

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 01/20/2015 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, Rhiannon Mulligan, Aaron Miller, Bryant Giorgi, Kevin Reece, Mike Ford, Tracy Pettit

Reclamation: Peggy Manza, Michele Palmer

NMFS: Barb Byrne, Jeff Stuart, Meiling Roddam

USFWS: Leigh Bartoo

CDFW: Duane Linander, Ken Kundargi, Bob Fujimura

SWRCB: Matt Holland

EPA: Erin Foresman

Agenda Items

1. Agenda review and introductions
2. Fish Monitoring
3. Current Operations
4. Smelt Working Group
5. RPA Implementation review
6. Special Topic: JSATS receivers available for use to track winter-run Chinook salmon movement
7. DOSS Advice

Agenda Item 2.

Red Bluff Diversion Dam (RBDD)

USFWS biweekly report (January 1, 2015- January 14, 2015) for preliminary estimates of passage by brood-year and run for unmarked juvenile Chinook salmon captured by rotary screw traps at RBDD included:

- Winter run Chinook salmon biweekly total: 5,800
- Winter run Chinook salmon brood year 2014 total: 402,524

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 ^A	Prisoners Pt/ Jersey Pt. ^A	Sacramento Trawls ^A	Mossdale Kodiak Trawl ^A	GCID RST	Knights Landing RST ^B	Tisdale RST ^C	Beach Seines ^A
Sample Date					1/13-1/19	1/12- 1/19	1/11-1/18	
Total Catch					422 (31mm-172mm)	39 (37mm-48mm)	76 (32mm-120mm)	
FR Chinook					196	14	52	
WR Chinook					20		4	
SR Chinook						10	13	
LFR Chinook					8			
Ad-Clipped Chinook					1		1	
Delta Smelt								
Splittail								
Longfin Smelt								
Steelhead (ad-clip)					196	12	6	
Steelhead (wild)					1			
Green Sturgeon								
W. Temp. (avg. °F)					50	51	49	
Flows (avg. cfs)					906	6,247	6,884	
Turbidity (avg. NTU)					7.6	19	22	

^A Data were provided to DOSS after the call; the holiday on Monday delayed the usual reporting schedule.

^B Sampling period is from 1/12 at 10:00 am to 1/19 at 9:15 am.

^C Sampling period is from 1/11 at 4:00 pm to 1/18 at 8:15 am.

Fish Salvage¹:

For at least part of the past week, both the CVP and SWP fish collection facilities have implemented reduced salvage sampling times (*e.g.*, fish counts based on 10-minute samples every 2 hours rather than the standard 30-minute samples every 2 hours) due to high debris.

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 30-minute sampling period within a 2-hour operation period, the single steelhead is expanded to a salvage of four.

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>.

DOSS Weekly Salvage Update
 Reporting Period: January 12-18, 2015
 Prepared by Bob Fujimura on January 20, 2015 0800 - UPDATED
 Preliminary Results -Subject to Revision

Criteria	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	Trend	
Loss Densities									
Wild older juvenile CS	0	1.60	0	0	0	0	0	↗	0.23
Wild steelhead	0	0	0	0	0	0	0	→	0.00
Exports									
SWP daily export	9,587	9,805	9,807	9,772	7,794	7,362	6,672	↗	8,686
CVP daily export	1,732	1,658	1,799	1,732	1,736	1,740	1741	↘	1,734
SWP reduced counts	50%	0%	0%	0%	0%	0%	0%	↘	
CVP reduced counts	0%	8%	50%	25%	25%	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

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	4	18	↗	36	72
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	6	26
Fall Run	0	0	→	0	0
Unclassified	0	0	→	24	NC
Total	4	18		66	98
Hatchery					
Winter Run	12	53	↗	52	171
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	12	53		241	691

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	0	0	→	4	17
Hatchery	0	0	→	0	0
Total	0	0		4	17

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 01/12/14-01/18/15.

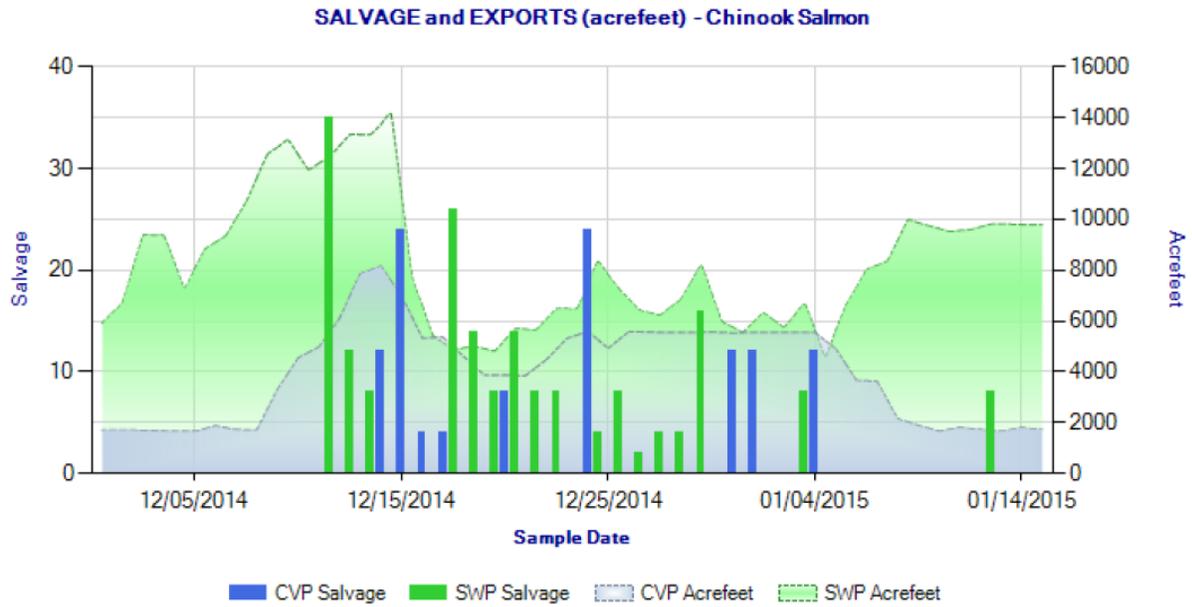


Figure 2. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during 12/01/14 through 01/15/15.

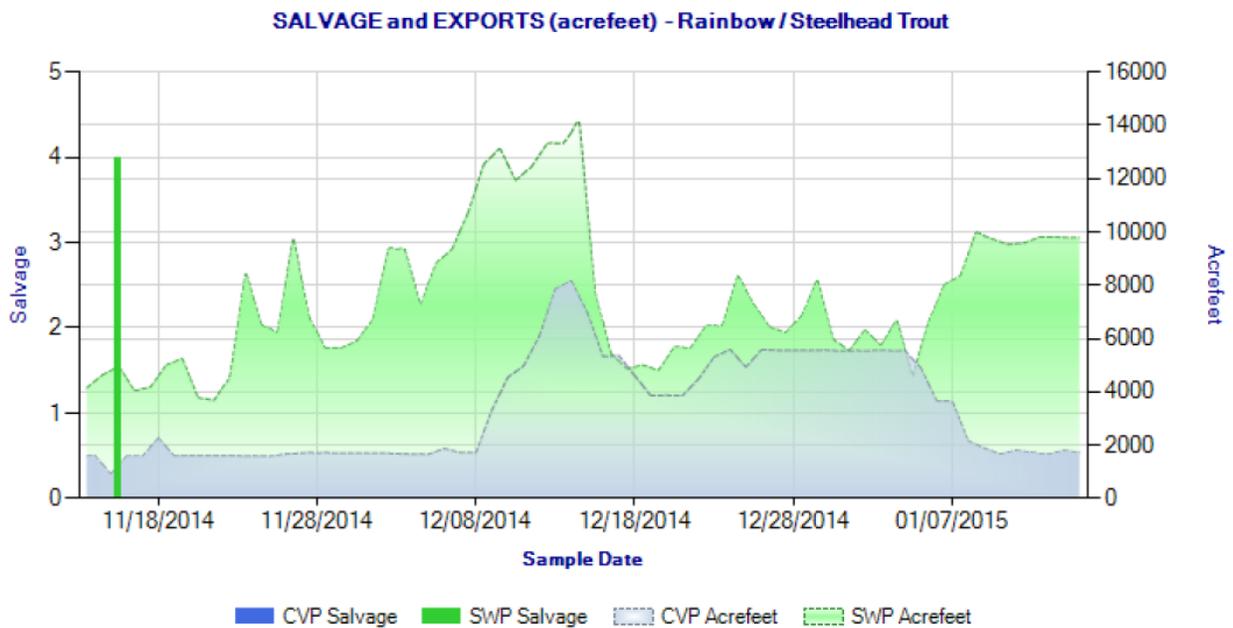


Figure 3. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during 12/01/14 through 01/15/15.

After the DOSS call, Islam (DWR) provided the following summary of coded-wire-tag recoveries at the SWP and CVP fish collection facilities. A limited update was provided during the call since the most recently recovered coded wire tags were not read yet due to the 1/19 holiday.

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	34.96	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%	1/12/2015	1/17/2015

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 ⁵	Unknown Hatchery Loss ⁷	Acoustic Tag Loss ⁸	Number of Unassigned CWTs ⁹
SWP	0.00	0.00	0.00	0.00	0
CVP	26.62	0.00	0.00	0.00	0
TOTAL	26.62	0.00	0.00	0.00	0

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

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 1/20/2015

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. Currently, the steelhead from Coleman National Fish Hatchery (CNFH) are the only tagged steelhead in the system. DFW reported that the Feather River Hatchery (FRH) would be releasing its steelhead in early February (likely at Boyd's Pump or the Yuba City boat Ramp on the Feather River); at that time it will become difficult to track the CNFH fish since clipped steelhead observed downstream of the confluence of the Feather River with the Sacramento River could be from CNFH or FRH. Both the CNFH and FRH steelhead stocks are included in the listed Distinct Population Segment.

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</i>	< 5% (last week: same)	> 95% (last week: same)	< 5% (last week: same)
<i>YOY spring-run Chinook salmon</i>	50% - 75% (last week: same)	25% - 50% (last week: same)	< 5% (last week: same)
<i>Yearling spring-run Chinook salmon*</i>	< 5% (last week: same)	80% - 90% (last week: same)	< 15% (last week: same)
<i>Coleman Nat'l Fish Hatchery Steelhead</i>	90% - 95% (last week: >95%)	5% - 10% (last week: < 5%)	0% (last week: same)

* 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.

Agenda Item 3.

Current Operations (01/20/2014)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	3,900	Jones Pumping Plant	900
Reservoir Releases (cfs)			
Feather - Oroville	950	American - Nimbus	900
		Sacramento - Keswick	3,250
		Stanislaus - Goodwin	300*
		Trinity - Lewiston	300
Reservoir Storage (in TAF)			
San Luis (SWP)	671	San Luis (CVP)	322
Oroville	1,412	Shasta	1,950
New Melones	869	Folsom	446
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	9,450

Outflow Index (cfs)	~5,500	San Joaquin River at Vernalis (cfs)	875
E:I	37% (14-day Avg.) 42% (3 -day Avg.)	X2	>81 km

*Reduced from short pulse flow and holding at 300 cfs for Vernalis salinity; will be reduced to 200 cfs on 1/22/15.

Delta outflow is currently controlling exports. The D-1641 Delta outflow requirement for January is 6,000 cfs (measured as a monthly average) rather than 4,500 cfs, because the December 8-River Index exceeded 800 TAF.

Agenda Item 4.

Smelt Working Group (SWG)

Because of the holiday on Monday, 1/19/15, the SWG did not meet yet this week.

Agenda Item 5.

RPA Implementation Review

Delta RPA Actions affecting operations during December/January:

Action IV.1.2 (DCC gate operations):

- Default DCC gate closure started Monday, December 1.

Action IV.2.3 (OMR Management)

- NMFS issued the final Juvenile Production Estimate (JPE) letter on 1/16/15². Based on the official brood year 2014 JPE, the first- and second-stage JPE-based triggers in Action IV.2.3 are (as anticipated) less than the minimum trigger levels. Action IV.2.3 will continue to be implemented using the minimum trigger values (along with all other triggers):
 - The first stage minimum action trigger is daily SWP/CVP older juvenile Chinook salmon loss density of 2.5 fish per TAF exported; exceedance would require OMR to be no more negative than -3,500 cfs for at least five days.
 - The second stage minimum action trigger is daily SWP/CVP older juvenile Chinook salmon loss density of 5.0 fish per TAF exported; exceedance would require OMR to be no more negative than -2,500 cfs for at least five days.
- No triggers have been exceeded; an OMR limit of -5,000 cfs is in effect.

² http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/20150116_nmfs_winter-run_juvenile_production_estimate_nr.pdf

Agenda Item 6.

Juvenile salmon acoustic telemetry system (JSATS) receivers available for use to track winter-run Chinook salmon movement

- Arnold Amman (NOAA- Southwest Fisheries Science Center, SWFSC) is continuing a study to measure survival of hatchery-produced winter-run Chinook salmon through the system; some real-time receivers will be placed this year to allow in-season tracking of the released hatchery winter-run.
 - Approximately 400 winter-run Chinook salmon hatchery fish will be tagged with JSATS tags and released with a production release of winter-run from Livingston Stone National Fish Hatchery (LSNFH).
 - In addition to the autonomous (*i.e. not telemetered for real-time data access*) receivers already in place for the survival analysis, 3 telemetered JSATS receivers are available for tracking hatchery winter-run in support of real-time management decisions.
- DOSS was asked for recommendations for the placement of these 3 receivers.
 - For real-time management:
 - there was strong support from DOSS for a receiver placement somewhere near Knights Landing, and one near the DCC junction.
 - There were several options discussed for the placement of the third receiver: (in no particular order): (1) along Middle River, or (2) Terminal end of Georgiana Slough
 - For non-telemetered receivers for data useful in post-migration-season analysis, DOSS suggested receiver placements (in no particular order): (1) Toe of Yolo Bypass (provided the bypass floods); (2) In the DCC channel; (3) An exit route of the Delta, such as near Jersey Point.

Agenda Item 7.

DOSS Advice

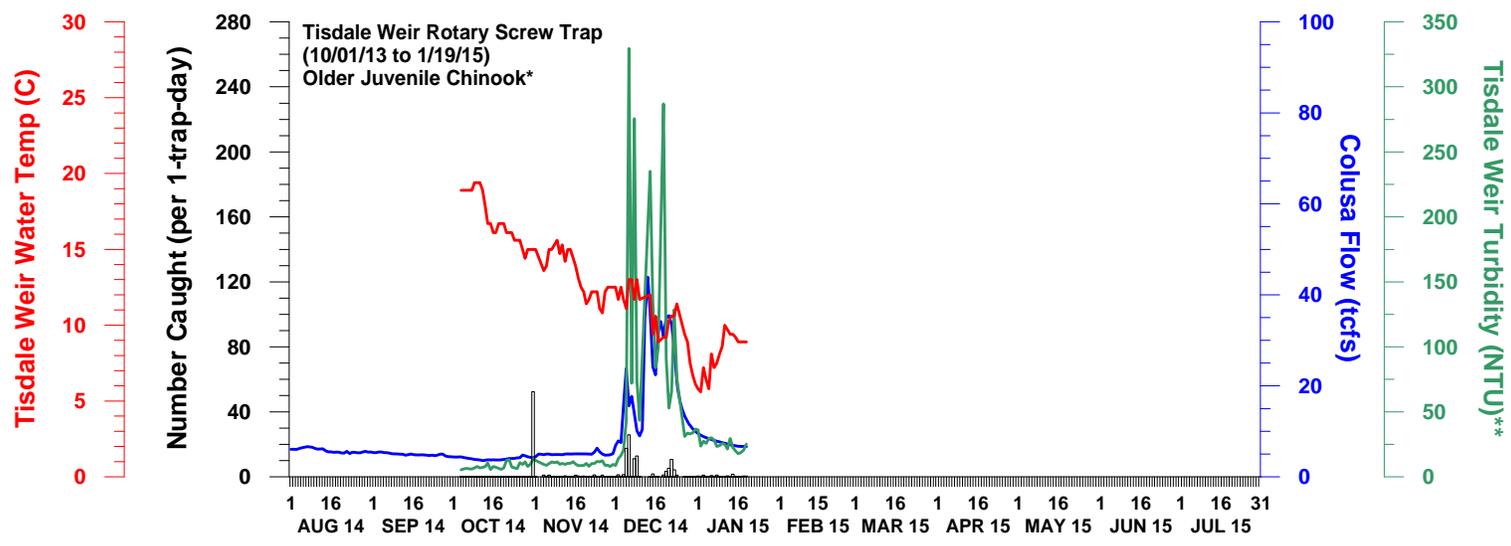
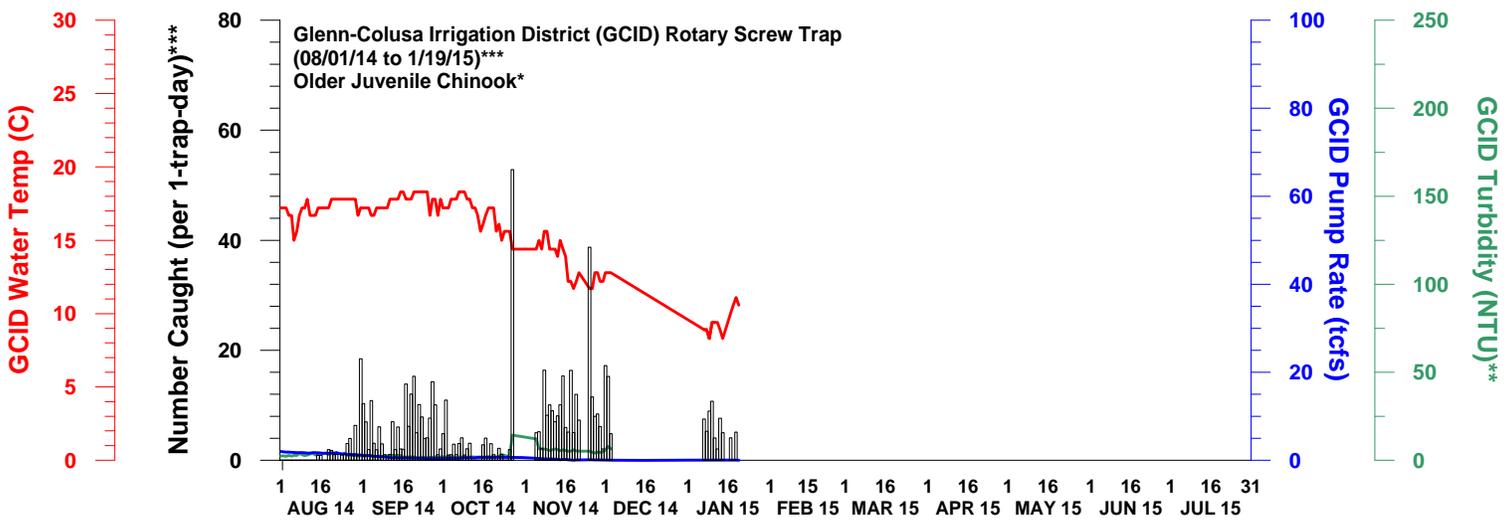
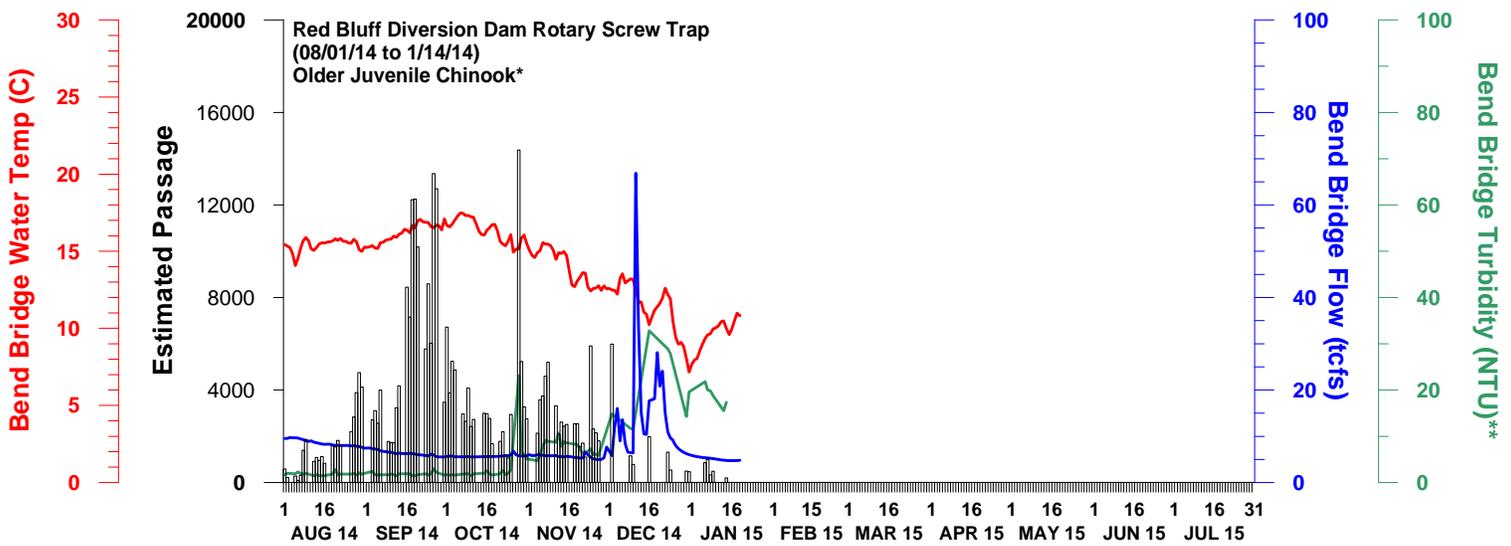
DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next DOSS conference call will be on 01/27/15 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:

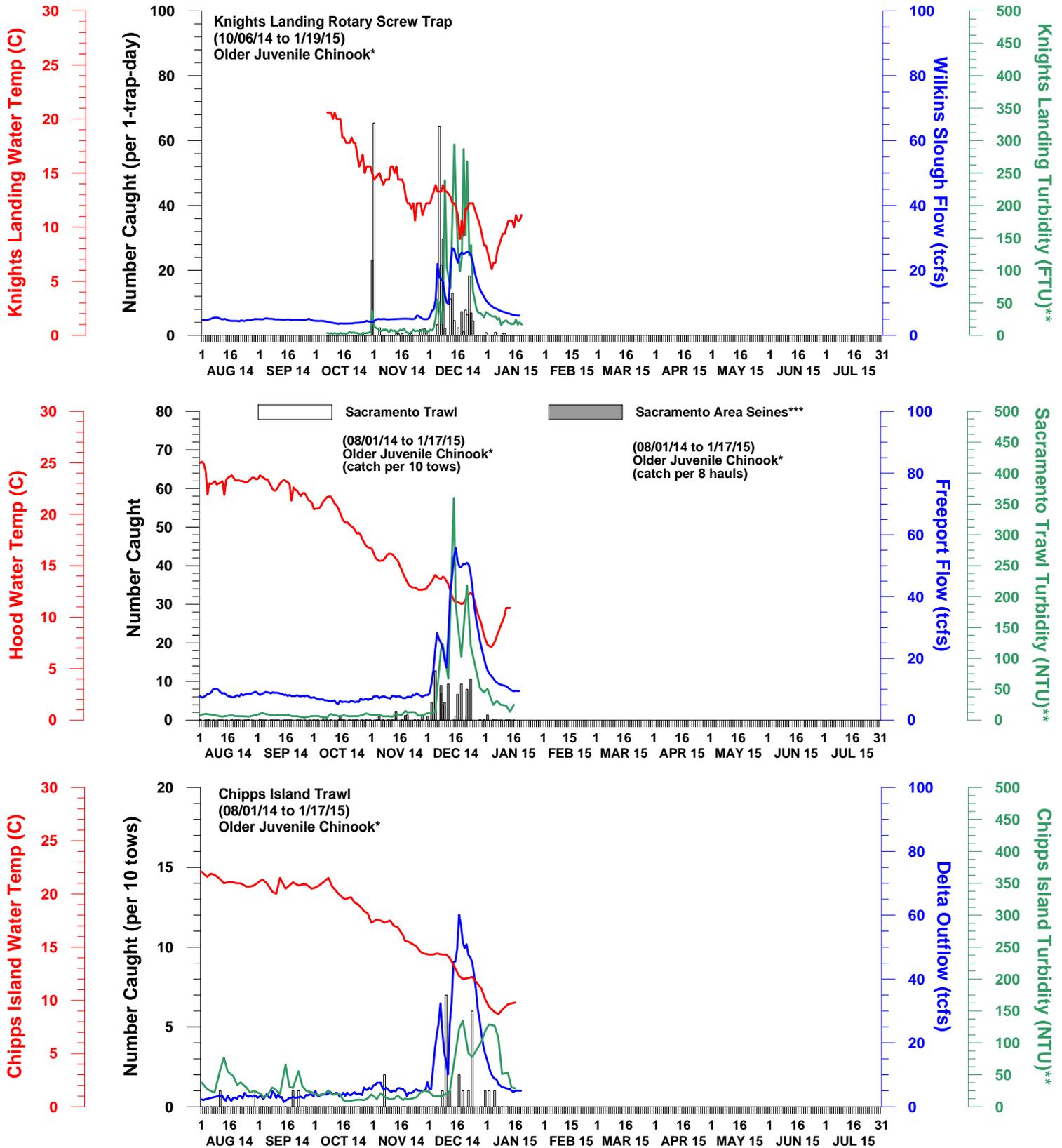
<http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 20 JANUARY 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.

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



DWR-DES 20 JANUARY 2015

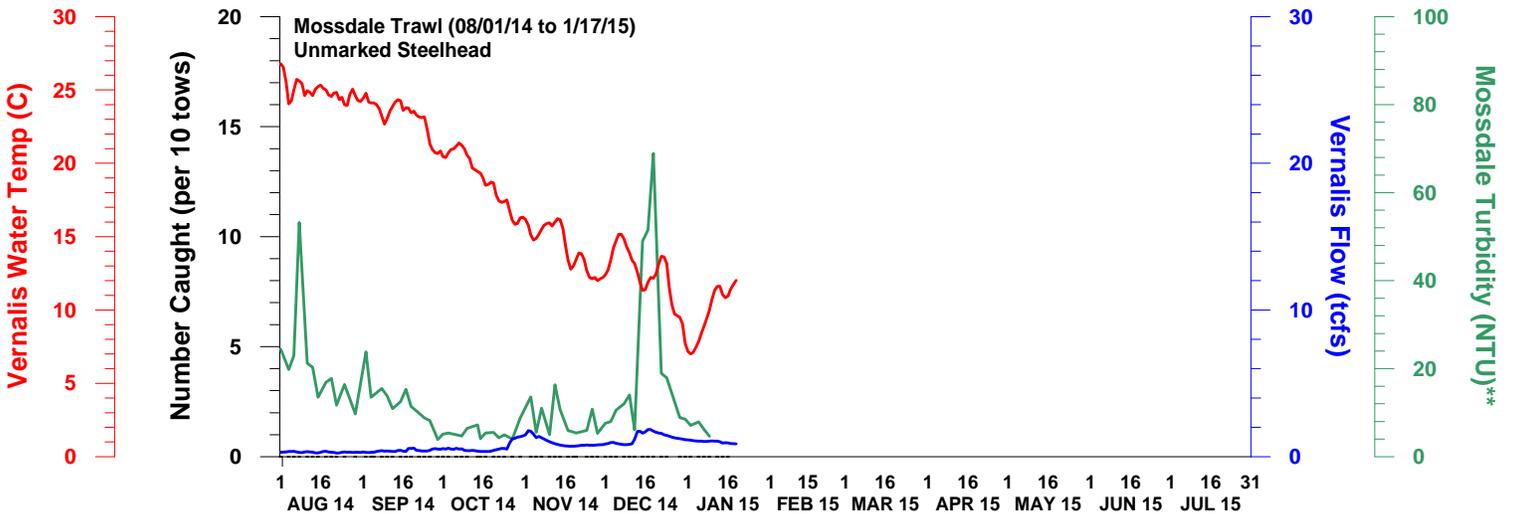
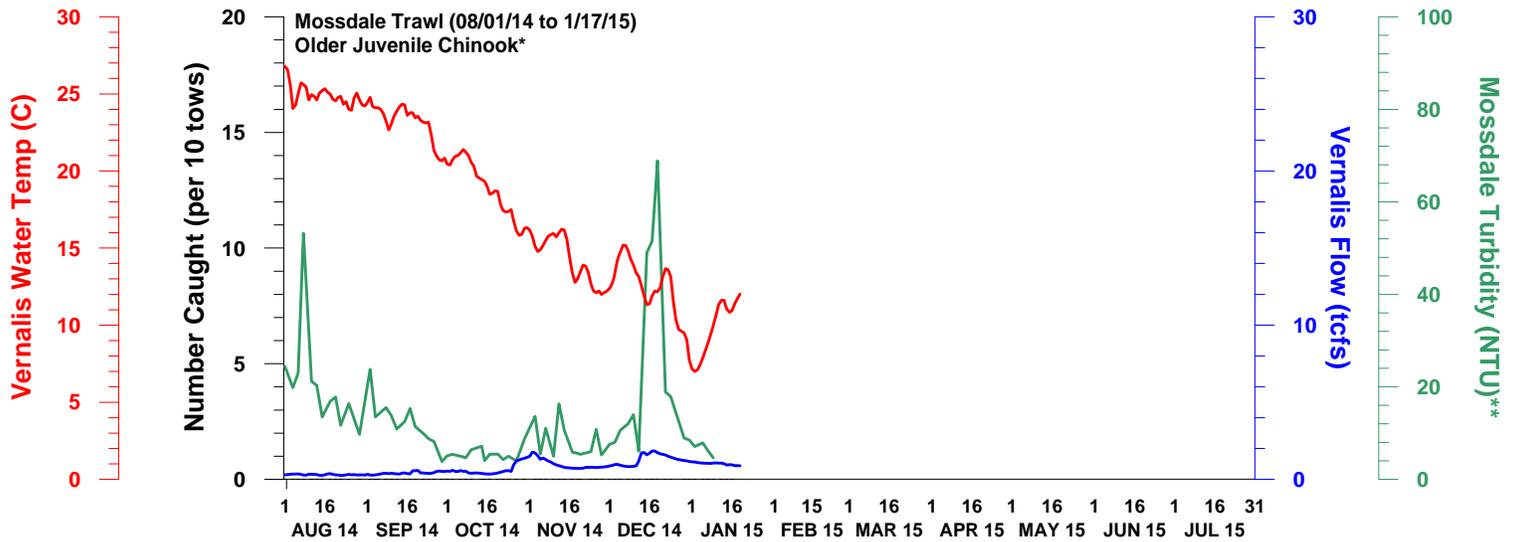
Preliminary data from DFW, FWS, and CDEC; subject to revision.

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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

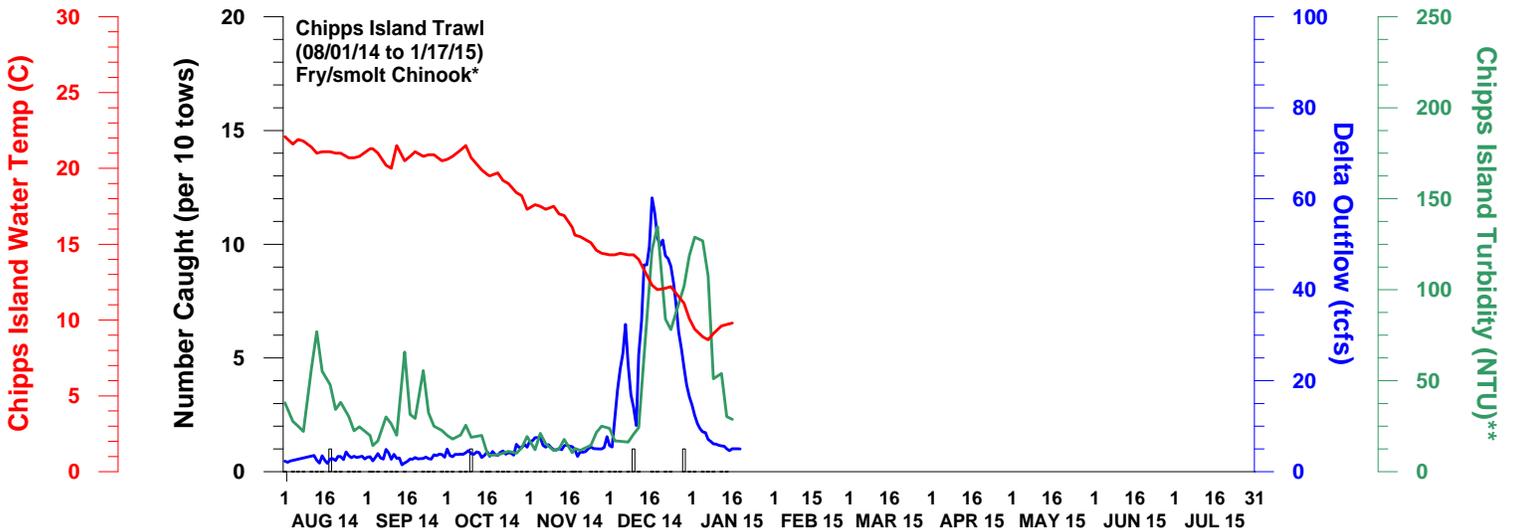
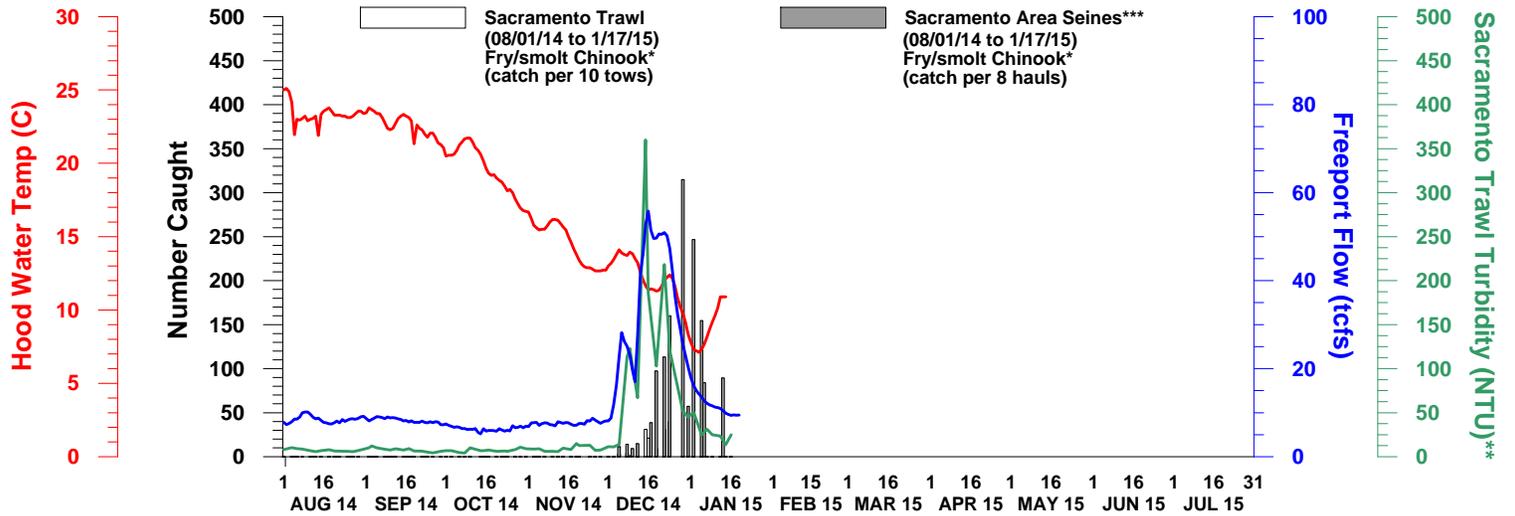
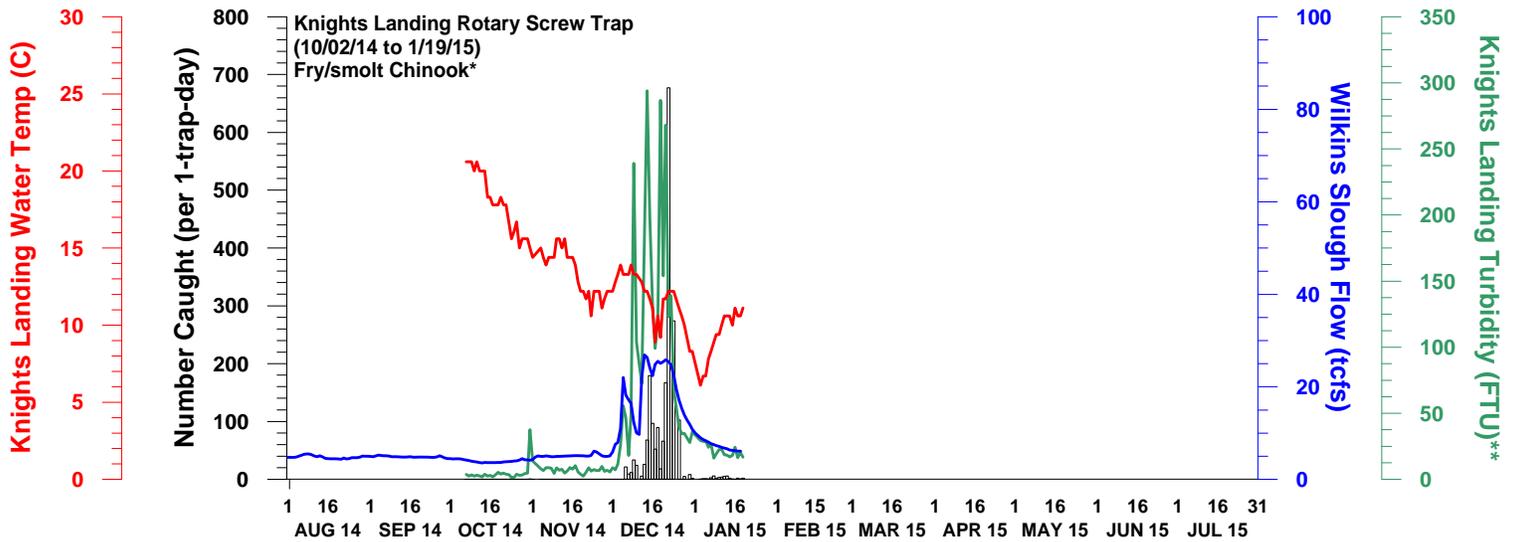


DWR-DES 20 JANUARY 2015
Preliminary data from FWS and CDEC; subject to revision.

*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.

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NUMBER OF UNMARKED FRY/SMOLT CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER AND CHIPPS ISLAND



DWR-DES 20 JANUARY 2015

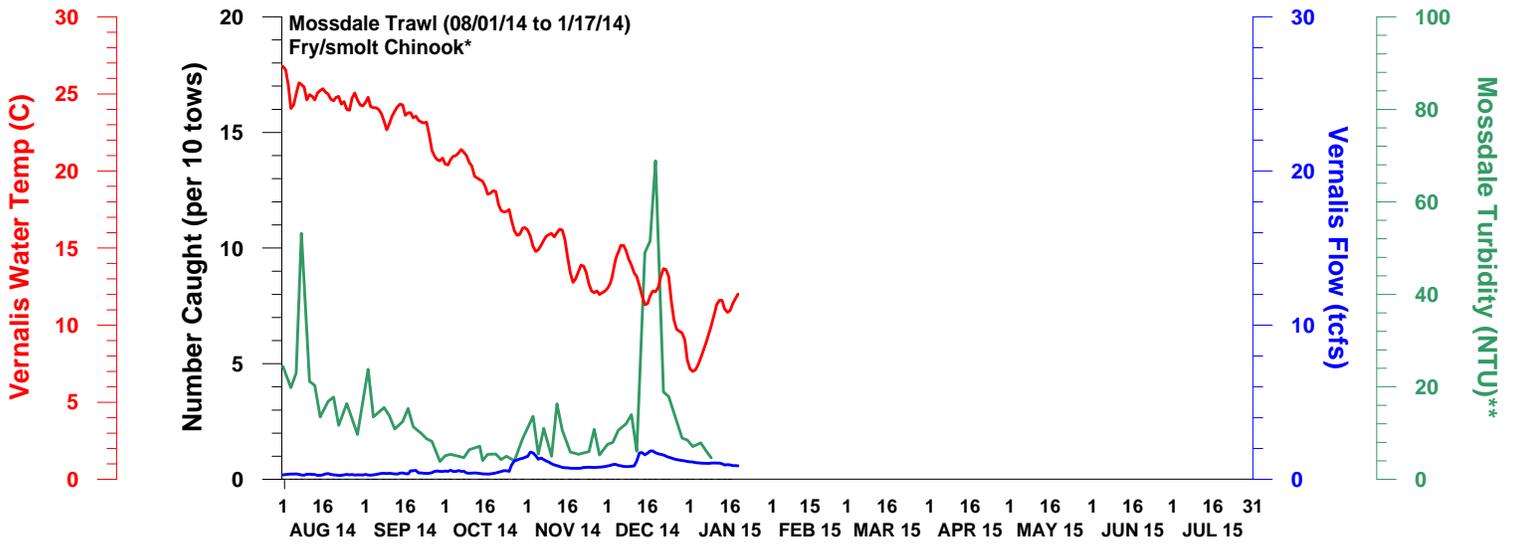
Preliminary data from DFW, FWS, and CDEC; subject to revision.

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

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***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 FRY/SMOLT CHINOOK MEASURED IN THE SAN JOAQUIN RIVER



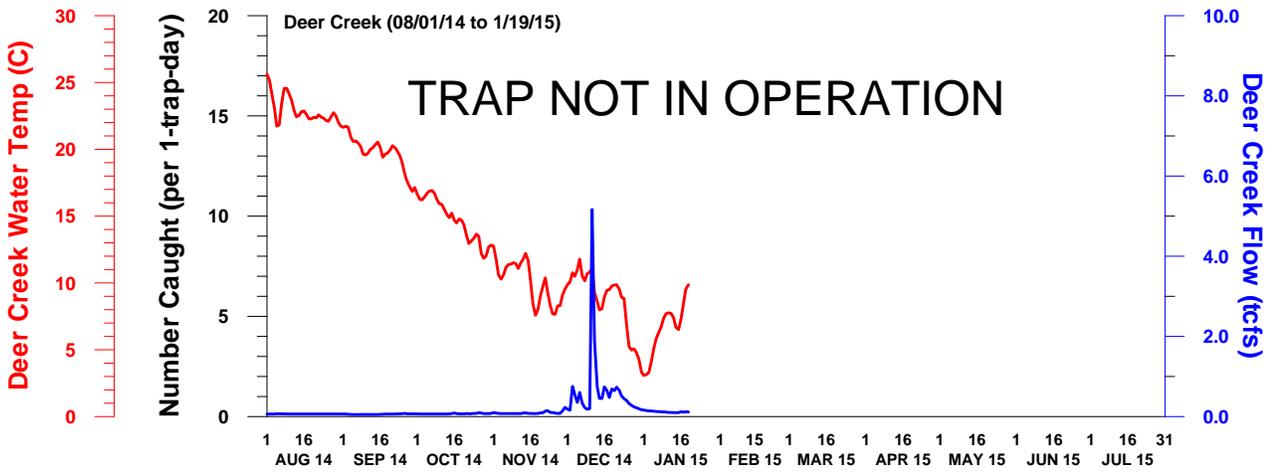
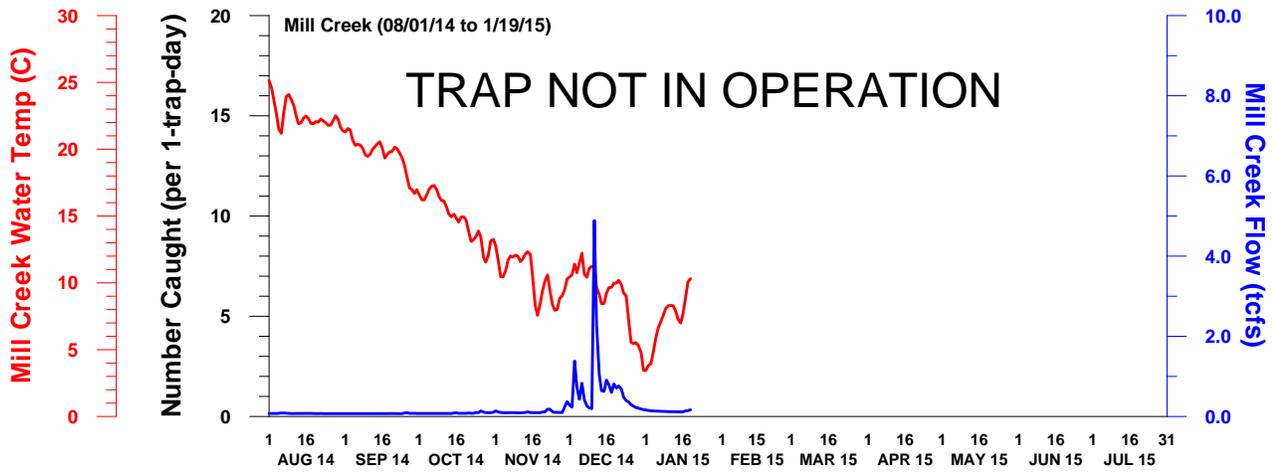
DWR-DES 20 JANUARY 2015

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.aspx).

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.

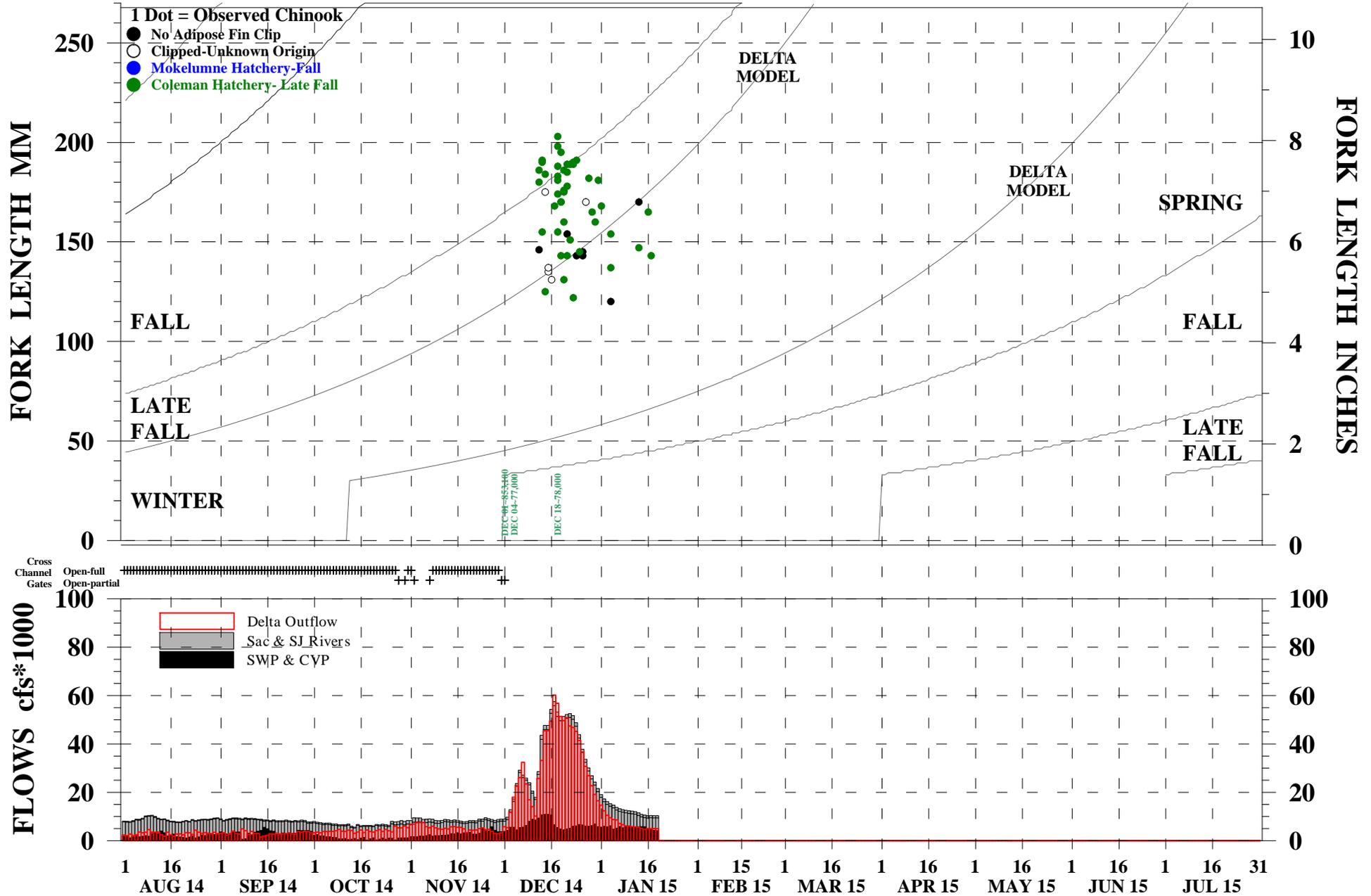
Sacramento River Trawl, Sacramento Area Beach Seine, and Chipps Island Trawl data were obtained directly from FWS, Stockton Fish and Wildlife Office (<http://www.fws.gov/stockton/ifmp/>).

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.

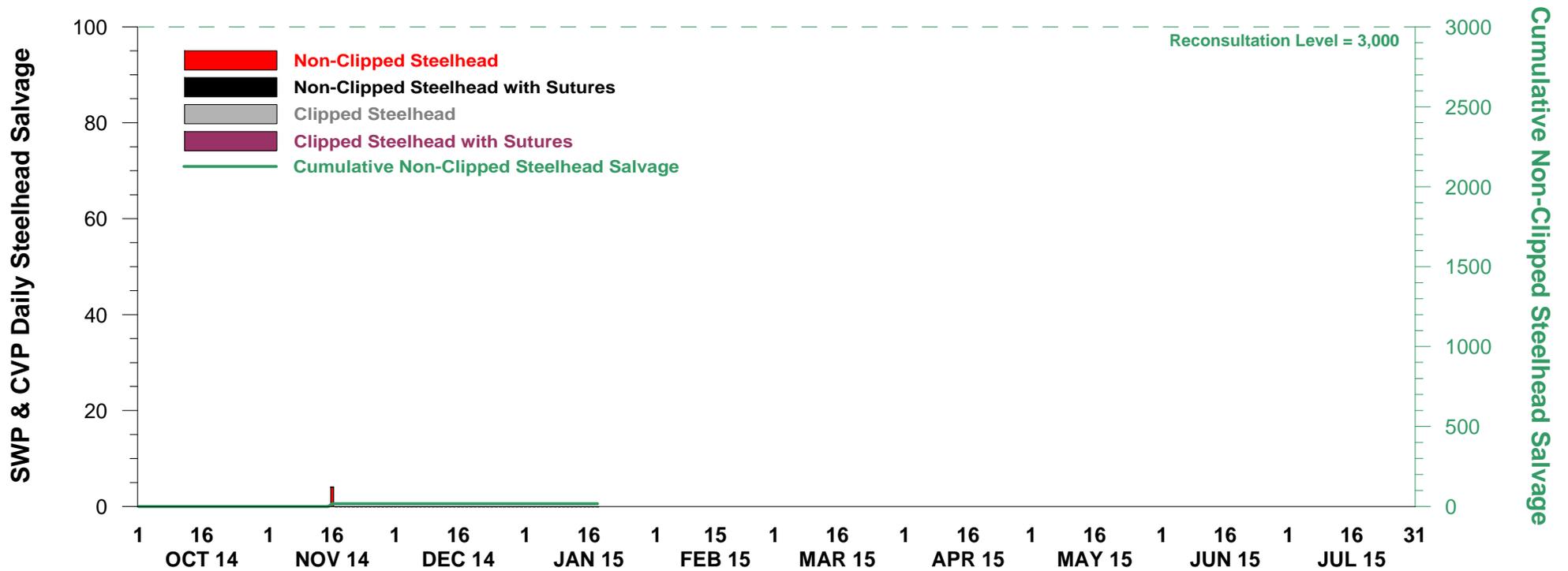
¹ Formerly known as the California Department of Fish and Game (DFG).

OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2014 THROUGH 1/19/2015

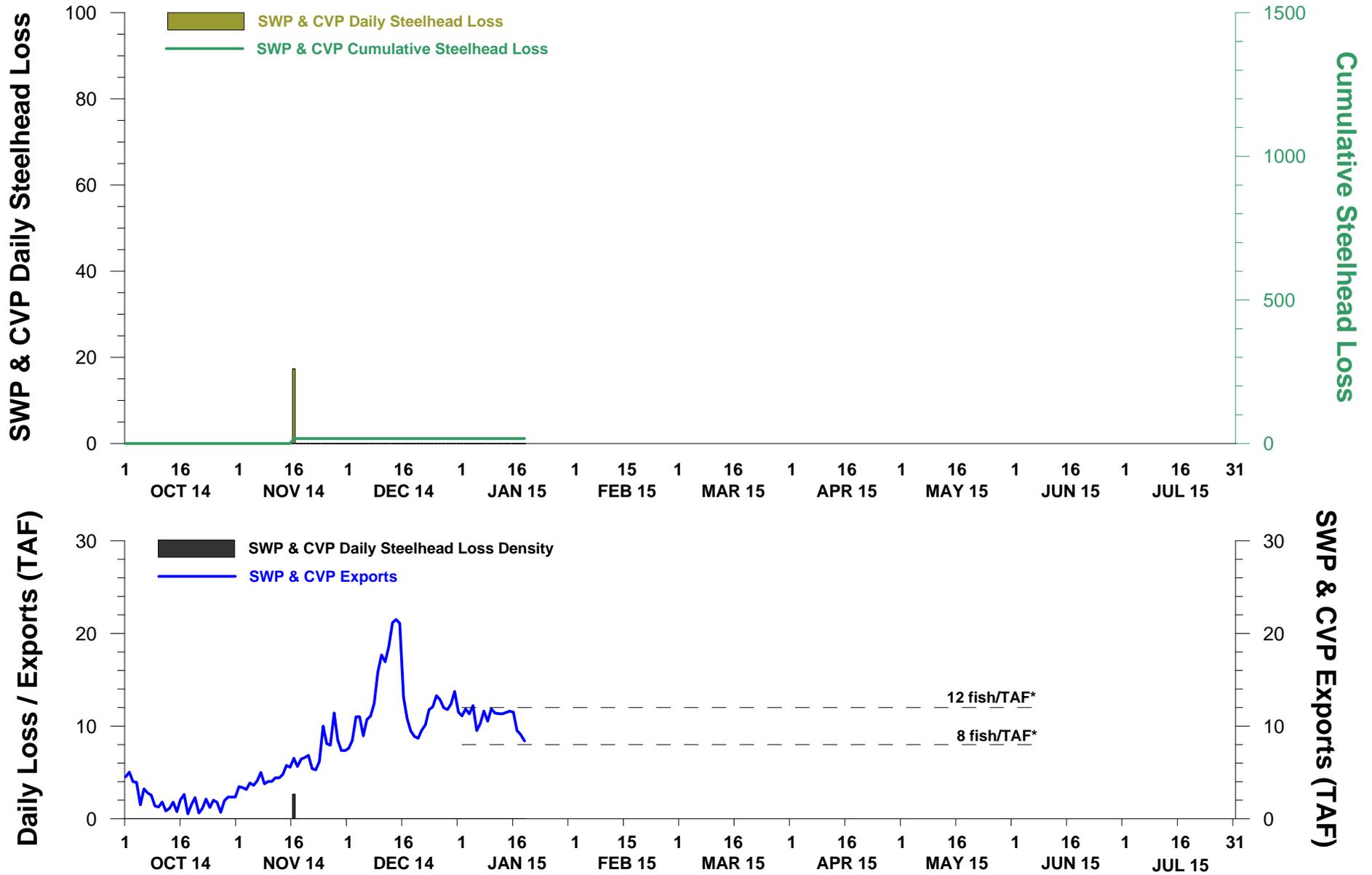


DWR-DES 20 JAN 2015
 Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.
 *Chinook not measured for length and Chinook outside of the length-at-date criteria (Delta model) are not reported.

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



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



DWR-DES 20 JANUARY 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.