

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 04/21/2015 at 9:00 a.m.

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.

DWR: Farida Islam, Kevin Reece, Aaron Miller, Rhiannon Mulligan, Bryant Giorgi, Dan Yamanaka

Reclamation: Peggy Manza, Michele Palmer

NMFS: Barb Byrne, Jeff Stuart, Meiling Roddam

USFWS: Craig Anderson, Roger Guinee

CDFW: Bob Fujimura, Duane Linander

SWRCB: Matt Holland

Agenda Items

1. Agenda review and introductions
2. RPA Implementation review
3. Current Operations
4. Smelt Working Group
5. Fish Monitoring
6. DOSS Advice

Agenda Item 2.

RPA Implementation Review

Delta RPA Actions affecting operations during April:

Action IV.1.2 (DCC gate operations):

- Default DCC gate closure.

Action IV.2.3 (OMR Flow Management)

- The OMR limit of no more negative than -5,000 cfs is in effect, but not controlling Delta exports.

Action IV.2.1 (I:E ratio)

- Currently, the Critical year 1:1 ratio (of San Joaquin inflow at Vernalis to combined CVP/SWP exports) is in effect, this action restricts combined exports to 100% of Vernalis flow, or 1,500 cfs, whichever is greater.

Agenda Item 3.

Current Operations (04/21/2015)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	525	Jones Pumping Plant	950
Reservoir Releases (cfs)			
Feather - Oroville	1,300*	American - Nimbus	500
		Sacramento - Keswick	4,500**
		Stanislaus - Goodwin	350***
		Trinity – Lewiston	300
Reservoir Storage (in TAF)			
San Luis (SWP)	921	San Luis (CVP)	388
Oroville	1,805	Shasta	2,718
New Melones	506	Folsom	572
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	5,946
Outflow Index (cfs)	3,282 (4,076 for 7-day NDOI)	San Joaquin River at Vernalis (cfs)	1,052
E:I	21% (3-day avg.) 18% (14-day avg.)	X2	>81 km

*Increased from 800 cfs to help meet Delta needs (outflow; salinity management)

**Will be increased to 5,000 cfs on 4/22/15.

***Due to 2nd peak of the Appendix 2E Stanislaus River pulse flow; will be gradually reduced to 150 cfs on 4/23.

At this time, exports are limited to 1,500 cfs by three separate regulatory requirements:

- The 4/6/15 SWRCB Revised Order on the TUCP -- limits combined exports to no more than 1,500 cfs when outflow is <5,500 cfs
- D1641 -- limits combined exports during the San Joaquin pulse flow to no more than 100% of the Vernalis flow (or no more than 1,500 cfs, when Vernalis flow is <1,500 cfs).
- NMFS RPA Action IV.2.1 -- Critical year 1:1 ratio (of San Joaquin inflow at Vernalis to combined CVP/SWP exports) is in effect; limits combined exports to 100% of Vernalis flow, or 1,500 cfs, whichever is greater.

OMR values as of 4/18:

	USGS gauges (cfs)	Index (cfs)
5-day avg.	-1,760	-1,790
14-day avg.	-1,690	-1,760

DCC Operations under the TUCP

DOSS briefly discussed the procedure for initiating flexibility in the DCC operations under the current drought contingency plan. DWR reported that the recent spring tidal conditions, low pressure, and winds have resulted in some salinity intrusion into the Delta. DWR expects that water quality may improve a bit during the coming neap tide, but wanted to check in on process in case water quality conditions do not improve and a DCC opening is contemplated.

Reclamation is hoping that no DCC opening will be required until May 20 (when both D-1641 and the NMFS BiOp allow occasional opening), but will continue to monitor conditions.

Reece (DWR) sent the following email update during the DOSS call:

The DCC matrix states the following “The Projects must notify the Real Time Drought Operations Management Team that water quality concerns levels may be reached within 5-7 days so that monitoring efforts can be increased to daily sampling no less than 72 hours prior to DCC gate opening, depending on fisheries catch indices.”

Agenda Item 4.

Smelt Working Group (SWG)

Bartoo (FWS) provided the following email update:

The Working Group agreed that given present distribution, current salvage, and Delta conditions, there was no indication that the projected combined exports of approximately 1500 cfs for the week (potentially resulting in daily average OMR flows of approximately -2000 cfs) need to be modified for the protection of Delta Smelt adults and larvae.

The Working Group is following guidance for entrainment protections from both Action 2 (adult Delta Smelt) and Action 3 (juvenile Delta Smelt).

The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, April 27, 2015 at 10 am.

Agenda Item 5.

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	Prisoners Pt/ Jersey Pt. ^A	Sacramento Trawl	Mossdale Kodiak Trawl	GCID RST	Knights Landing RST ^D	Tisdale RST ^E	Beach Seines
Sample Date	4/12-4/18		4/12-4/18	4/12-4/19	4/14-4/20	4/13-4/20	4/13-4/20	4/12-4/18
Total Catch	427		33	60	311	7	15	13
FR Chinook	70		7	57 ^B (range in avg. FL:	56		1	6

				85mm-88mm)				
WR Chinook	2		1		2			
SR Chinook	259		17		244	7 (91mm-108mm)	11	5
LFR Chinook								
Ad-Clipped Chinook	95		8					1
Delta Smelt								
Splittail								
Longfin Smelt	1							
Steelhead (ad-clip)				2 ^c	4		2	1
Steelhead (wild)				1 (202mm)	5		1	
Green Sturgeon								
Flows (avg. cfs)					747	4,089	4,049	
W. Temp. (avg. °F)					58	64	62	
Turbidity (avg. NTU)					4.4	14	15	

^A No trawls conducted this week.

^B 3 Chinook had pink dye on the caudal fin; Of those 3 fish, 1 had pink dye on the upper caudal and 2 had pink dye on the lower caudal. These fish likely came from the Caswell RST efficiency tests on the Stanislaus River.

^C Sutures visible.

^D Sampling period was from 4/13 at 9:45am to 4/20 at 9:00am.

^E Sampling period was from 4/13 at 8:30am to 4/20 at 8:30am.

Acoustic-tagged Hatchery Spring-Run Chinook from Feather River Fish Hatchery-- Tracking with Real-Time Receivers:

- JSATS tagged spring-run Chinook were released in the Feather River on 3/18/2015 at about 10:45am at Boyds rkm 258 (75 tagged fish along with 500k regular fish) and 11:30am at Gridley rkm 303 (75 tagged fish along with 500k regular fish).
- Proportion of tag codes observed passing receiver as of 4/20 at 10:30am:

<u>Receiver</u>	<u>Release 1: Boyds</u> [Percent with 2+ detects]	<u>Release 1: Gridley</u>	<u>Both Releases</u>	<u>Release 2: Boyds</u>	<u>Release 2: Gridley</u>	<u>All Releases</u>
Sacramento I80 Bridge	9.3	1.3	5.3	10.7	8.0	9.3
Hood* (activated on 2/27)	1.3	0.0	0.7	4.0	6.7	5.3
Middle River	0.0	0.0	0.0	0.0	0.0	0.0

(activated on 2/16)						
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*Out of service from 3/4 – 3/17; Re-activated on 3/18.

Acoustic-tagged non ad-clipped Chinook smolts in the Sutter Bypass

Colin Purdy (CDFW) provided an email update on a tagging study being conducted by Jeremy Notch (SWFSC). Byrne (NMFS) will follow up with Notch to determine the objectives of the study. A summary of the information in the email update is below:

- From 4/6/15- 4/16/15, 141 non ad-clipped Chinook smolts, with fork lengths ranging from 80mm – 136mm, were tagged with acoustic tags in the Sutter Bypass.
- As of 4/20/15 at 10:30 am, 13 fish out of 141 tagged (9%) were detected at Sacramento, and 10 fish out of the 141 tagged (7%) were detected at Hood.
- Low flows in Butte Creek and through the Sutter Bypass have currently stopped the RST below weir 2 from sampling. There is an effort to work with the wildlife areas to release some water into Butte Creek to encourage smolt downstream migration and reduce upstream passage issues for adults moving up through the system.

Fish Salvage¹:

Fujimura (DFW) provided the following summaries of salvage and loss at the SWP and CVP fish collection facilities. The two salvage figures were generated from data on CDFW’s salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

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 13-19, 2015
 Prepared by Bob Fujimura on April 20, 2015 15:10
 Preliminary Results - Subject to Revision

Criteria	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	0	0	5.29	5.67	0	0	↗	1.57
Exports									
SWP daily export	892	744	1,305	1,318	1,095	527	1,129	↗	1,001
CVP daily export	1,961	1,962	1,956	1,956	1,957	1,962	1,968	→	1,960
SWP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%
CVP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%

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)
 Reduced counts = percentage of time that routine salvage sample time were less than 30 min per 2 hours of salvage and export operations
 Yellow highlighted dates indicate TFCF salvage outage occurred

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	→	53	106
Spring Run	2	10	↗	25	29
Late Fall Run	0	0	→	6	26
Fall Run	0	0	→	16	26
Unclassified	0	0	→	24	NC
Total	2	10		124	188
Hatchery					
Winter Run	0	0	→	62	214
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	136	340
Fall Run	0	0	→	41	180
Unclassified	0	0	→	12	NC
Total	0	0		251	734

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time
 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	8	35	↗	34	133
Hatchery	4	17	↗	519	1,838
Total	12	52		553	1,971

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

Figure 1. DOSS weekly salvage update for the reporting period 4/13/15-4/19/15.

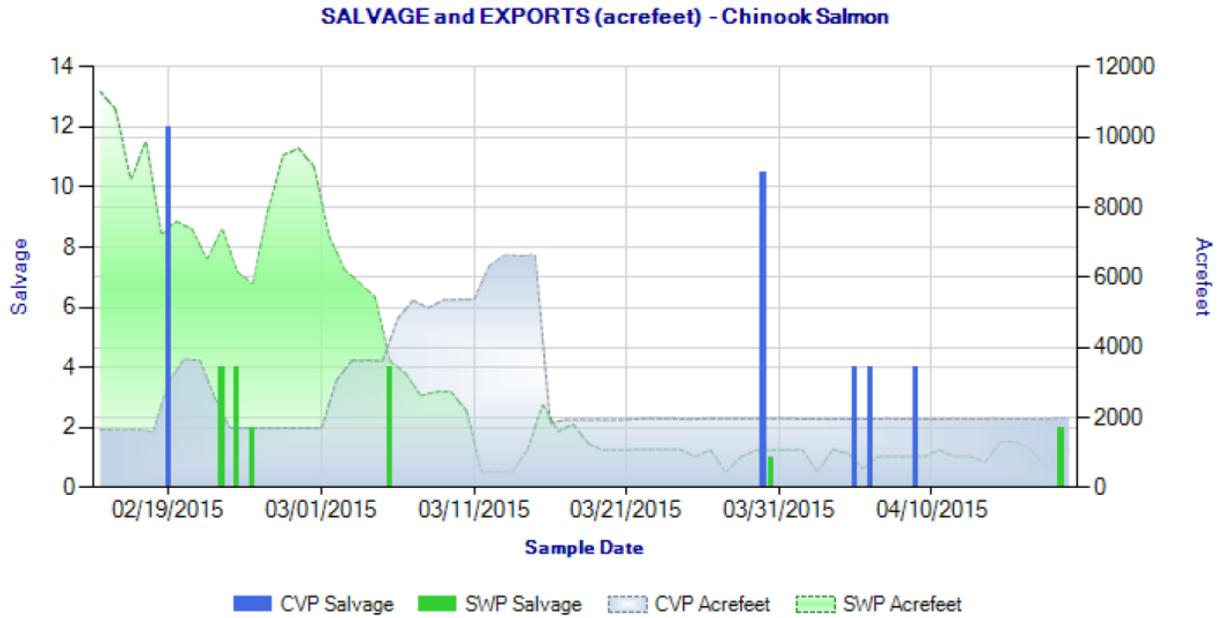


Figure 2. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during 02/15/15 through 04/19/15.

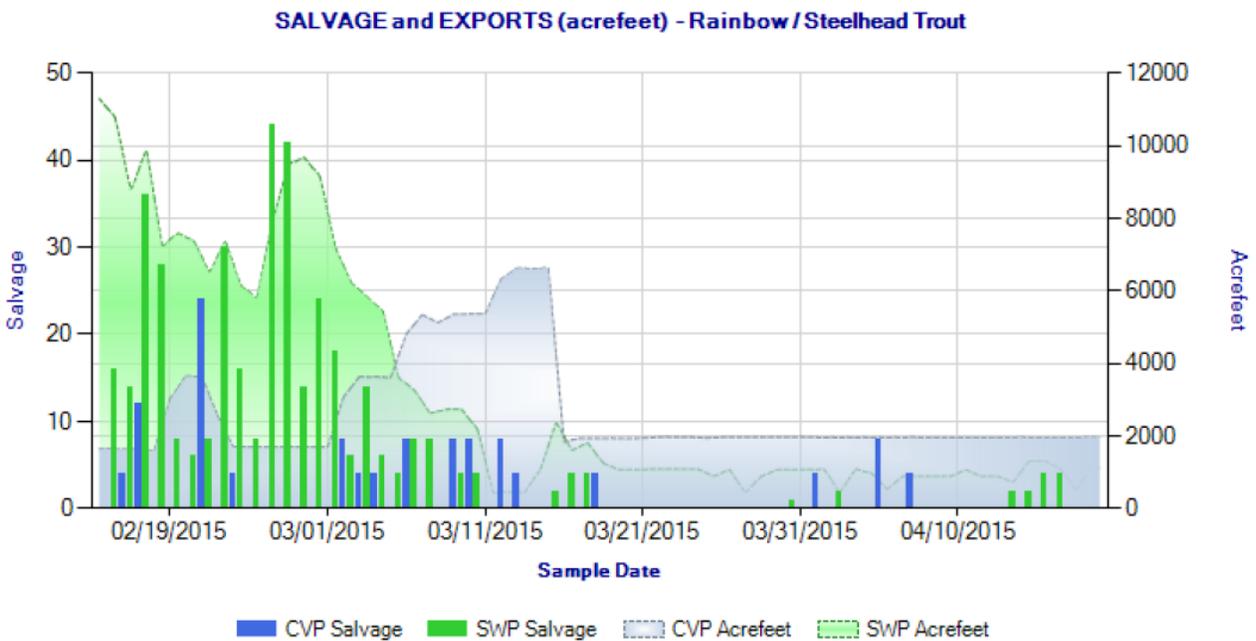


Figure 3. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during 02/15/15 through 04/19/15.

Islam (DWR) provided the following summary of coded-wire-tag recoveries at the SWP and CVP fish collection facilities.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2014/2015

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
12/1/2014	LF	Coleman NFH	Battle Creek	Production	574.59	853,100	n/a	0.067	n/a	n/a	n/a	12/12/2014	1/16/2015
12/4/2014	LF	Coleman NFH	Battle Creek	Spring Surrogate	34.98	77,000	n/a	0.045	n/a	0.5%	1.0%	12/25/2014	12/29/2014
12/18/2014	LF	Coleman NFH	Battle Creek	Spring Surrogate	45.42	78,000	n/a	0.058	n/a	0.5%	1.0%	1/1/2015	1/17/2015
2/5/2015	LF	Coleman NFH	Battle Creek	Spring Surrogate	0.00	83,100	n/a	0.000	n/a	0.5%	1.0%	*	*
2/4 - 2/6/2015	W	Livingstone NFH	Sacramento River	Production	8.40	612,056	188500	0.001	0.00004	0.5%	1.0%	2/25/2015	2/25/2015
4/2-4/3/2015	F	Coleman NFH	Rio Vista net pens	Production	0.00	109,500	n/a	0.000	n/a	0.5%	1.0%	*	*
4/10-4/19/2015	F	Coleman NFH	Rio Vista net pens	Production	0.00	1,517,900	n/a	0.000	n/a	0.5%	1.0%	*	*
4/18-4/19/2015	F	Coleman NFH	Rio Vista net pens	Production	0.00	207,350	n/a	0.000	n/a	0.5%	1.0%	*	*

UNCONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2014/2015

Facility	Unknown CWT Loss ⁵	Unread CWT Loss ⁶	Unknown Hatchery Loss ⁷	Acoustic Tag Loss ⁸	Number of Unassigned CWTs ⁹
SWP	18.01	0.00	0.00	17.00	0
CVP	26.62	0.00	0.00	0.00	0
TOTAL	44.63	0.00	0.00	17.00	0

SWP and CVP adipose-fin clipped Chinook lost from 10/1/2014 through 4/19/2015.

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.

¹⁰Chinook outside of the length-at-date criteria (Delta model) are not reported.

* - Information not yet available.

DWR-DES Revised 4/20/2015

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

DOSS Estimates of Fish Distribution

DOSS estimates of the current distribution of listed Chinook, as a percentage of the population, are based on recent monitoring data and historical migration timing patterns. The table below reflects current distribution.

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
<i>Young-of-year (YOY) winter-run Chinook salmon(naturally produced)</i>	Few stragglers only (last week: same)	10% (last week: 20%)	90% (last week: 80%)
<i>YOY winter-run Chinook salmon (hatchery-produced)</i>	Few stragglers only (last week: same)	10% (last week: 20%)	90% (last week: 80%)
<i>YOY spring-run Chinook salmon^A</i>	Few stragglers only to 5% (last week: ~5%)	40% (last week: 50%)	60% (last week: 50%)
<i>Yearling spring-run Chinook salmon^B</i>	>95% out of Delta; Generally done migrating with the exception of a few stragglers.		
<i>Hatchery Steelhead^C</i>	< 5% (last week: 5% all hatchery fish)	< 5% (last week: 5% all hatchery fish)	>95% (last week: 90% all hatchery fish)
<i>Sacramento River steelhead (naturally- produced)</i>	Limited catch data		
<i>San Joaquin River steelhead^D</i>	5% (last week: 5% -10%)	25% (last week: 40%)	70% (last week: 45%-50%)

^A Chipp Island Trawl data of spring-run is difficult to interpret now that the 75% unmarked fall-run productions are likely masking the wild spring-run Chinook catch.

^B No yearling spring-run Chinook salmon have been caught in 2014 monitoring. In general, very few yearling spring-run Chinook salmon are observed because of their relatively large size and strong swimming (and associated gear avoidance) abilities.

^C Difficult to assess now that all hatchery releases are in the system (CNFH, Feather River Fish Hatchery, and Mokelumne Fish Hatchery released as usual; Nimbus Hatchery released their steelhead in the spring of 2014 because of expected unsuitable hatchery water temperatures during the summer of 2014). Percentages are intended to capture distribution of steelhead that migrate out; not those that may residualize.

^D Have observed a few juvenile steelhead in monitoring data. Distribution estimates are also based on 10 years of historical data from Mossdale Trawls (on the San Joaquin River) and RST data from Caswell Park (on the Stanislaus River), as well as on recent flow and water temperature conditions.

DOSS Feedback on Entrainment Risk

Entrainment risk of fish from the Sacramento River into the Interior Delta (same as last week except for tidal conditions):

DOSS noted that generally, there is an increased risk of entrainment into the interior Delta during spring tides, compared to during neap tides, at any OMR level. During a spring tide, tidal conditions extend further upstream and may, for example, create conditions at Georgiana Slough (e.g., reverse flows) that are associated with routing into Georgiana Slough, a route to the interior

Delta. Currently, the Delta is exiting a spring tide and entering a neap tide (quarter moon is on Saturday, 4/25).

Entrainment risk of fish in the Interior Delta into the CVP/SWP facilities (same as last week, except more negative than -5,000 cfs OMR level risk is no longer included since no OMR flex request is anticipated):

DOSS assessed the current risk of entrainment for YOY winter-run Chinook salmon. For both naturally-produced and hatchery-produced YOY winter-run in the Delta, the current risk of entrainment for each OMR flow ranges was characterized as follows:

- -1,200 to -2,000 cfs has a medium risk of entrainment
- -2,000 to -3,500 cfs has a medium to high risk of entrainment
- -3,500 to -5,000 cfs has a high risk of entrainment

Agenda Item 6.

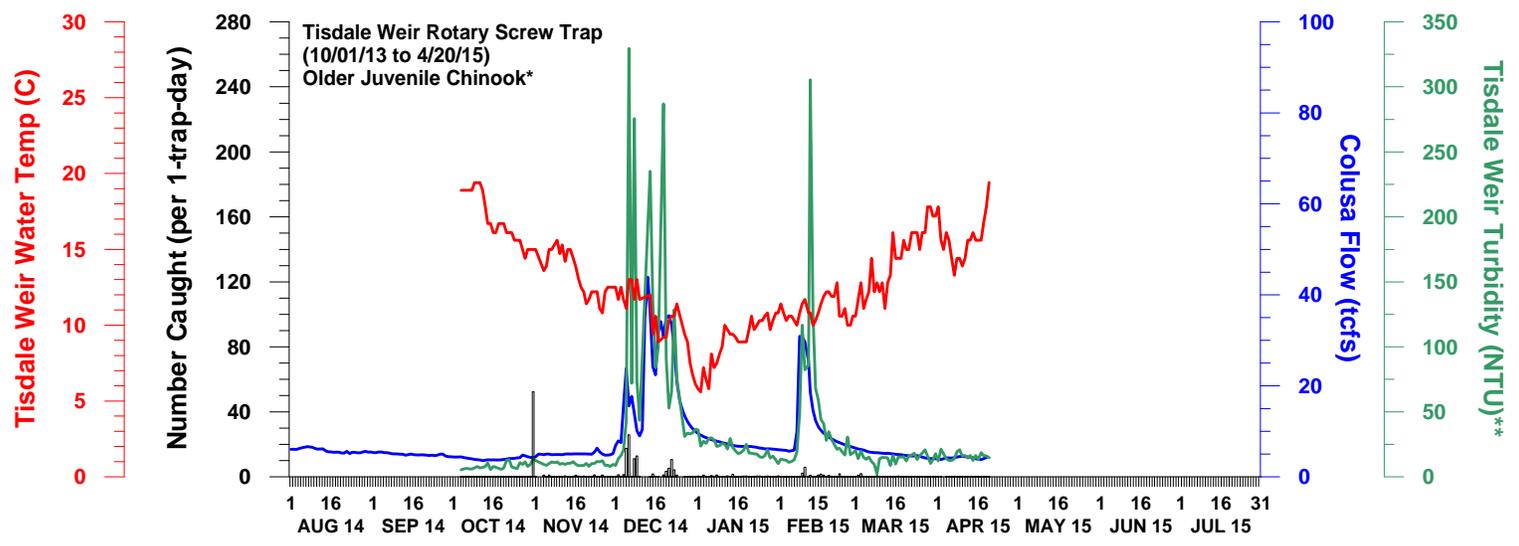
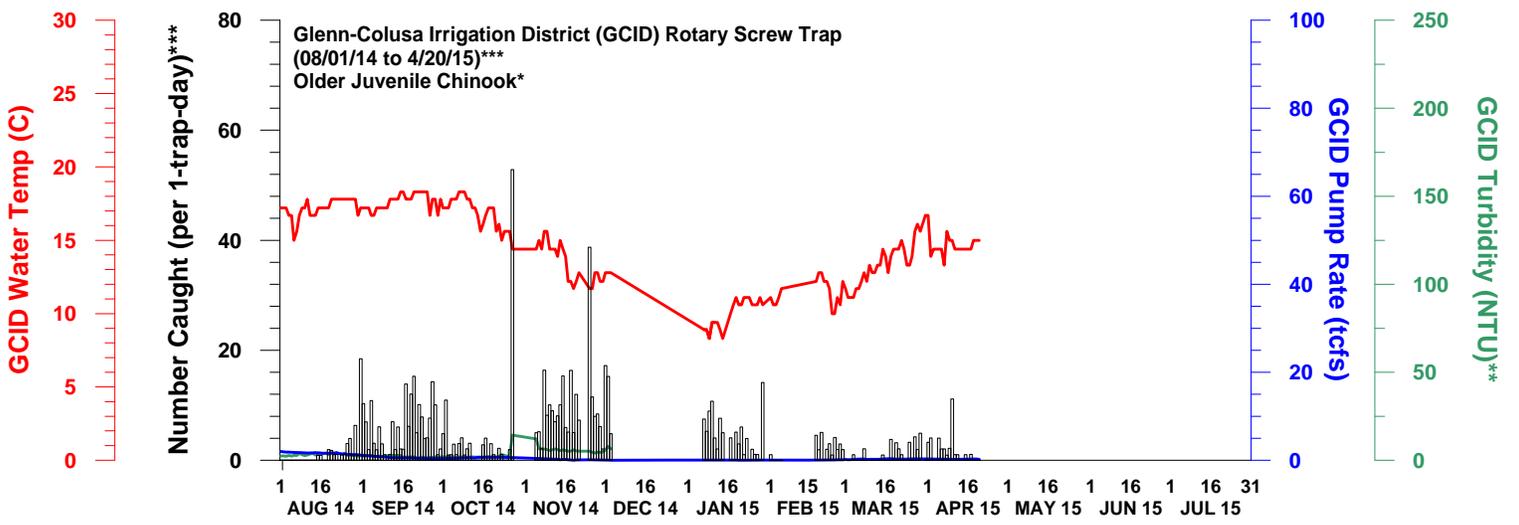
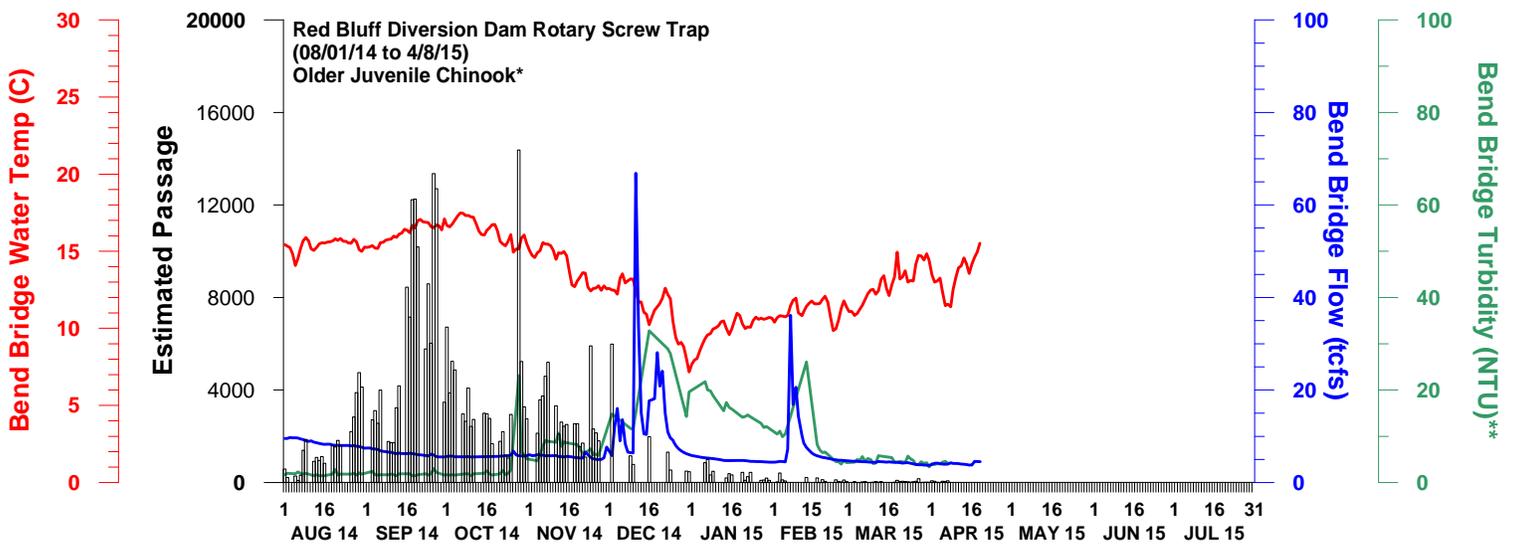
DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next DOSS conference call will be on 04/28/15 at 9am.

The following graphs were 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 at:

<http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>

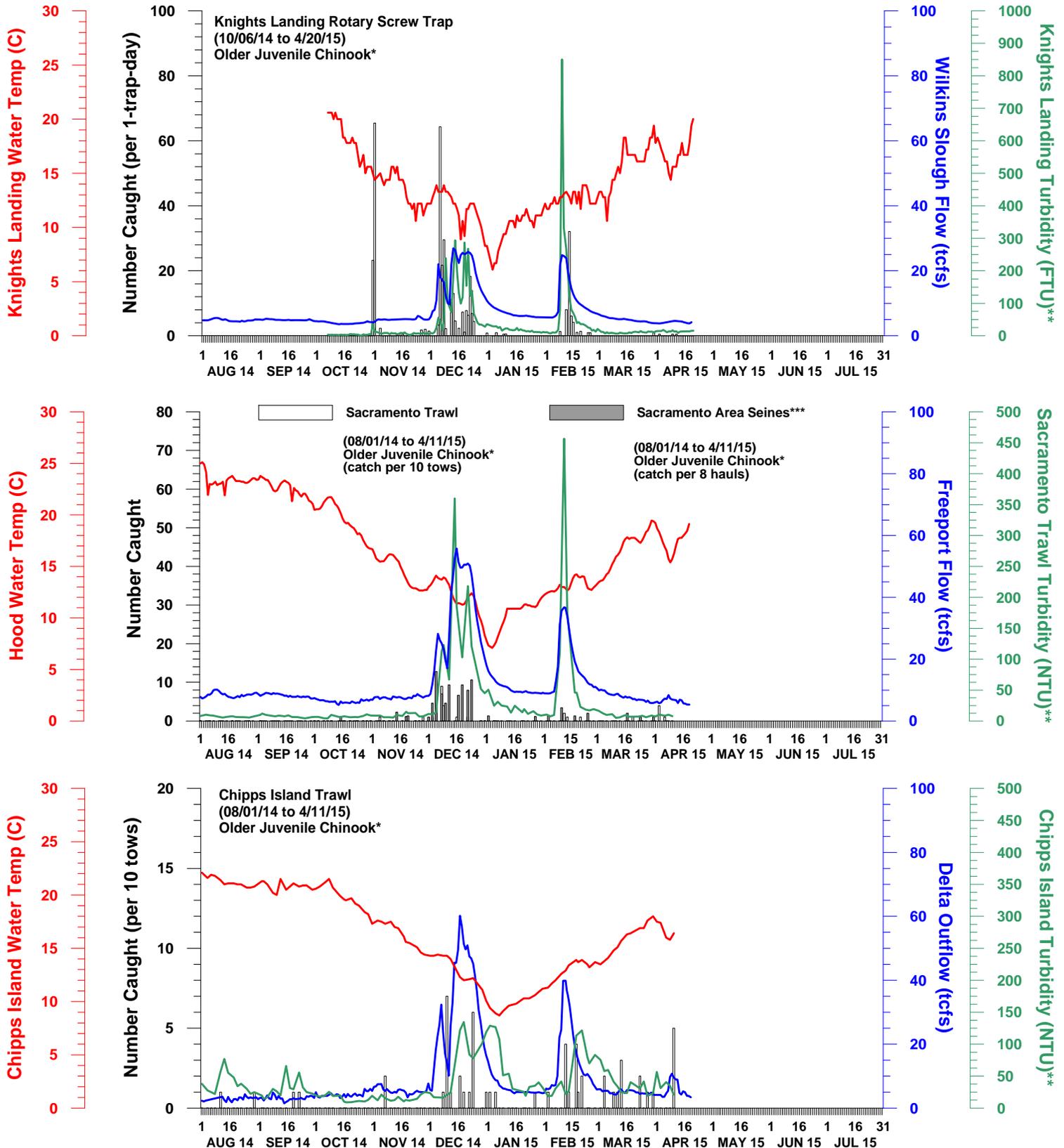
NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 20 APR 2015
 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.
 ***Trap was pulled on 10/28/14 due to extremely turbid conditions, heavy debris, and high number of listed winter run Chinook and has resumed since 11/5/14.
 Trap was not in operation on 10/14/14, 1/14/15, and 2/14/15, 3/14/15 due to forecasted increases in flow and subsequent elevation changes.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER AND CHIPPS ISLAND



DWR-DES 20 APR 2015

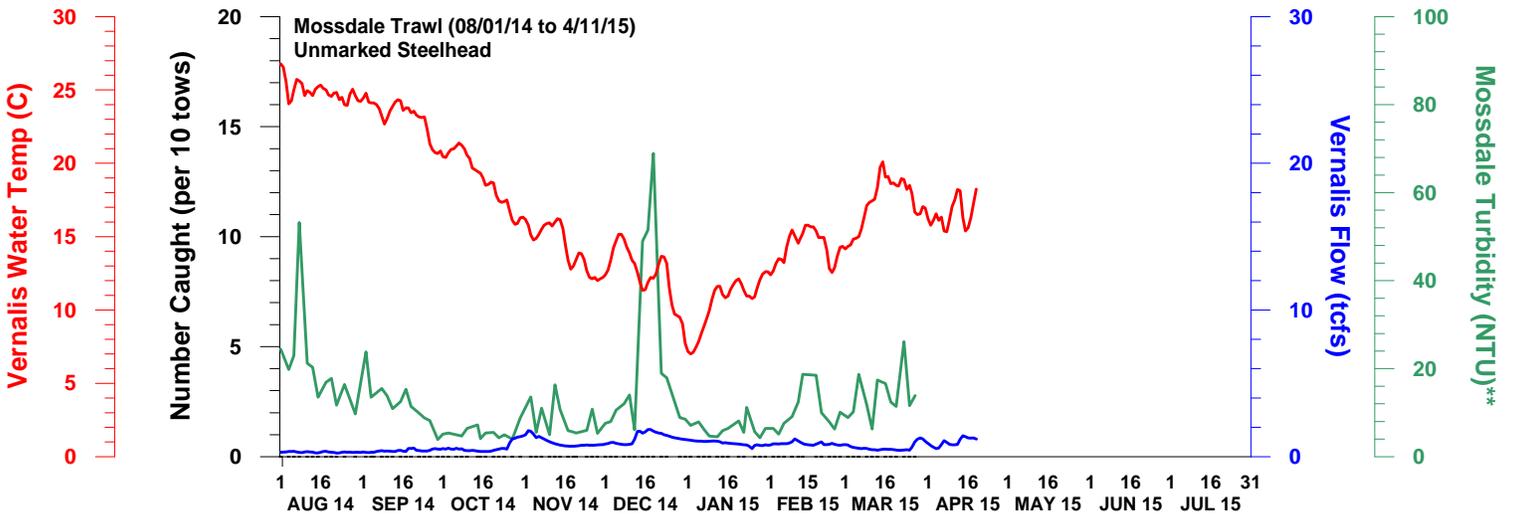
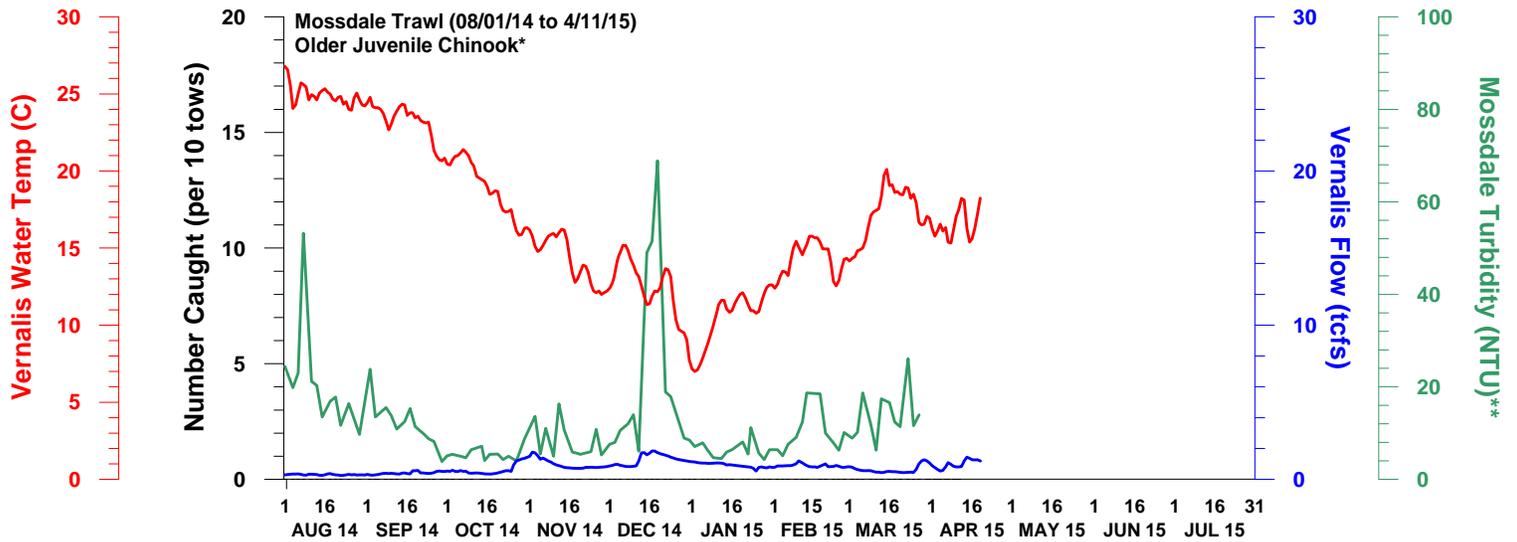
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*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

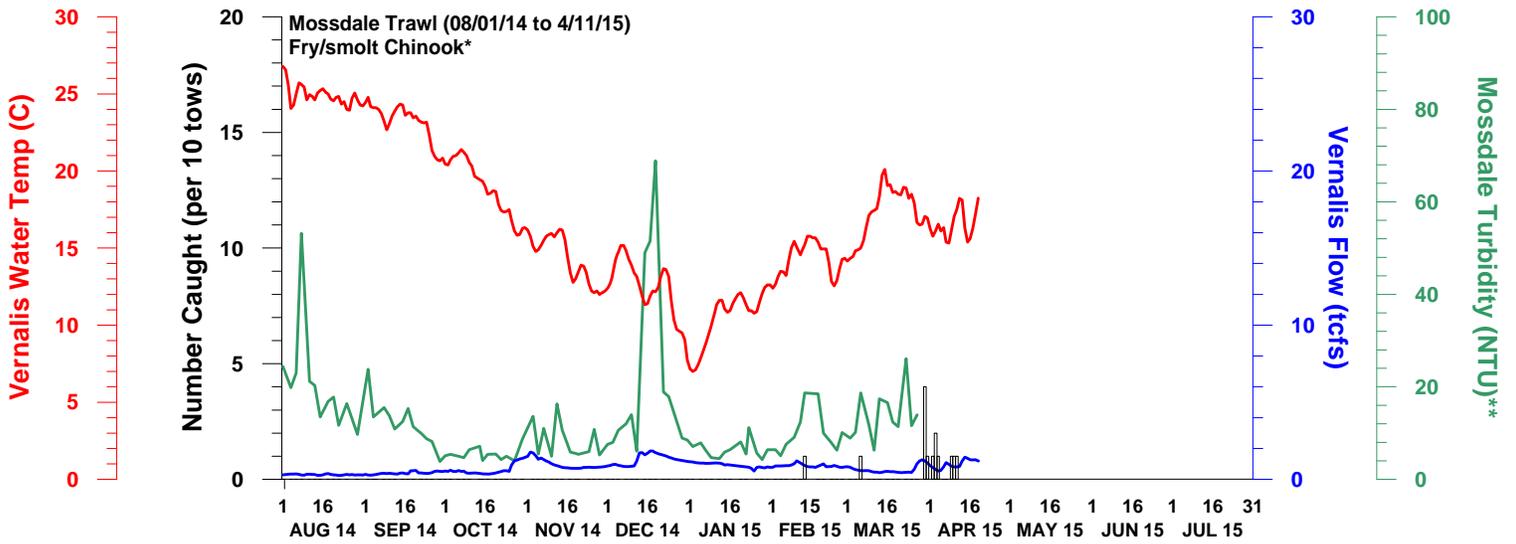


DWR-DES 20 APR 2015
Preliminary data from FWS and CDEC; subject to revision.

*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.

NUMBER OF UNMARKED FRY/SMOLT CHINOOK MEASURED IN THE SAN JOAQUIN RIVER



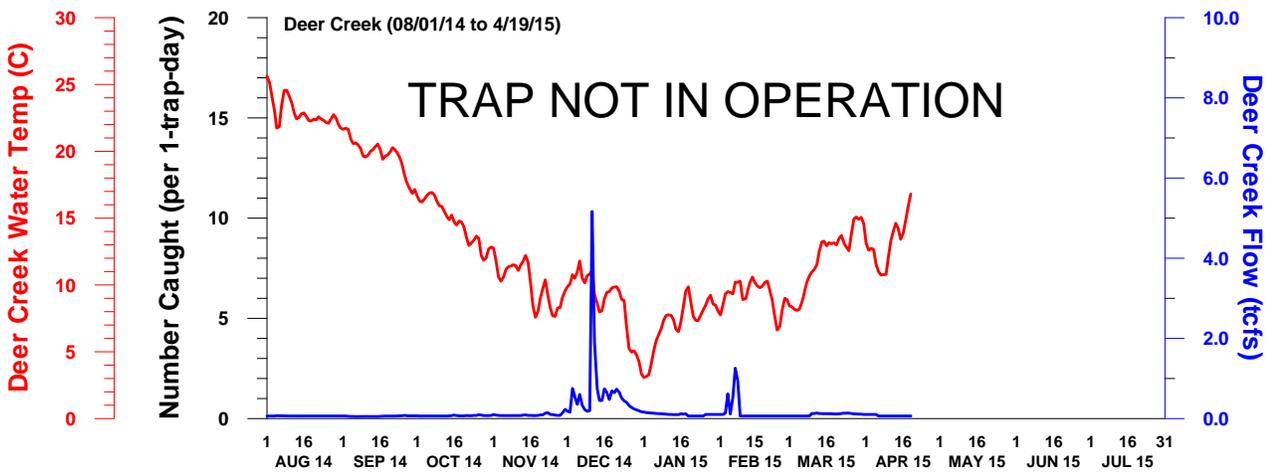
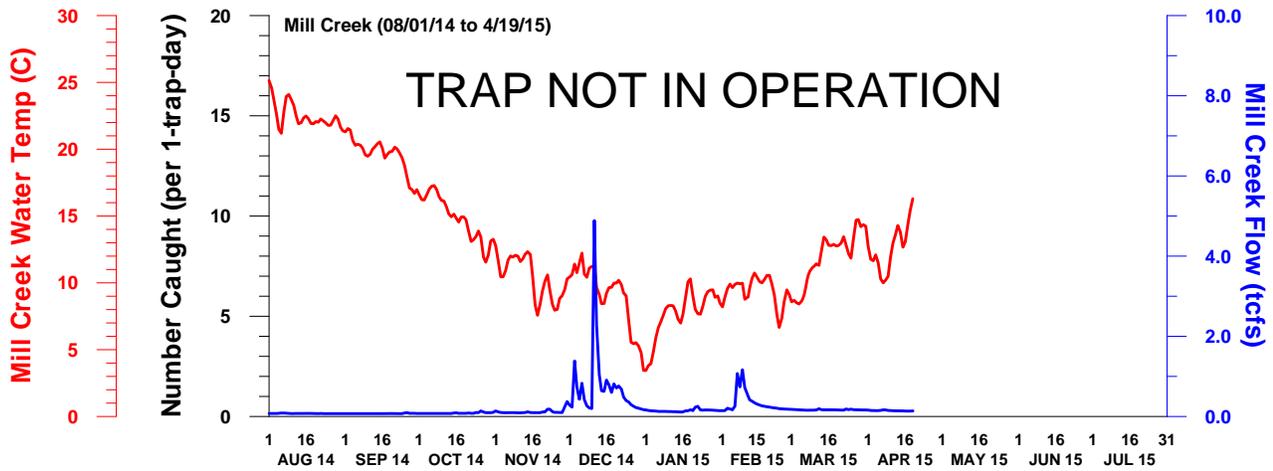
DWR-DES 20 APR 2015

Preliminary data from FWS and CDEC; subject to revision.

*Fry/smolt Chinook defined as all Chinook less than the minimum winter run length-at-date criteria (Frank Fisher model).

**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



Data Acquisition:

All data are preliminary and subject to revision.

The estimated passage data for the Red Bluff Diversion Dam were obtained directly from the US Fish and Wildlife Service (FWS), Red Bluff Fish and Wildlife Office (http://www.fws.gov/redbluff/rbdd_biweekly_final.html).

The catch data for Glenn-Colusa Irrigation District (GCID) were obtained directly from GCID.

The catch data for Tisdale Weir and Knights Landing were obtained directly from the California Department of Fish and Wildlife (DFW)¹, North Central Region.

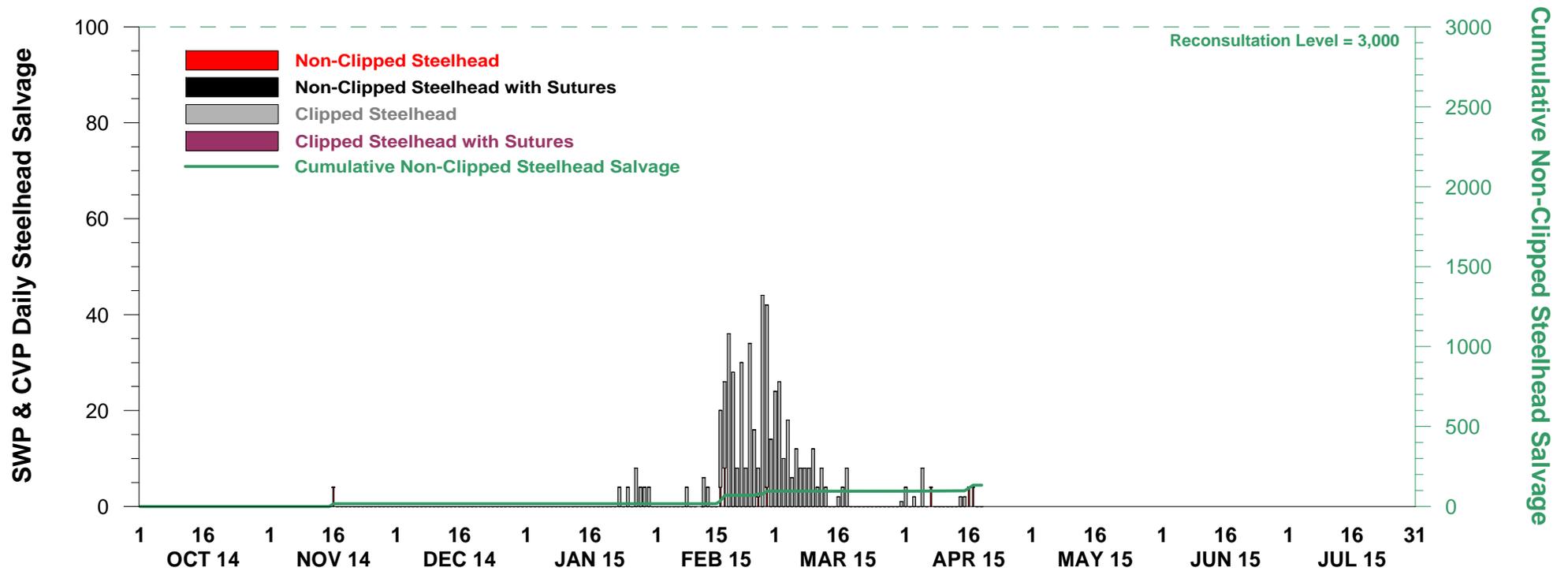
Sacramento River Trawl, Sacramento Area Beach Seine, and Chipps Island Trawl data were obtained directly from FWS, Stockton Fish and Wildlife Office (<http://www.fws.gov/stockton/ifmp/>).

Mossdale Trawl data were either obtained directly from FWS, Stockton Fish and Wildlife Office or from DFW (Region 4).

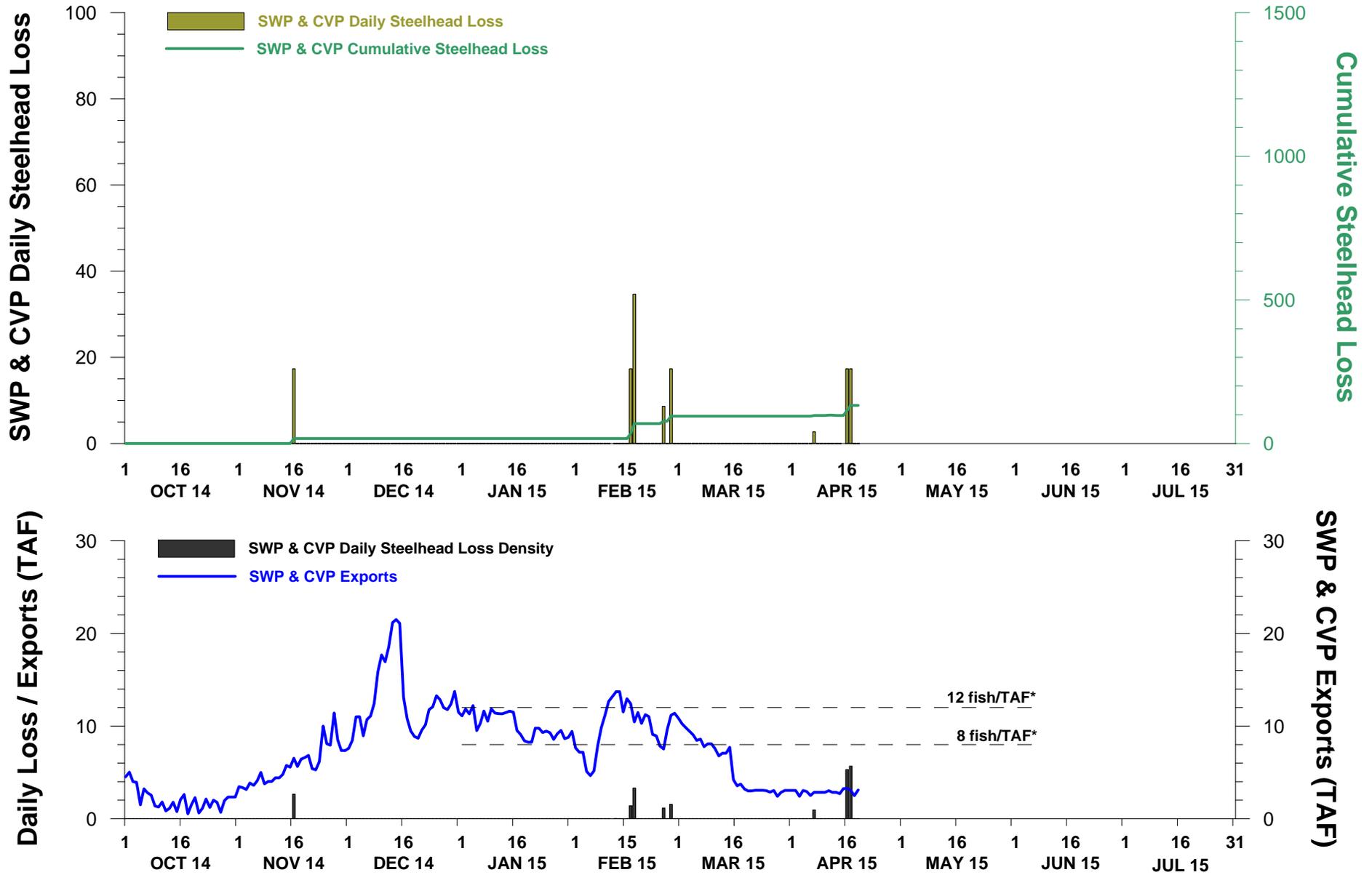
The hydrology data were either downloaded from the California Data Exchange Center (CDEC) (<http://cdec.water.ca.gov>) or obtained directly from the California Department of Water Resources, Operations Control Office.

¹ Formerly known as the California Department of Fish and Game (DFG).

STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 19 APR 2015



NON-CLIPPED STEELHEAD LOSS AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 19 APR 2015



DWR-DES 20 APRIL 2015

Preliminary data from DFW; subject to revision.

*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.