

Delta Operations for Salmonids and Sturgeon (DOSS) Group
5/6/14

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: Mike Ford, Farida Islam, Aaron Miller, Rhiannon Mulligan
FWS: Leigh Bartoo
NMFS: Barbara Rocco, Barb Byrne, Jeff Stuart
Reclamation: Russ Yaworsky
DFW: Bob Fujimura, Colin Purdy
EPA, SWRCB, USGS: not present

Agenda

1. Agenda Review and Introductions
2. Fish Monitoring
3. Current Ops
4. Update on TUCP Order
5. SWG
7. 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 ¹	Mossdale Kodiak Trawl ²	GCID	Knights Landing RST	Tisdale RST	Beach Seines	Jersey Point
Sample Date	4/30, 5/2	4/30, 5/2	4/29–5/4	4/29–5/1	4/29, 30, 5/1–5	4/29–30, 5/1	4/29, 5/1, 2	n/a
Total Catch	48	101		1,531	7	22	79	
FR	39	95	115	1,444	7	20	57	
WR						1		
SR	3	5		57		1	1	
LFR								
Ad-Clipped Chinook	6	1	1	29 (FR; 28 juv, 1 smolt)				
DS							1 (70 mm)	
Splittail							20 (21–42 mm)	
Longfin								

SH (ad-clip)								
SH (wild)				1				
W. Temp. (avg. °F)	64.9	67.6		68.1	67.8	63.6	66.2	
Flows (avg. cfs)					3,753	4,220		
Turbidity (avg. NTU)	39.8	5.2		4.6	3.4	7.8	14.2	
WR/LFR Avg. CPUE				11.49		0.007		
FR/SR Avg. CPUE					0.033	0.15		

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.

Glenn-Colusa Irrigation District (GCID): The pumping rate at GCID has substantially increased from 550 cfs on 4/28 to 1,500 cfs currently.

Red Bluff Diversion Dam (RBDD): NMFS expects to receive RBDD rotary screw trap (RST) data within the next few days. Byrne (NMFS) will forward it to DOSS.

Mossdale: Catch of juvenile non-clipped fall-run Chinook at Mossdale during spring 2014 is less than a quarter of last year’s catch at this time. Trawl sampling has captured 506 non-clipped fall run and 35 ad-clipped fall run so far this year. By this time last year, 2,925 non-clipped fall run had been captured.

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 4/28 through 5/4. All salvaged salmonids were at TFCF; none were salvaged at SFCF. The salvage of fall-run-size non-clipped juvenile Chinook was comparable to that of the previous week. The number of non-clipped spring-run-sized Chinook continued to decrease compared to the previous week. Twenty-four non-clipped spring run and 203 fall run were salvaged. No ad-clipped juvenile Chinook were salvaged. Four wild steelhead were salvaged; no hatchery steelhead were salvaged. The season total steelhead loss of wild steelhead is 258; the season total loss of hatchery steelhead is 311. No sturgeon were observed for the week or season.

The preliminary report for 5/5 indicates that no salmon, steelhead, or sturgeon were salvaged.

TFCF Outage Schedule: The outage is tentatively scheduled for 6/8 through 6/28; however, Reclamation is still waiting for confirmation from NMFS that NMFS has no concerns about this rescheduled outage period. Byrne will follow up internally within NMFS regarding the outage schedule.

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: April 28-May 4, 2014
Prepared by Bob Fujimura on May 5, 2014 2000
Preliminary Results -Subject to Revision

Criteria	28-Apr	29-Apr	30-Apr	1-May	2-May	3-May	4-May	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	0	0	0.55	0	0	0	↗	0.08
Exports									
SWP daily export	437	747	744	744	1,463	1,661	1,661	↘	1,065
CVP daily export	4,957	4,951	4,951	4,240	3,941	3,622	2,447	↘	4,158

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
Wild					
Winter Run	0	0	→	192	338
Spring Run	24	17	↘	476	340
Late Fall Run	0	0	→	0	0
Fall Run	203	144	→	500	352
Unclassified	0	0	→	0	0
Total	227	161		1,168	1,030
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
 *Value includes the latest interpretation of a NMFS/USBR interim procedure to estimate loss due to secondary channel construction outage.

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	4	3	↘	181	258
Hatchery	0	0		226	311
Total	4	3		407	569

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

Generated by Bob Fujimura on May 5, 2014



Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during March 16 through May 4, 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 16 through May 4, 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 5/4/14.

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 ⁴
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 ⁵	Unread CWT Loss ⁶	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 5/04/2014.

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 5/05/2014

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

Hatchery Releases: Mokelumne River Hatchery will be releasing 1.8 million fall-run Chinook smolts at Sherman Island on the San Joaquin River into acclimation pens from 5/3 through 5/7. On 5/5, approximately 100,000 100% marked fall-run Chinook will be released into acclimation pens on the N.F. Mokelumne River at Millers Ferry Bridge (Thornton-Walnut Grove Rd); this release will be paired with another release of 100% marked fall run at the Golden Gate.

Because of concerns about water temperatures expected during summer of the American River water used by the hatchery, last week, the Nimbus hatchery released all its young-of-year steelhead (~200,000) in the river at Sunset Avenue. Normally, the fish stay in the hatchery through summer and are released in winter/early spring. This year, hatchery staff were concerned that young-of-year needed to be released early. Because the hatchery draws its water from the river, staff were concerned that they could not continue to keep the water temperatures low enough for the hatchery fish to survive there.

Fish Distribution: Based on the information provided in the monitoring reports, DOSS agreed that the yearling spring-run estimate has not changed over the last week, but updated the estimated distribution of YOY winter and spring run. With river water temperature increasing, DOSS expects that juvenile salmonids will be cued to emigrate.

	Yet to Enter Delta	In the Delta	Exited the Delta Past Chipps Island
<i>Young-of-year (YOY) winter-run Chinook salmon</i>	<i><5% not yet exited past Chipps Island</i>		<i>>95% (last week 90-95%)</i>

	<i>(last week: 5–10% not yet exited past Chipps Island)</i>		
<i>Yearling spring-run Chinook salmon</i>	Most yearling spring run have most likely exited the Delta.		
<i>YOY spring-run Chinook salmon</i>	<i><10% (last week: <10–15%)</i>	<i>50–75% (last week: 25–75%)</i>	<i>>35%* (last week: >25%)</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—hatchery releases of fall run (25% ad-clipped and with coded wire tags, 75% unmarked) have occurred at Rio Vista and in Battle Creek. Estimates of the YOY spring-run Chinook distribution take this “spillover” into consideration. For example, the range estimated for the fraction of the YOY spring-run population having passed Chipps Island is lower than it would have been had DOSS believed that all spring-run-sized fish reported at Chipps were actually genetic spring run; however, because DOSS cannot “correct” for the hatchery fish spillover effect exactly, the ranges for the YOY spring-run distribution are rather wide.

Operations (5/6/14)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	200	Jones Pumping Plant	1,000
Reservoir Releases (cfs)			
Feather - Oroville	800 (might increase to 1,200 or 1,500 cfs within the next week to increase Delta flows)	American - Nimbus	800 (will increase to 950 cfs on 5/8)
		Sacramento - Keswick	6,000 (will increase to 6,500 cfs at noon today and to 7,000 cfs tomorrow)
		Stanislaus - Goodwin	2,100
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	384	San Luis (CVP)	573 (59)
Oroville	1,869	Shasta	2,393
New Melones		Folsom	559
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	4,694
Outflow Index (cfs)	~3,900	San Joaquin River (cfs) at Vernalis	2,263
Total Delta Inflow (cfs)	~7,551	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs index method)	-2,500
X2 (km)	>81.0	OMR 14-day avg (cfs, index method)	-2,900
E/I (%)	15.0 (14-d avg)		

*At the time these notes were reviewed, actual Keswick releases had not yet reached these projected levels.

Export Controlling Factors: The modified outflow requirement in the 5/2 SWQCB order² and salinity levels are controlling exports. Delta outflow yesterday was about 3,900 cfs and operators are attempting to keep Delta outflow between 3,000 and 4,000 cfs to ensure that the modified requirement is met.

²http://www.swrcb.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/050214_tucp_order.pdf

Delta Cross Channel (DCC): The DCC gates will most likely remain closed until 5/20, at which point the gates might be opened on weekends per the usual allowed practice in both the NMFS BiOp and D-1641. The western Delta is beginning to experience an increase in salinity; however, it is still fairly fresh and no DCC closure is currently necessary.

OMR Index vs Gage Measurements: The OMR index for the 5- and 14-day averages is running ~400 cfs more negative than the gage measurements for both the 5- and 14-day averages for which gage data are available.

RPA Actions:

- IV.1.2 (DCC gate operations): DCC gates are closed.
- IV.2.1 I:E ratio: Under the Drought Operations Plan³, the 1:1 I:E ratio is in effect during the San Joaquin River pulse period (4/17–5/17), but outflow, not the I:E ratio, is controlling exports. Approximately 50% of Vernalis flow is being exported.
- 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. As of yesterday, the 5-day OMR index was ~-2,500 cfs; the 14-day OMR index was ~-2,900 cfs. OMR data are available on the Reclamation CVO website: <https://www.usbr.gov/mp/cvo/index.html>

Revised TUCP Order: Byrne will request summary of most recent TUCP Order from SWRCB staff and share with DOSS by e-mail.

Smelt Working Group (SWG): SWG met on 5/5. Given the current hydrology and fish distributions, there was no need to change operations to protect delta or longfin smelt. Previous SWG meeting notes are available at: http://www.fws.gov/sfbaydelta/cvp-swp/smelt_working_group.cfm.

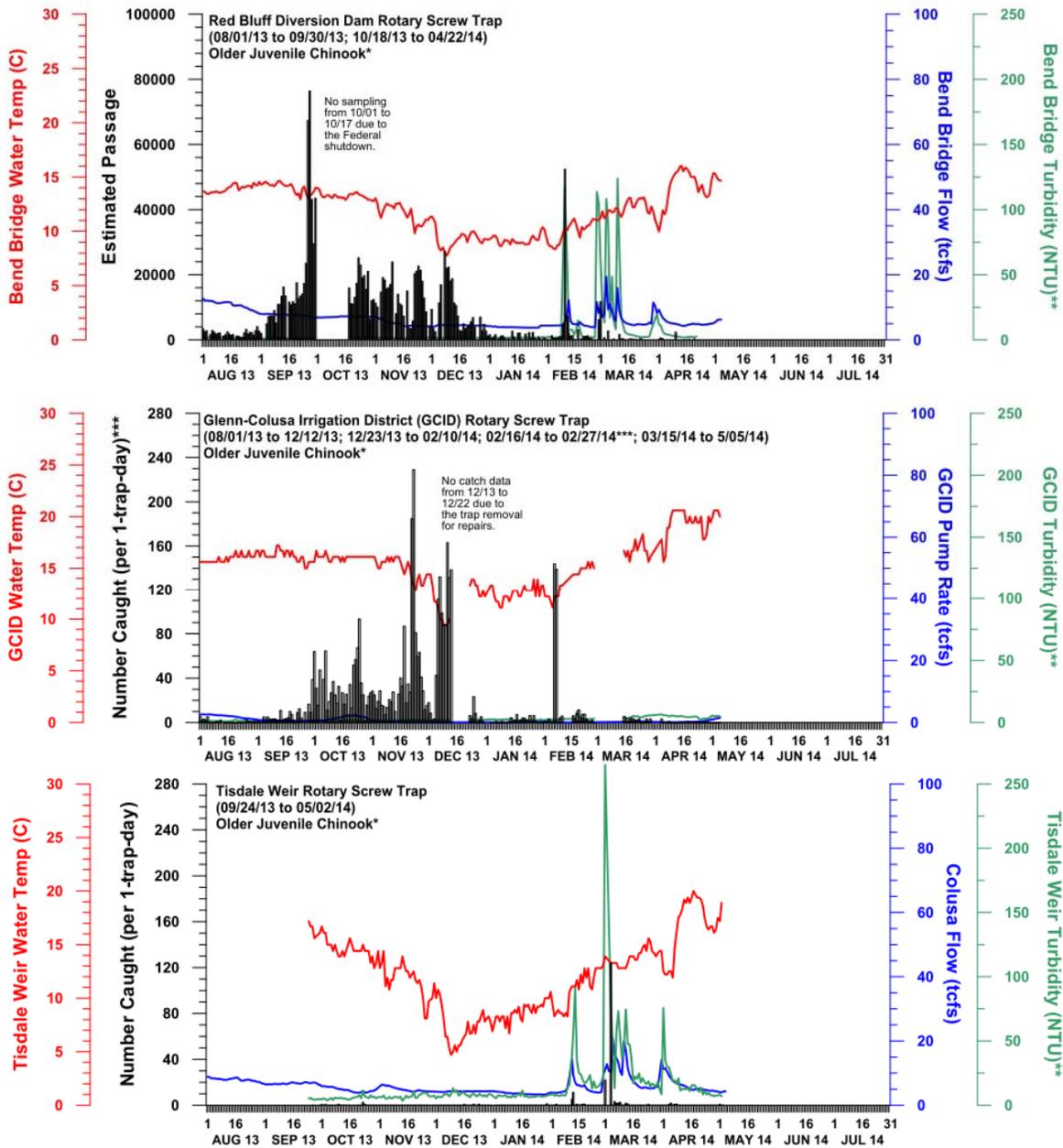
DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next scheduled conference call will be on 5/13 at 9:00 a.m.

³<http://www.ca.gov/drought/pdf/2014-Operations-Plan.pdf>

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 05 MAY 2014

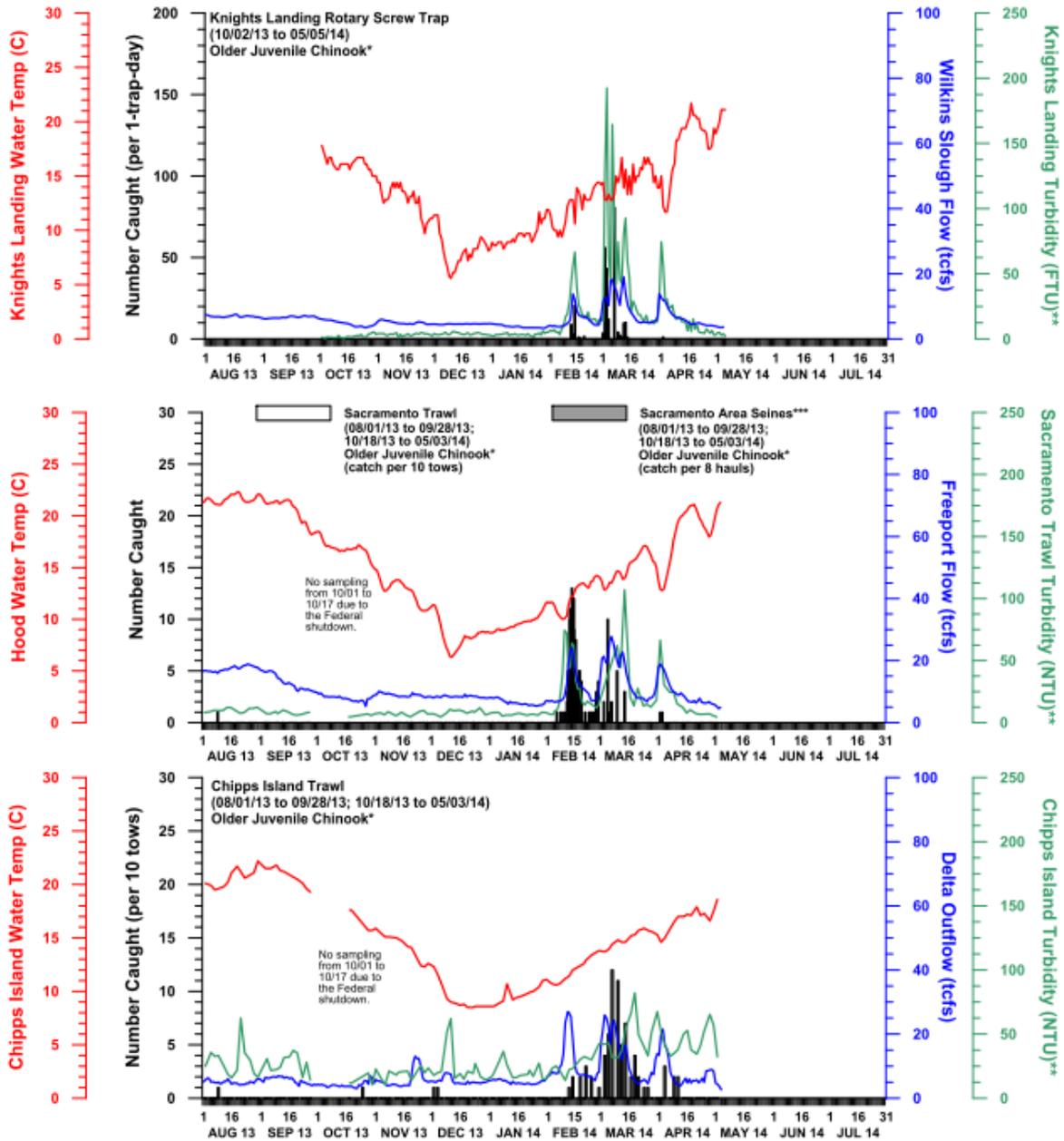
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

*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 5 MAY 2014

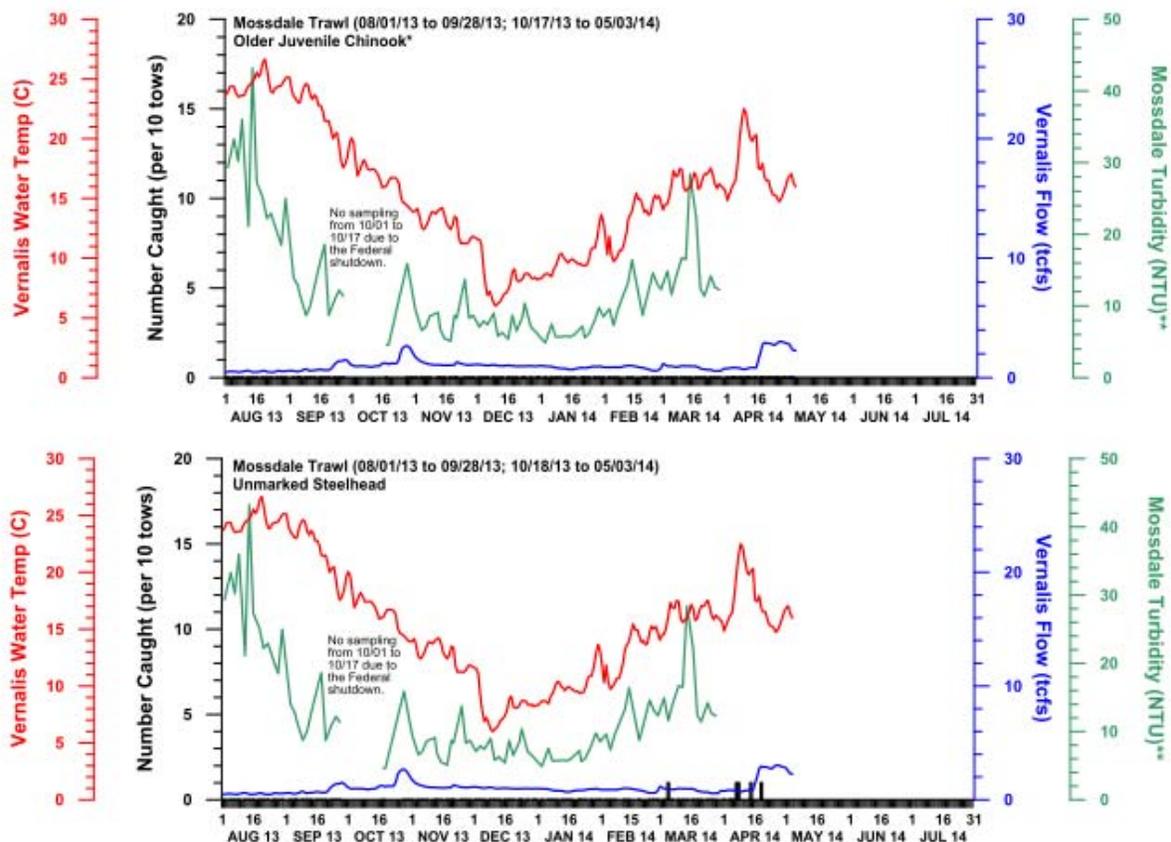
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*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



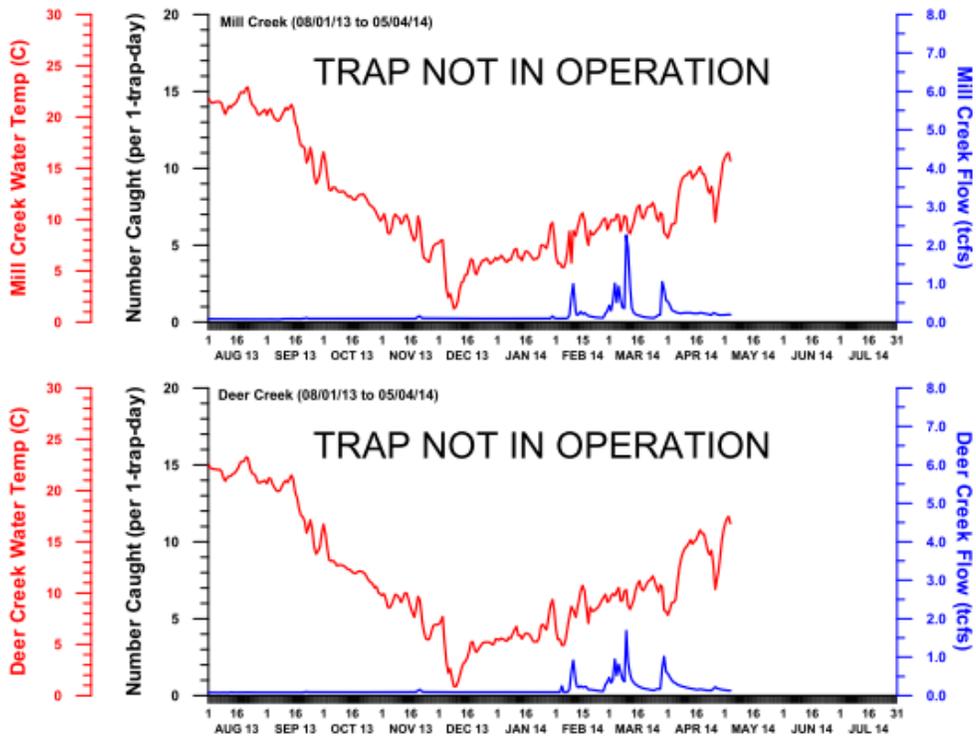
DWR-DES 05 MAY 2014

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 5 MAY 2014
Preliminary data from CDEC; subject to revision.

