

Delta Operations for Salmonids and Sturgeon (DOSS) Group
5/13/14

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, Rhiannon Mulligan, Kevin Reece, Dan Yamanaka, James Gleim, Tracy Pettit
FWS: Leigh Bartoo
NMFS: Barbara Rocco, Barb Byrne, Jeff Stuart
Reclamation: David van Rijn, Josh Israel
DFW: Bob Fujimura
SWRCB: Scott Ligare
EPA, USGS: not present

Agenda

1. Agenda review and introductions
2. Fish Monitoring
3. Current Ops
4. SWG
5. TUCP Update
6. 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 ¹	Mossdale Kodiak Trawl ²	GCID ³	Knights Landing RST	Tisdale RST	Beach Seines	Jersey Point
Sample Date	5/5, 8	5/6, 9	5/6, 8–10	5/6–7	5/6–11	5/6–9	5/6–8	n/a
Total Catch	391	25	266	301	5	5	79	
FR	194	21	265	289	5	4	39	
WR								
SR	179	4		5			1	
LFR								
Ad-Clipped Chinook	17			7				
DS								
Splittail							39	

Longfin								
SH (ad-clip)								
SH (wild)	1		1			1		
W. Temp. (avg. °F)	64.9	68.0		68.0	67.0	63.3	67.6	
Flows (avg. cfs)					3,502	4,380		
Turbidity (avg. NTU)	30.2	5.7		6.9	4.2	7.6	12.5	
WR/LFR Avg. CPUE				4.08				
FR/SR Avg. CPUE					0.02	0.02		

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.

³5/8/2014: Trap was pulled because of a large increase in debris that caused the cone door panel to break. Trapping will not continue until repairs are made.

Mossdale: The catch at Mossdale continues to be about 1/3 of last year’s catch. There were 3,545 Chinook caught at Mossdale by this time last year, compared to the current catch of ~1,000.

Knights Landing: Water temperatures at Knights Landing are in the high 60s and are expected to increase over the next week. Handling and sampling restrictions will begin when temperatures reach 70 and 72°F, respectively, which could happen over the next week.

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 5/5 through 5/11. Salvage of non-clipped juvenile Chinook salmon in the fall-run-size class markedly decreased compared to that of the previous week. The salvage of non-clipped juveniles in the spring-run size also decreased compared to that of the previous week. Eight non-clipped spring-run-sized and 24 fall-run-sized Chinook were salvaged. No ad-clipped Chinook were salvaged last week.

Four wild steelhead were salvaged last week—the same as the previous week. The season total loss of wild steelhead is 261. No hatchery steelhead were salvaged during the reporting period. No green or white sturgeon have been salvaged this season.

Preliminary results for 5/12 indicate that a few juvenile non-clipped Chinook in the spring-run size range were salvaged at TFCF; none were salvaged at SFCF.

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 5-11, 2014
Prepared by Bob Fujimura on May 12, 2014 2330
Preliminary Results - Subject to Revision

Criteria	5-May	6-May	7-May	8-May	9-May	10-May	11-May	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	1.29	0	0	0	0	0	↗	0.18
Exports									
SWP daily export	856	124	540	546	546	364	816	↘	542
CVP daily export	2,039	1,989	1,985	1,976	1,981	1,981	1,981	↘	1,990

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	8	6	↘	484	346
Late Fall Run	0	0	→	0	0
Fall Run	12	23	↘	512	375
Unclassified	0	0	→	0	0
Total	20	29		1,188	1,059
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.

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	→	185	261
Hatchery	0	0	→	226	311
Total	4	3		411	572

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

Generated by Bob Fujimura on May 5, 2014

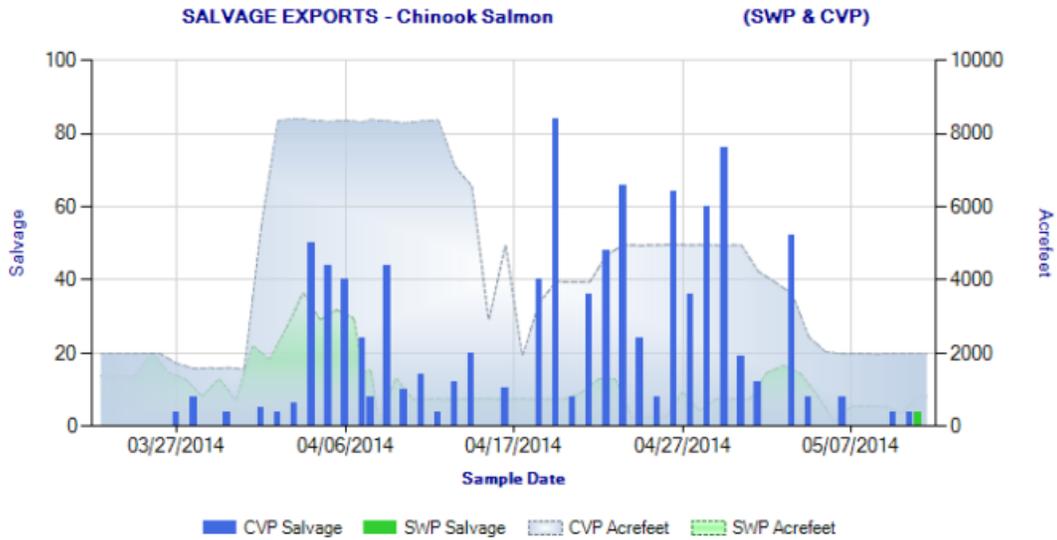


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during March 23 through May 11, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

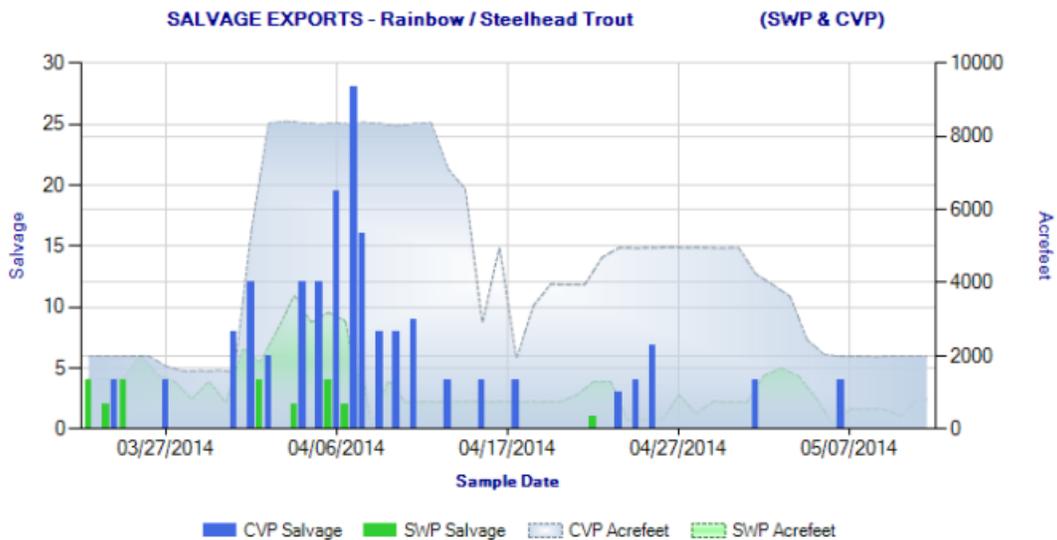


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during March 23 through May 11, 2014. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

Coded Wire Tags (CWTs): The following table presents the CWT releases and losses from 10/1/13 through 5/11/14.

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	**	**	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 5/11/2014.

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 5/12/2014

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

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 runs. With river water temperature increasing, DOSS expects that juvenile salmonids are being 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>	Most YOY winter-run have most likely exited the Delta. (<i>last week: <5% not yet exited past Chipps Island, >95% 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>	<5% (<i>last week: <10%</i>)	25–50% (<i>last week: 50–75%</i>)	>50%* (<i>last week: >35%</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.

Operations (5/13/14)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	200 (Banks Pumping Plant not pumping today because of an outage; inflow is still taken in at CCF)	Jones Pumping Plant	1,000
Reservoir Releases (cfs)			
Feather - Oroville	1,200	American - Nimbus	950
		Sacramento - Keswick	7,500
		Stanislaus - Goodwin	2,100 (ramping down to 600 cfs by 5/16)
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	377	San Luis (CVP)	556
Oroville	1,837	Shasta	2,343
New Melones		Folsom	567
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	5,390
Outflow Index (cfs)	~4,400	San Joaquin River (cfs) at Vernalis	2, 190
Total Delta Inflow (cfs)	~8,138	OMR (daily) (cfs)	-1,600 to -1,700
Water Temperature (°F)		OMR 5-day avg (cfs index method)	
X2 (km)	81	OMR 14-day avg (cfs, index method)	
E/I (%)	13.2 (14-d avg)		

Factors Controlling Operations: DWR reported that Delta outflow and water quality are currently controlling operations. Operators are providing a buffer on outflow (targeting a Delta outflow of 3,500 to 4,000 cfs) to maintain water quality; the water quality concern is about general salinity intrusion rather than concern about water quality as measured at a specific compliance location. .

Pumping will most likely remain near current levels for the week. Flows in the Stanislaus River will be down to 600 cfs by this weekend; Vernalis flows will drop accordingly. Adjustments to flows will need to come from upstream reservoirs, so we should expect some changes in reservoir releases in the near future.

The DCC gates are closed but might open on weekends after 5/20. This will help water quality in the interior Delta and offset some of the drop in flows in the San Joaquin River.

TUCP Order: Ligare (SWRCB) reported on the recent TUCP Order modifications. The most recent order includes modified outflow requirements (outflow not less than a monthly average of 3,000 cfs) for May and July; the June D1641 requirement is still in effect. The requirement for minimum monthly Sacramento River flows at Rio Vista from September through November 15 (the standard goes through December, but the Drought Operations Plan covers operations

through November 15) was modified from 3,000 cfs (September and October) or 3,500 (November) to 2,000 cfs; the 7-day average might not fall below 1,500 cfs. The western Delta salinity standard at Emmaton (an agriculture standard) was shifted to a new compliance location at Three Mile Slough (3 miles upstream). The agriculture standards are applied through August 15, which covers the primary growing season.

OMR Index vs Gage Measurements: A comparison of OMR computations for 5/6 was reported. The OMR index for the 5- and 14-day averages are running more negative than ~-1,800 cfs and less negative than ~-2,400 cfs, respectively. The gage data for the 5-day average was less negative than ~-2,300 cfs; the 14-day was ~-2,800 cfs. These data indicate a difference of ~400-500 cfs between the OMR index and gage data.

RPA Actions:

- IV.1.2 (DCC gate operations): DCC gates are closed.
- IV.2.1 I:E ratio: Because we are currently in the San Joaquin River pulse period, the 1:1 I:E ratio is in effect, but 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 5/12. Given the current hydrology and fish distributions (salvage was down), 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.

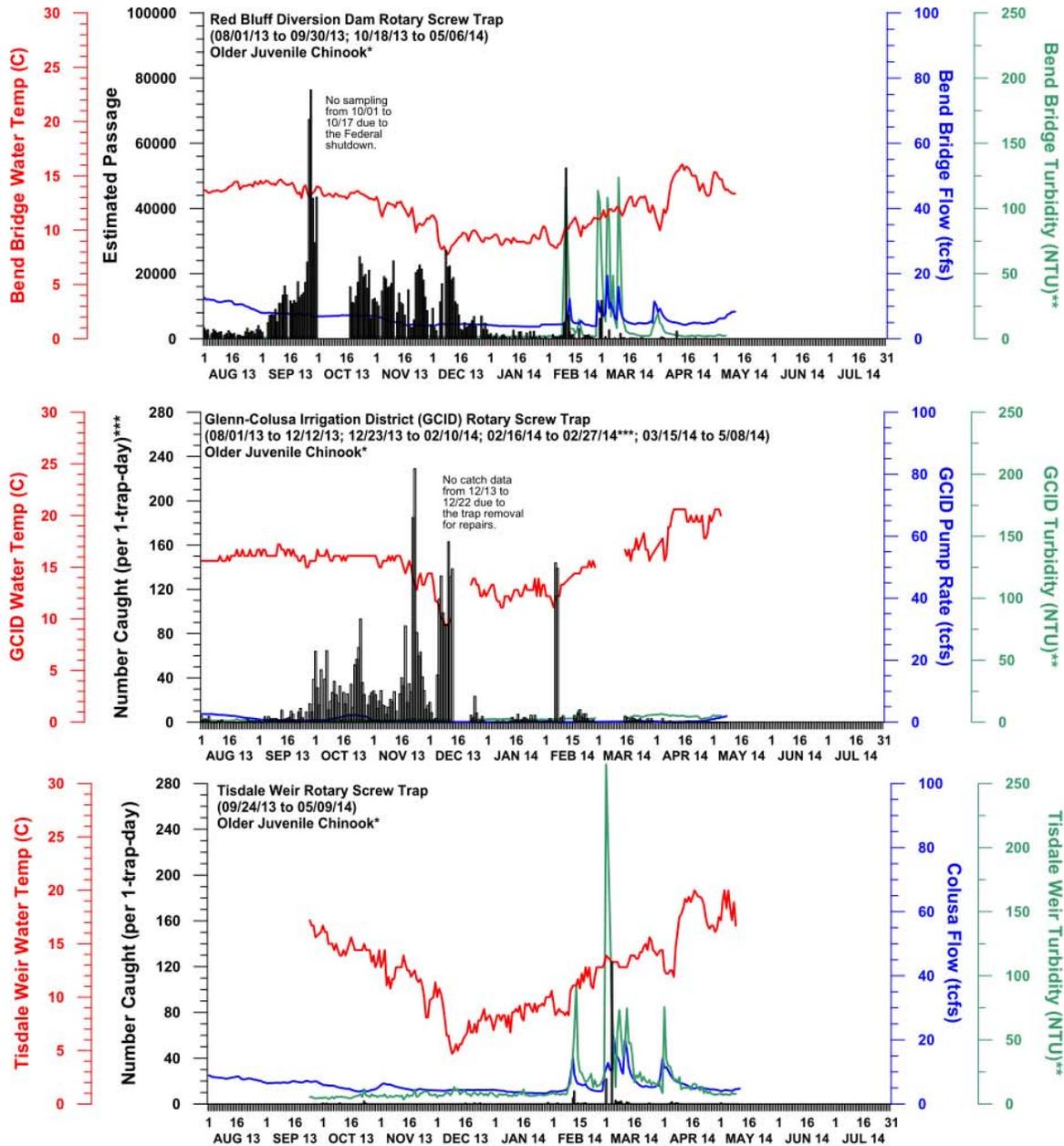
DOSS Advice to WOMT and NMFS: None.

DOSS Meetings: DOSS meetings normally break in mid-June and reconvene in October; however, given the potential for a review of drought operations, it might be useful for DOSS (or a DOSS subgroup) to have some meetings over summer.

Next Meeting: The next scheduled conference call will be on 5/20 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 12 MAY 2014

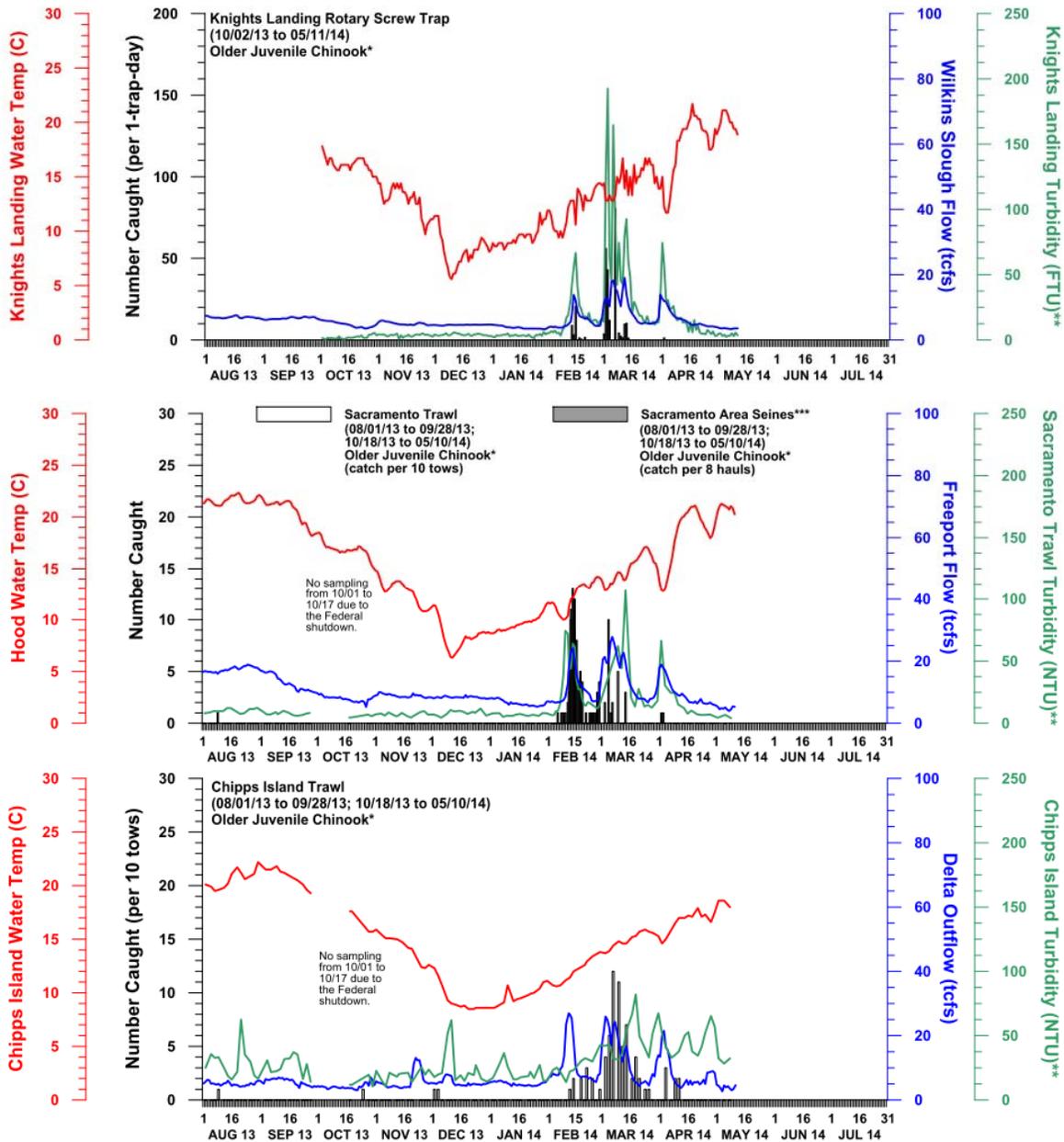
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

*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 12 MAY 2014

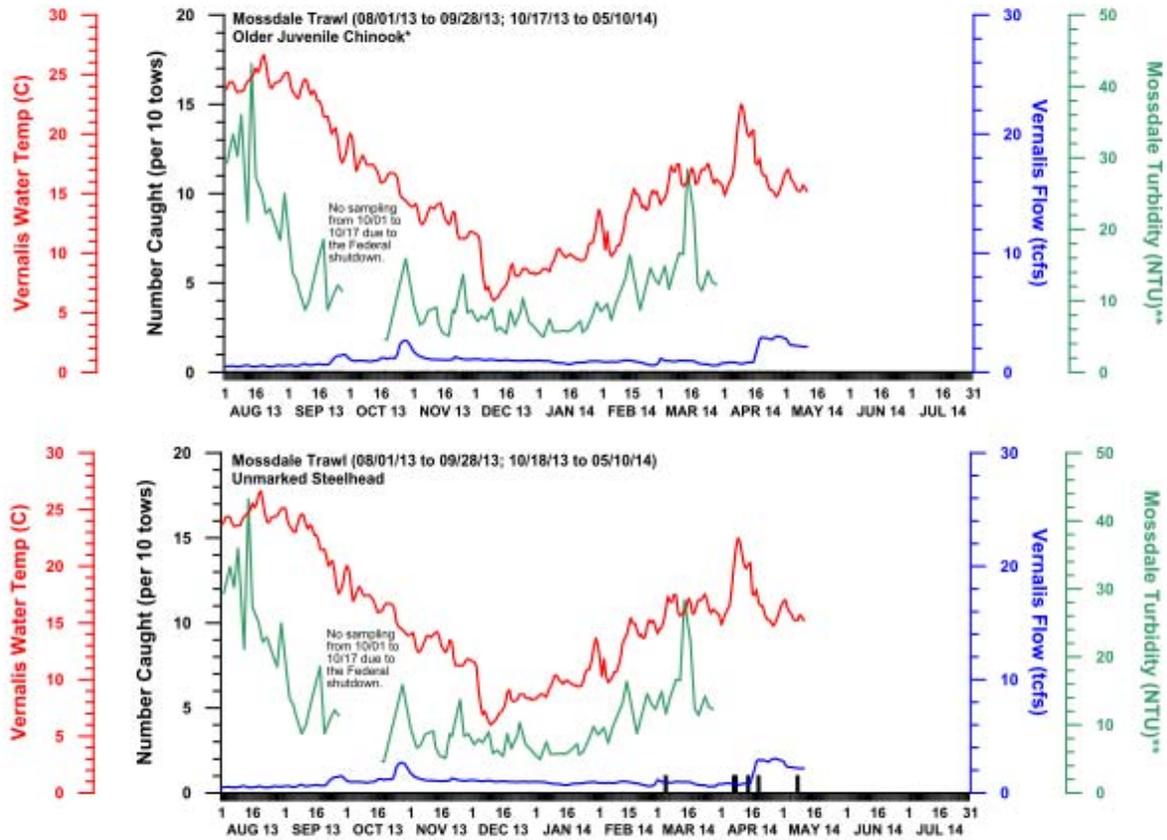
Preliminary data from DFW, FWS, and CDEC; subject to revision.

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**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



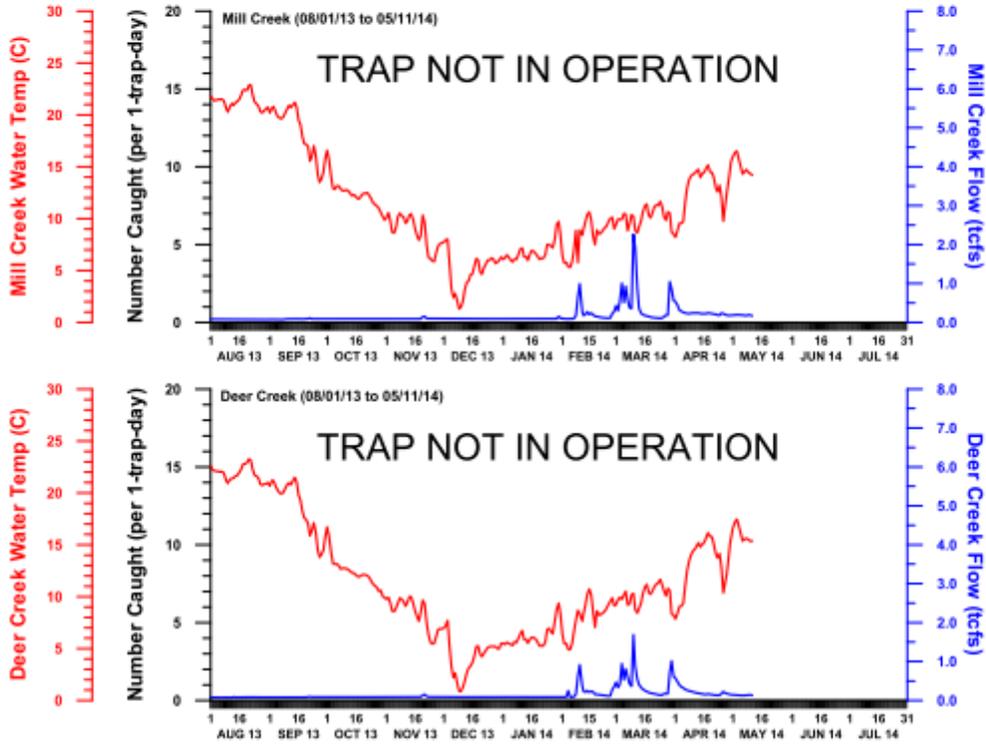
DWR-DES 12 MAY 2014

Preliminary data from FWS and CDEC, subject to revision.

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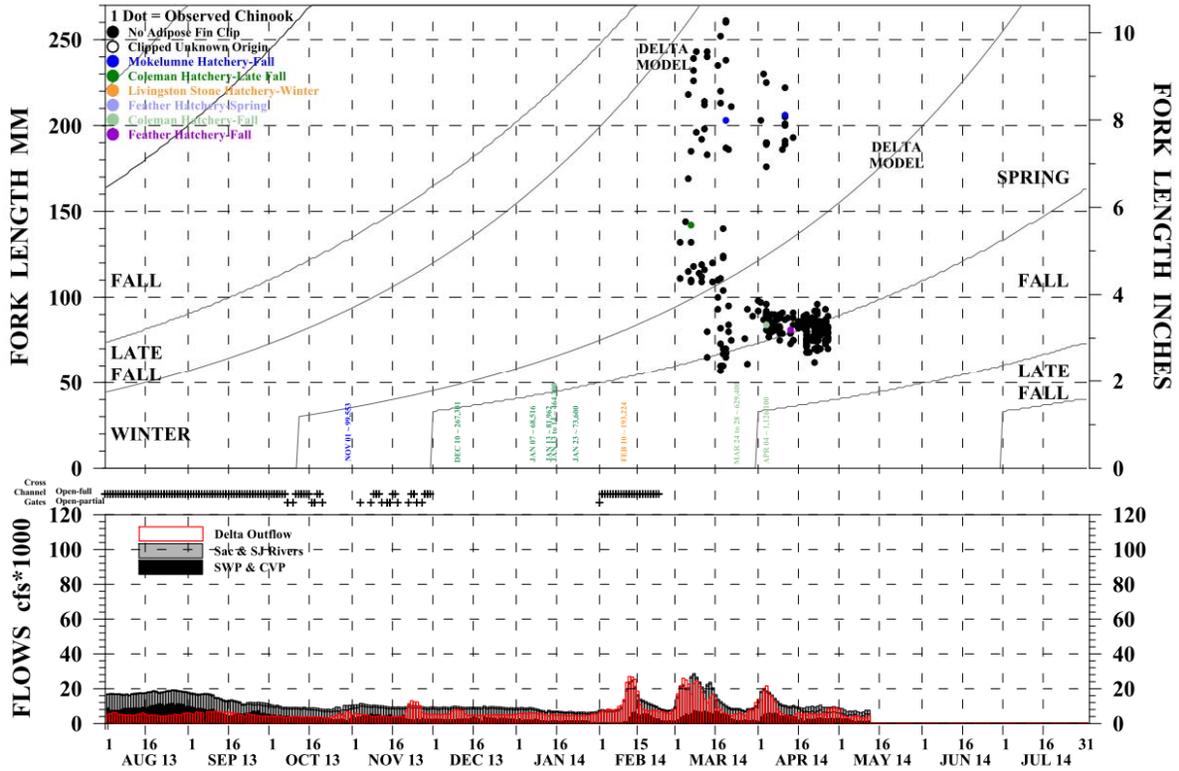
**Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured unless data are missing for more than five days.

WATER TEMPERATURE AND FLOW MEASURED AT MILL AND DEER CREEK



DWR-DES 12 MAY 2014
Preliminary data from CDEC; subject to revision.

OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2013 THROUGH 05/11/2014



DWR-DES 12 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.