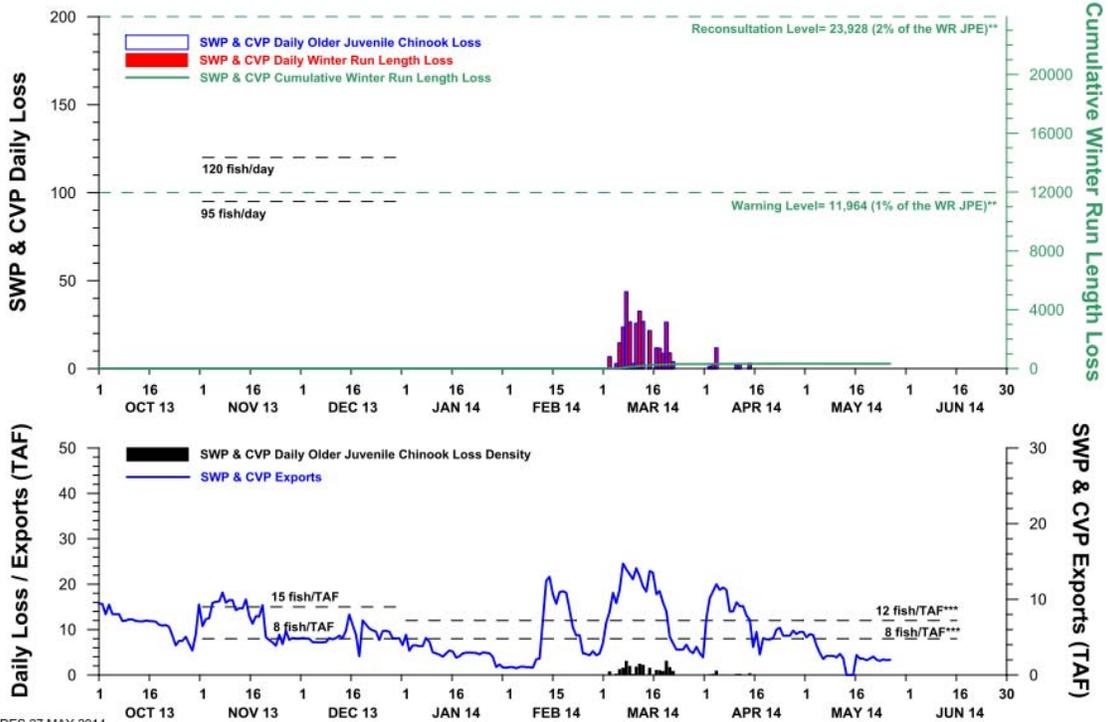
**Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured unless data are missing for more than five days.

WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



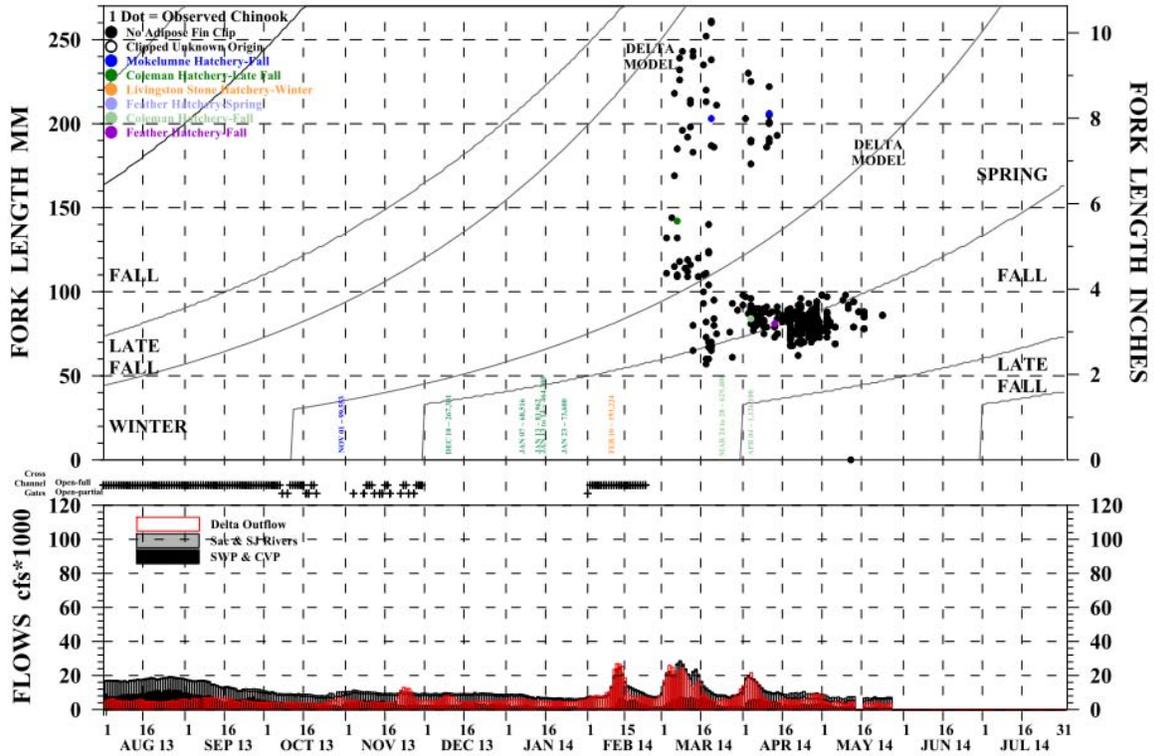
DWR-DES 19 MAY 2014
Preliminary data from CDEC; subject to revision.

NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2013 THROUGH 26 MAY 2014



DWR-DES 27 MAY 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 05/26/2014



DWR-DES 27 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.