

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 6/9/2015 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, Aaron Miller, Kevin Reece, Dan Yamanaka

Reclamation: Josh Israel

NMFS: Barb Byrne Meiling Roddam

USFWS: Roger Guinee, Dan Welsh, Craig Anderson

CDFW: Duane Linander, Ken Kundargi, Bob Fujimura

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
7. 2015 DOSS Annual Report -- TOC review and drafting assignments
8. Next meeting

Agenda Item 2.

RPA Implementation Review

Delta RPA Actions affecting operations during June:

Action IV.1.2 (DCC gate operations):

- DCC gates were opened Friday, 6/5/15, and closed Monday, 6/8/15.
- DCC gates will open again Friday, 6/12/15, and stay open indefinitely.
- Both of the above openings are allowed during the May 21-June 15 period of both the NMFS BiOp and D-1641 DCC operations schedule.
- No restrictions on DCC operations are in effect June 16-September 30

Action IV.2.3 (OMR Flow Management)

- Effective 6/8/15, the OMR restrictions were lifted through the remainder of Action IV.2.3 on June 15, 2015 as a result of a temperature offramp.

Action IV.2.1 (I:E ratio)

- Implementation of this RPA action ended May 31.

Agenda Item 3.

Current Operations (6/9/2015)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	400	Jones Pumping Plant	400 ^A
Reservoir Releases (cfs)			
Feather - Oroville	2,000	American - Nimbus	2,000
		Sacramento - Keswick	7,200
		Stanislaus - Goodwin	150
		Trinity – Lewiston	830 ^B
Reservoir Storage (in TAF)			
San Luis (SWP)	752	San Luis (CVP)	266
Oroville	1,528	Shasta	2,354
New Melones	438	Folsom	517
Delta Operations			
DCC	Closed ^C	Sacramento River at Freeport (cfs)	6,973
Outflow Index (cfs)	~ 4,700	San Joaquin River at Vernalis (cfs)	272
E:I	8.5% (3-day avg.)	X2	> 81 km

^A Two-day average; Due to water quality concerns, Reclamation is cycling one unit (which pumps at a rate of ~800 cfs) on/off every 24 hours throughout the week.

^B Will decrease to 450 cfs by the end of June.

^C Will open on Friday, 6/12, and is expected to stay open until further notice.

Salinity management and Delta outflow are currently controlling exports.

OMR values as of 6/5/15:

	USGS gauges (cfs)	Index (cfs)
5-day avg.	-1,550	-1,485
14-day avg.	-1,600	-1,600

Emergency Drought Salinity Barrier at West False River (update from DWR)

- Barrier was closed on 5/28/15.
- There has been an observed shift in hydrodynamics around Franks Tract, and increased salinity along the mainstem San Joaquin River, particularly at San Andreas Landing.
- There is a pool of fresh water near the mouth of the Mokelumne River and from the San Joaquin River that is slowly feeding into the Old and Middle River corridor.

Agenda Item 4.

Smelt Working Group (SWG)

Fujimura (DFW) reported that the SWG summary was the same as in previous weeks. SWG summary (received after the DOSS call) is provided below.

- The SWG reviewed the recent survey data, current salvage, and Delta conditions. Members indicated Delta Smelt had a low risk of entrainment for the OMR flow range of -1,250 to -2,000 cfs.
- The SWG is following guidance for entrainment protections from both Action 2 (adult Delta Smelt) and Action 3 (juvenile Delta Smelt).
- The SWG agreed that given their present distribution, existing conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.
- The SWG will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, 6/15/15 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	Sacramento Trawl	Beach Seines	Lower American RST ^A	Knights Landing RST ^B	Tisdale RST ^C	GCID RST ^D	Mossdale Kodiak Trawl
Sample Date	5/31-6/6	5/31-6/6	5/31-6/6	5/26-5/29	5/25-6/5	5/24-6/8	5/26-6/8	5/26-6/7
Total Catch	3	1	183	22	3	3	87	2
FR Chinook				21	3	3	87	
WR Chinook								
SR Chinook				1				
LFR Chinook								
Ad-Clipped Chinook	1 (94mm)		2 (92mm, 97mm)					
Delta Smelt								
Splittail	1	1	181					
Longfin Smelt	1							
Steelhead (ad-clip)								
Steelhead (wild)								2 (both 220mm)
Green Sturgeon								
Flows (avg. cfs)					4,419	5,197	886	
W. Temp. (avg. °F)					71	69	65	

Turbidity (avg. NTU)					9	12	4.2	
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^A End of WY 2015 sampling season.

^B Sampling period was from 5/25 at 10:15am to 6/5 at 9:30am. End of WY 2015 sampling season.

^C Sampling period was from 5/24 at 9:00am to 6/8 at 9:00am. End of WY 2015 sampling season.

^D RST removed from channel for repairs.

Fish Salvage¹:

DOSS was sent a Tracy Technical report about sturgeon predation at Tracy Fish facilities².

Fujimura (DFW) provided the following summaries of salvage and loss at the SWP and CVP fish collection facilities. The 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: June 1-7, 2015
Prepared by Bob Fujimura on June 8, 2015 14:20
Preliminary Results -Subject to Revision

Criteria	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	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	1,274	637	546	546	546	546	546	↘	663
CVP daily export	1,299	340	1,404	226	1,233	354	1,313	↘	881
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
NS = not sampled

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	0	0	→	50	70
Late Fall Run	0	0	→	6	26
Fall Run	0	0	→	16	26
Unclassified	0	0	→	24	NC
Total	0	0		149	229
Hatchery					
Winter Run	0	0	→	62	214
Spring Run	0	0	→	8	7
Late Fall Run	0	0	→	136	340
Fall Run	0	0	→	41	180
Unclassified	0	0	→	12	NC
Total	0	0		259	741

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	→	43	157
Hatchery	0	0	→	523	1,841
Total	0	0		566	1,998

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 6/1/15-6/7/15.

¹ Salvage 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.

² The report, Technical Bulletin 2015-3, is available at: <http://www.usbr.gov/mp/TFFIP/tracyreports/>

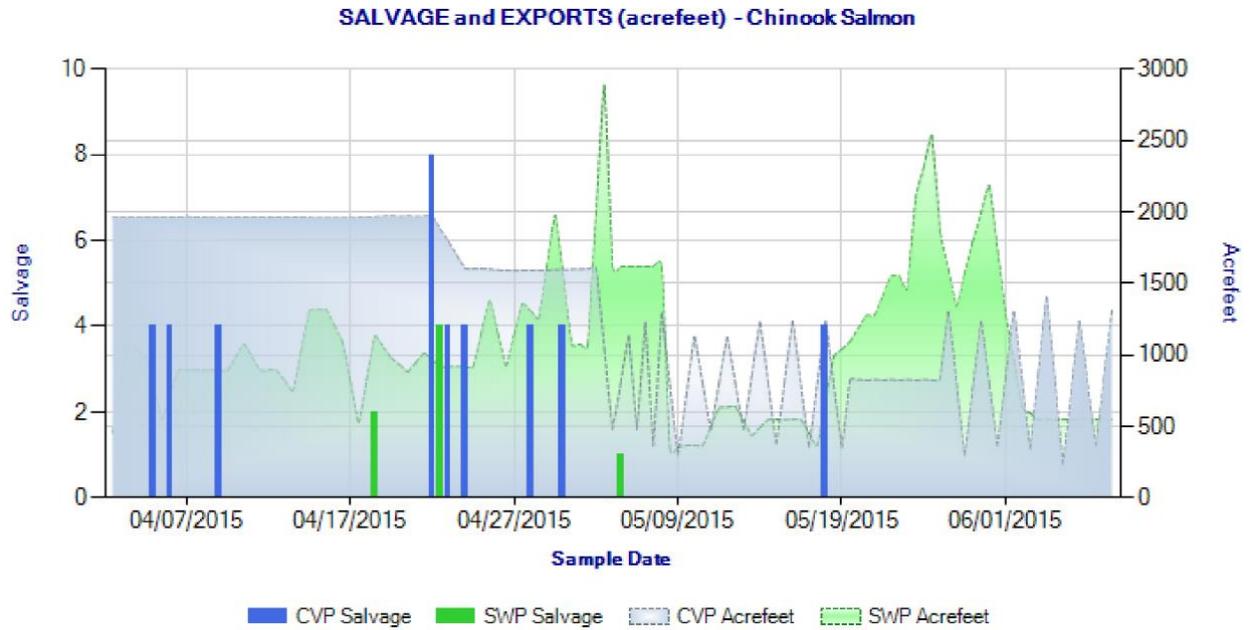


Figure 2. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during 4/3/15 through 6/7/15.

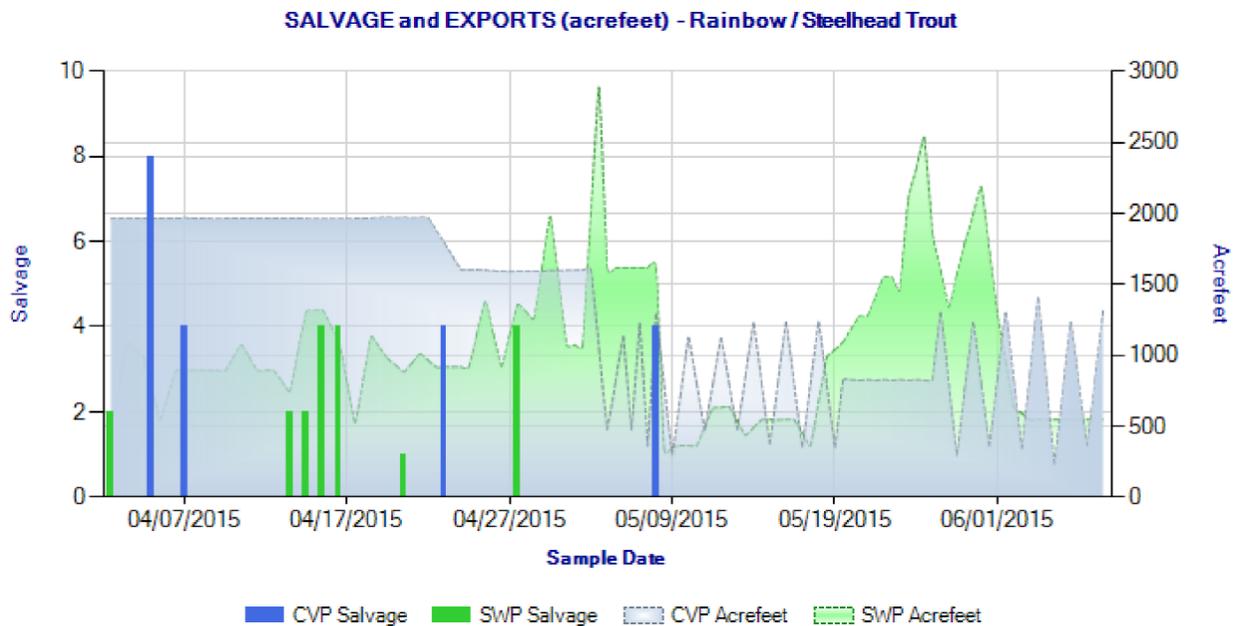


Figure 3. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during 4/3/15 through 6/7/15.

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 ⁵
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	188,500	0.001	0.00004	0.5%	1.0%	2/25/2015	2/25/2015
3/25-3/31/2015	F	Coleman NFH	Rio Vista net pens	Production	-3.72	942,800	n/a	n/a	n/a	n/a	n/a	2/23/2015	2/23/2015
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 6/7/2015.

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 6/8/2015

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 and steelhead, 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>		>99% out of Delta; Generally done migrating with the exception of a few stragglers. (Last week: same)	
<i>YOY winter-run Chinook salmon (hatchery-produced)</i>		>99% out of Delta; Generally done migrating with the exception of a few stragglers. (Last week: same)	
<i>YOY spring-run Chinook salmon^A</i>		>99% out of Delta; Generally done migrating with the exception of a few stragglers. (Last week: few stragglers upstream, 5% in the Delta, 95% exited the Delta)	
<i>Yearling spring-run Chinook salmon^B</i>		>99% out of Delta; Generally done migrating with the exception of a few stragglers. (last week: same)	
<i>Hatchery steelhead^C</i>		>99% out of Delta; Generally done migrating with the exception of a few stragglers. (Last week: same)	
<i>Sacramento River steelhead (naturally- produced)</i>		Limited catch data	
<i>San Joaquin River steelhead^D</i>		>99% out of Delta; Generally done migrating with the exception of a few stragglers. (Last week: >95% out of Delta)	

^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 entering a spring tide.

DOSS notes that a DCC opening may increase the risk of entrainment into the interior Delta for fish in the vicinity of the DCC. Occasional DCC gate openings from 5/21 to 6/15 are allowed per both D-1641 and the NMFS BiOp's RPA Action IV.1.2, and so this opening doesn't represent any change in risk to migrating salmonids relative to typical operations.

Entrainment risk of fish in the Interior Delta into the CVP/SWP facilities (same as last week): DOSS assessed the current risk of entrainment for listed salmonids. For listed salmonids in the Delta, the current risk of entrainment for each OMR flow range 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.

Agenda Item 7.

2015 DOSS Annual Report

- DOSS briefly discussed the draft table of contents for the 2015 Annual Review Report.
- DOSS will discuss progress on the Annual Report during the next meeting.

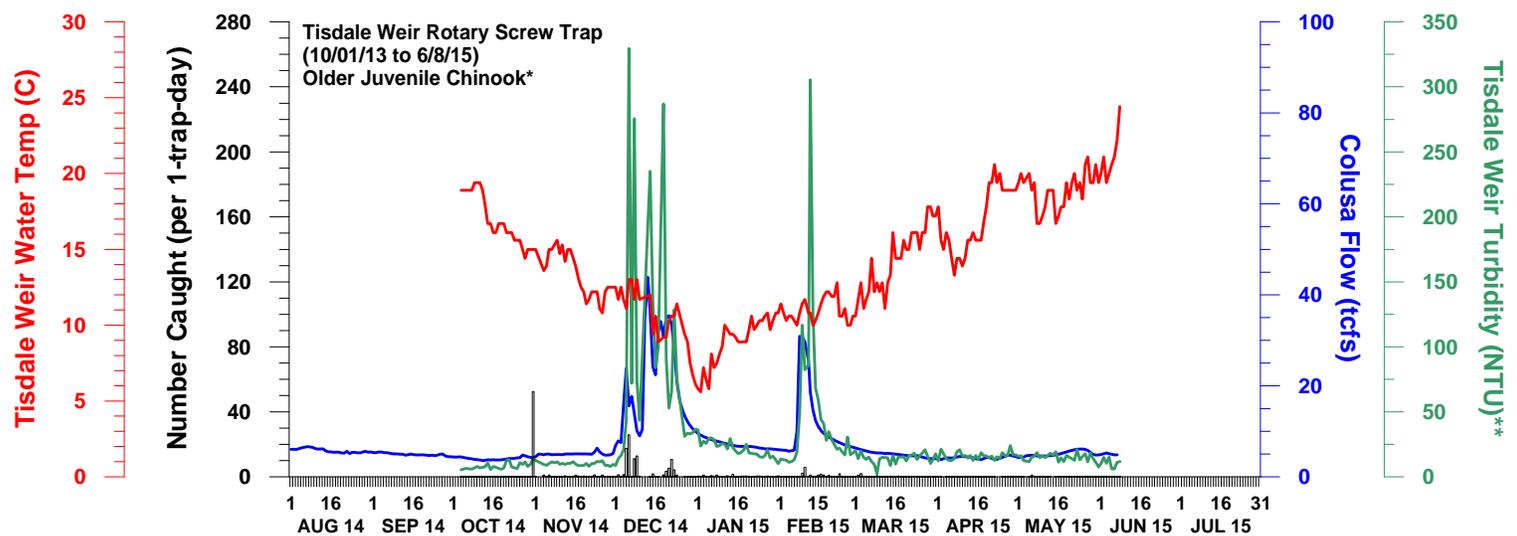
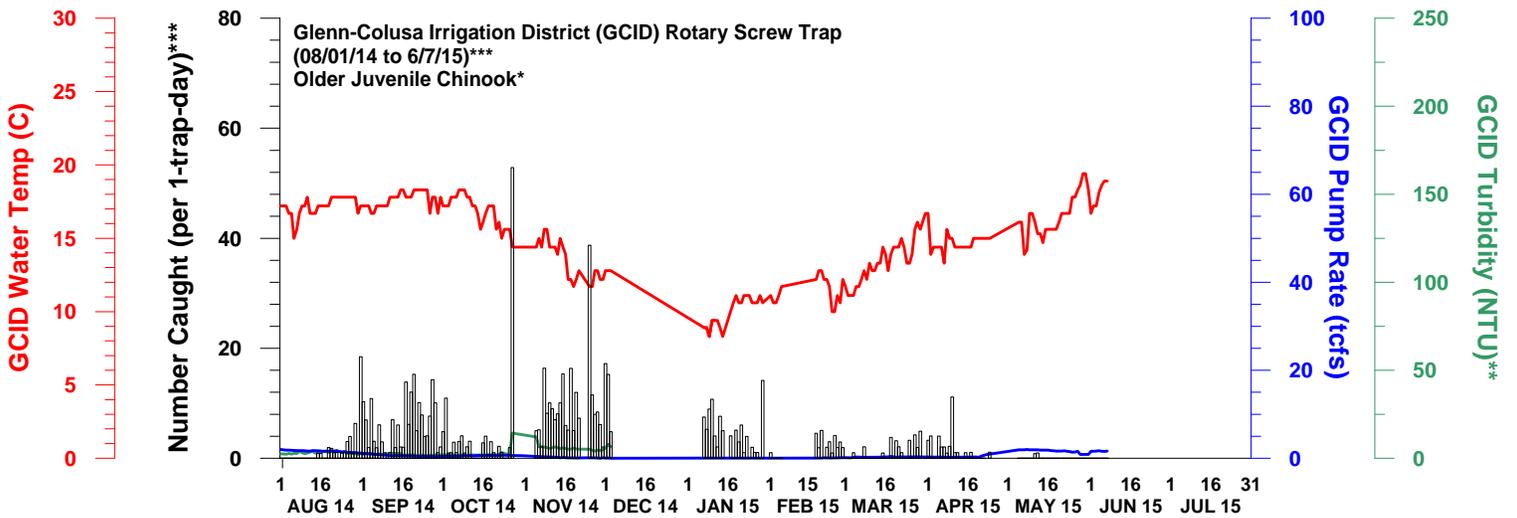
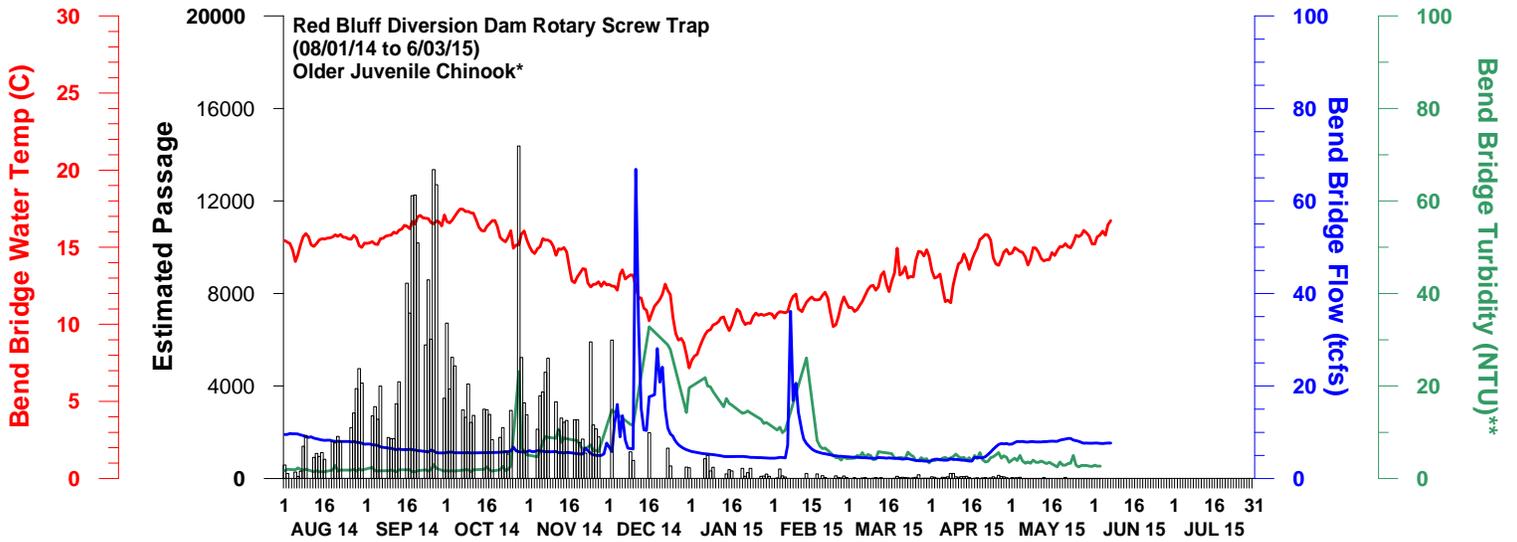
Agenda Item 8.

Next Meeting: The next DOSS conference call will be on 7/21/15 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>

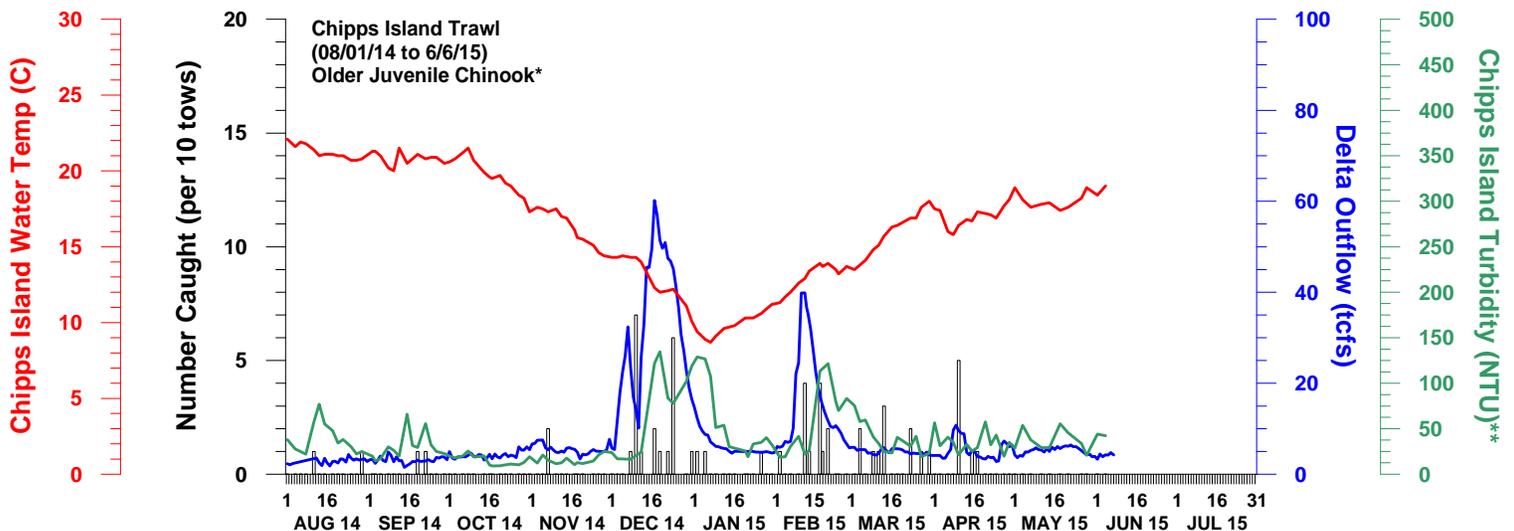
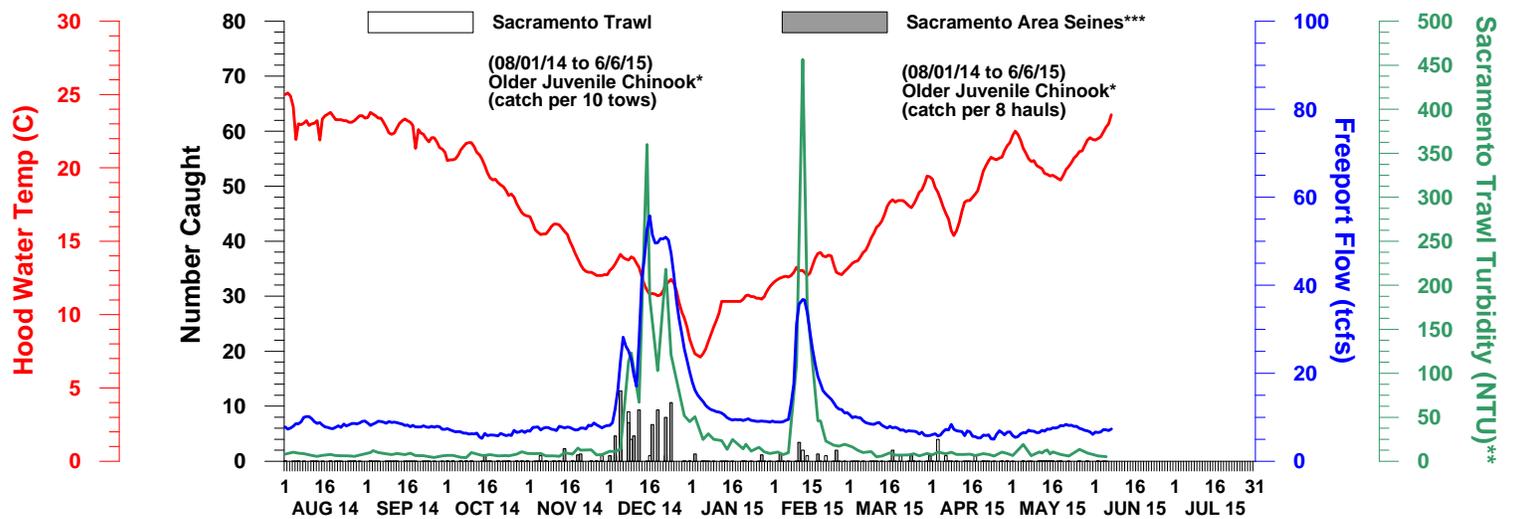
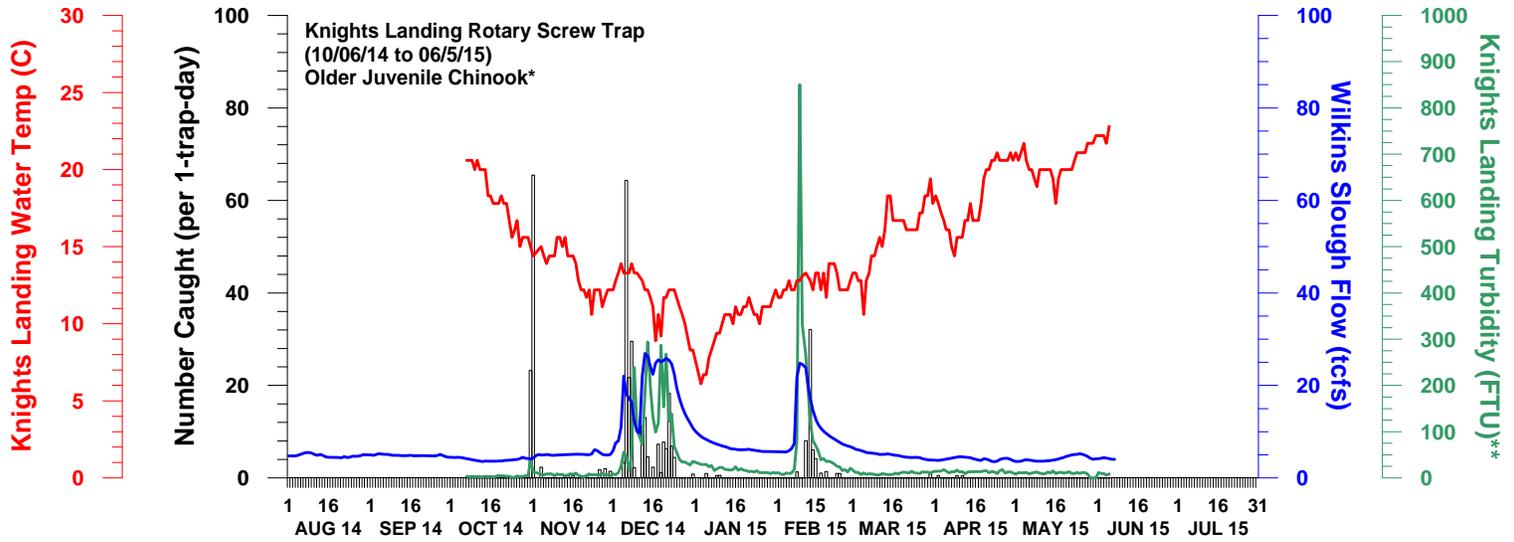
NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 8 JUNE 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 12/3/14-1/6/15, 2/5/15-2/16/15, and 4/25/15-5/4/15 due to various reasons.

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



DWR-DES 8 JUNE 2015

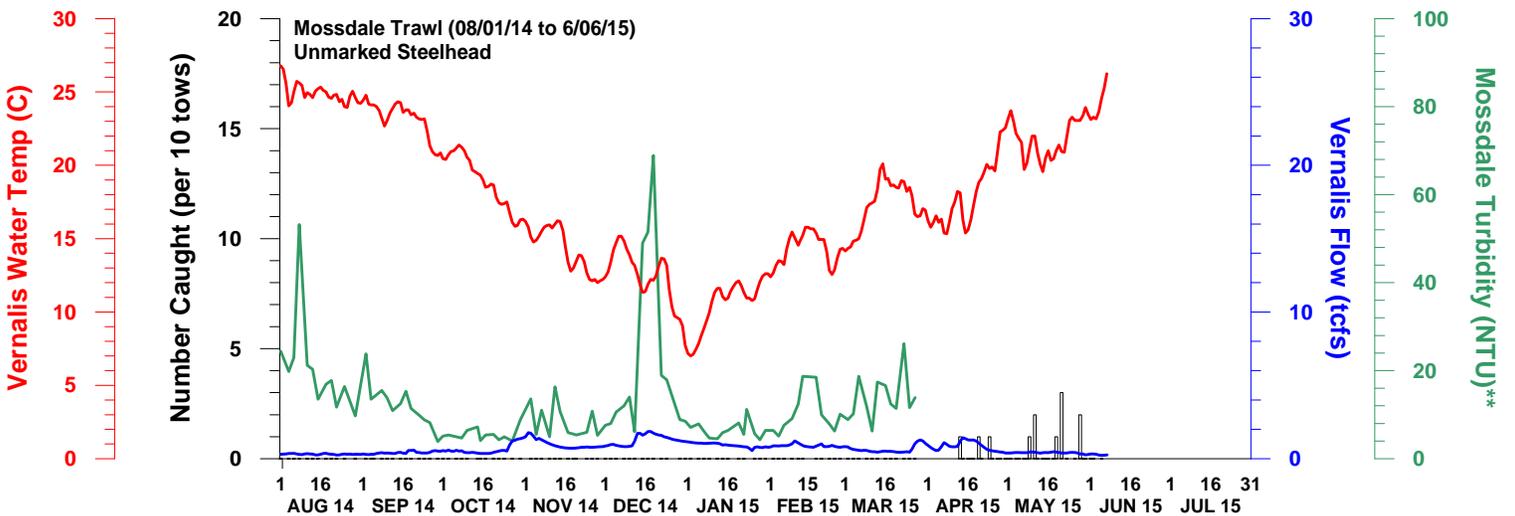
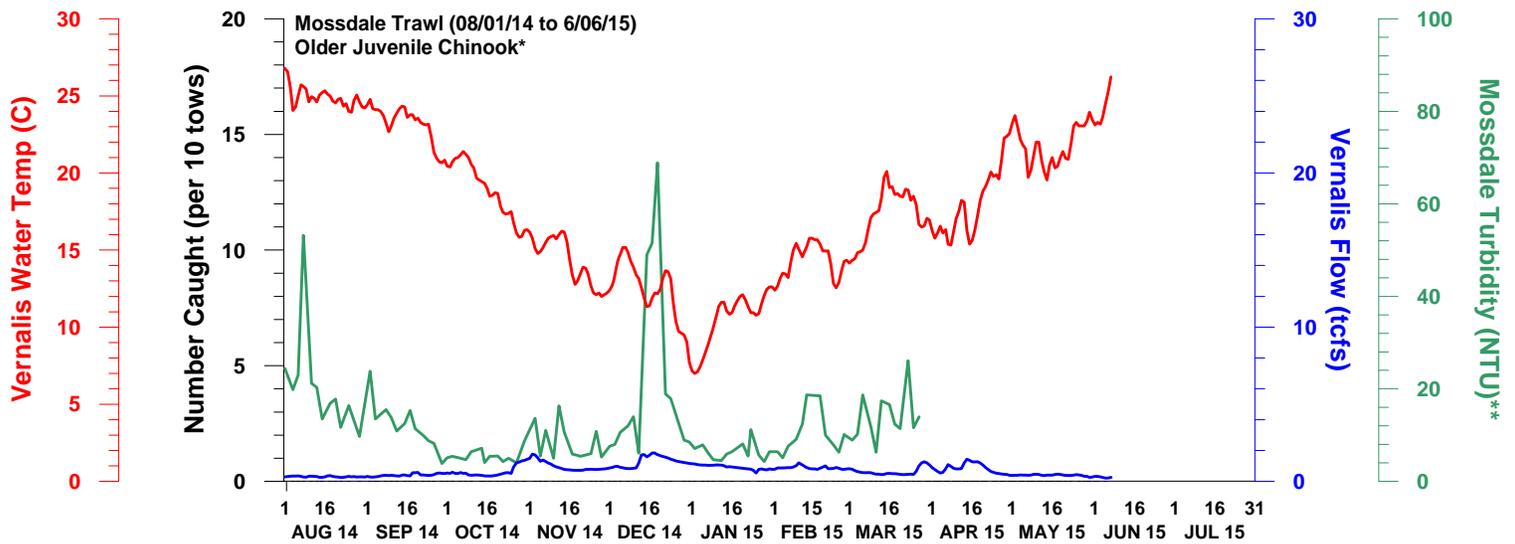
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*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

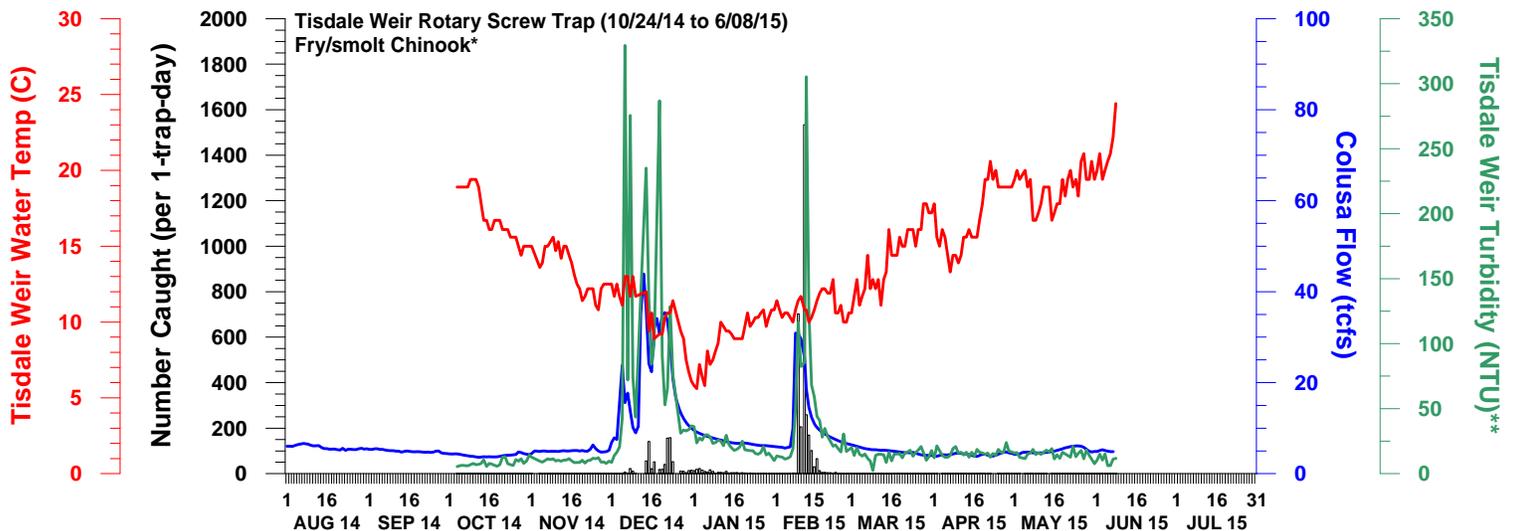
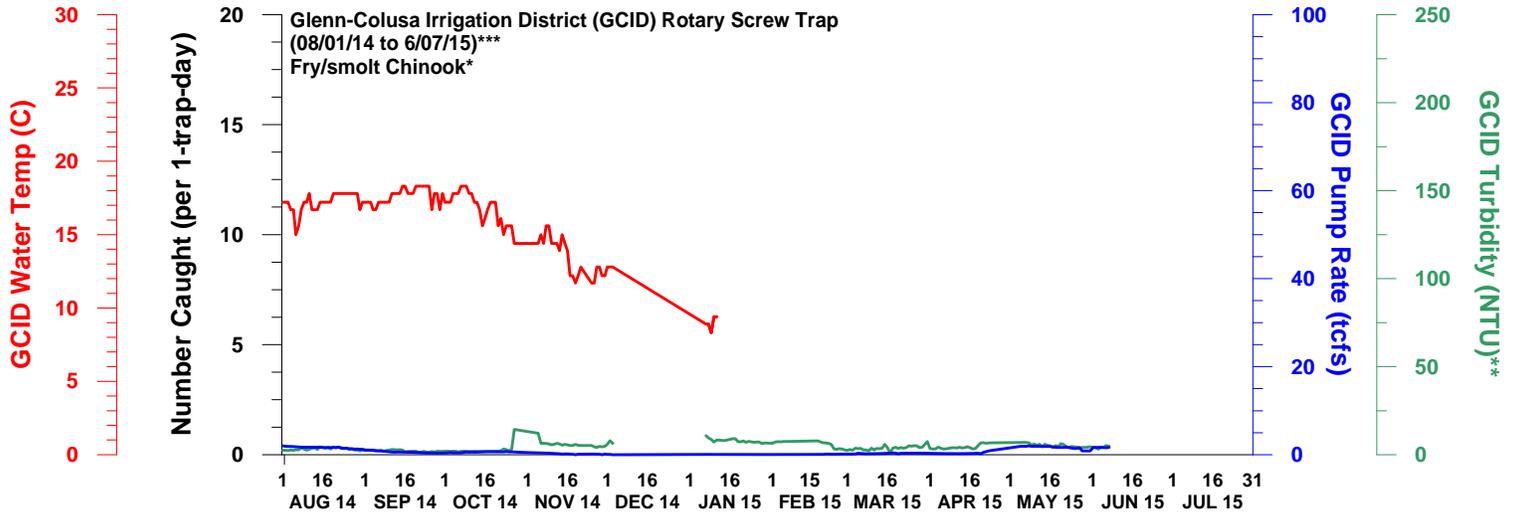
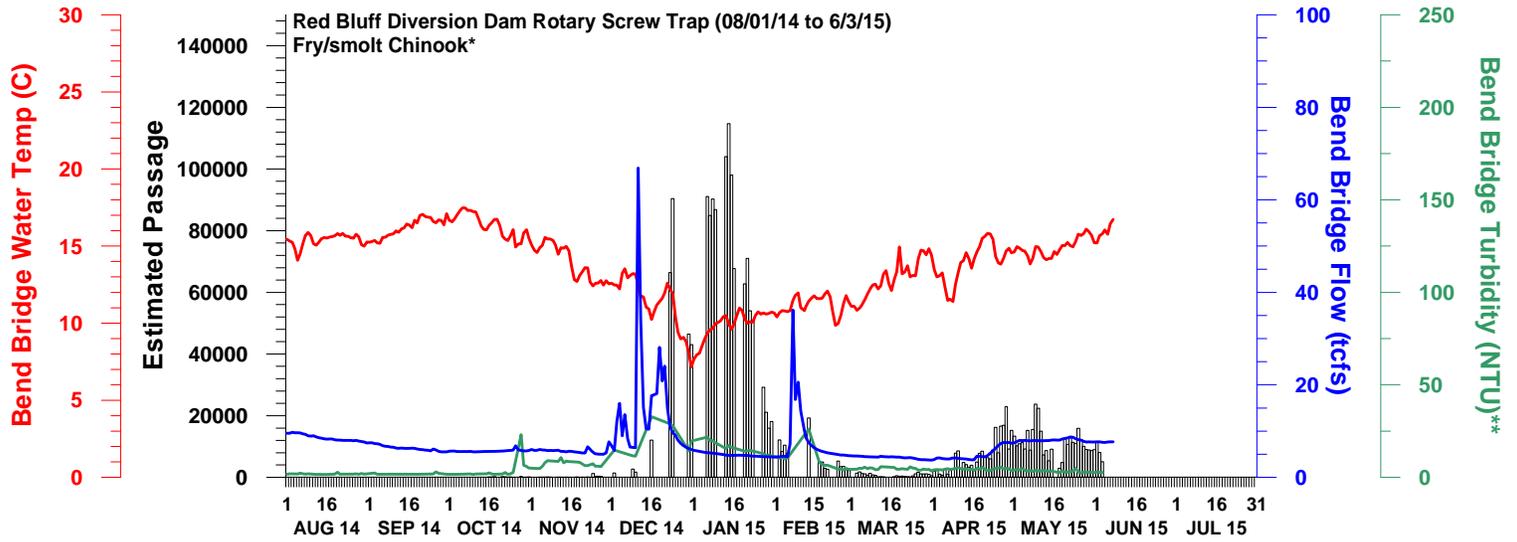


DWR-DES 8 JUNE 2015
Preliminary data from FWS and CDEC; subject to revision.

*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 SACRAMENTO RIVER



DWR-DES 8 JUNE 2015

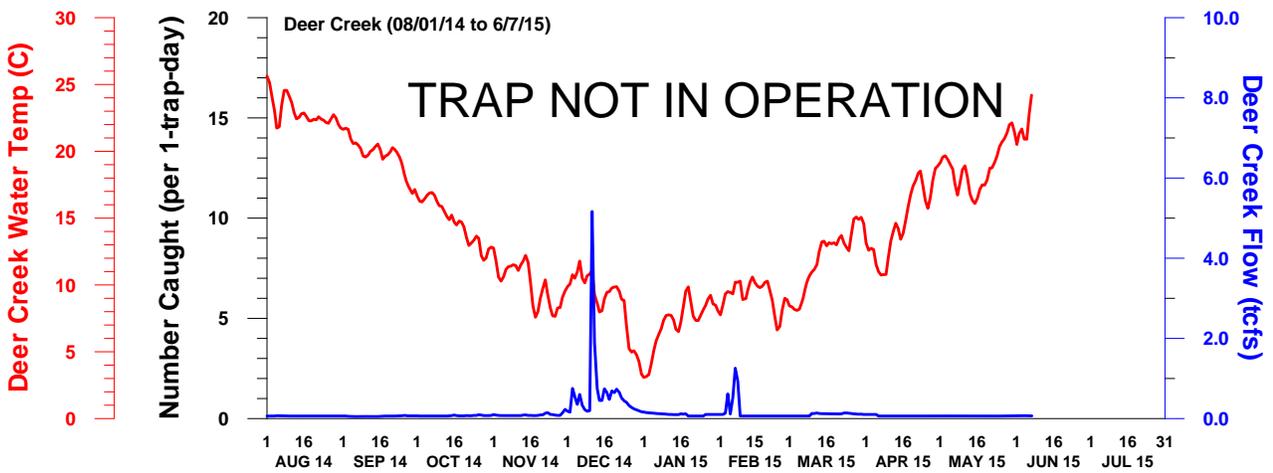
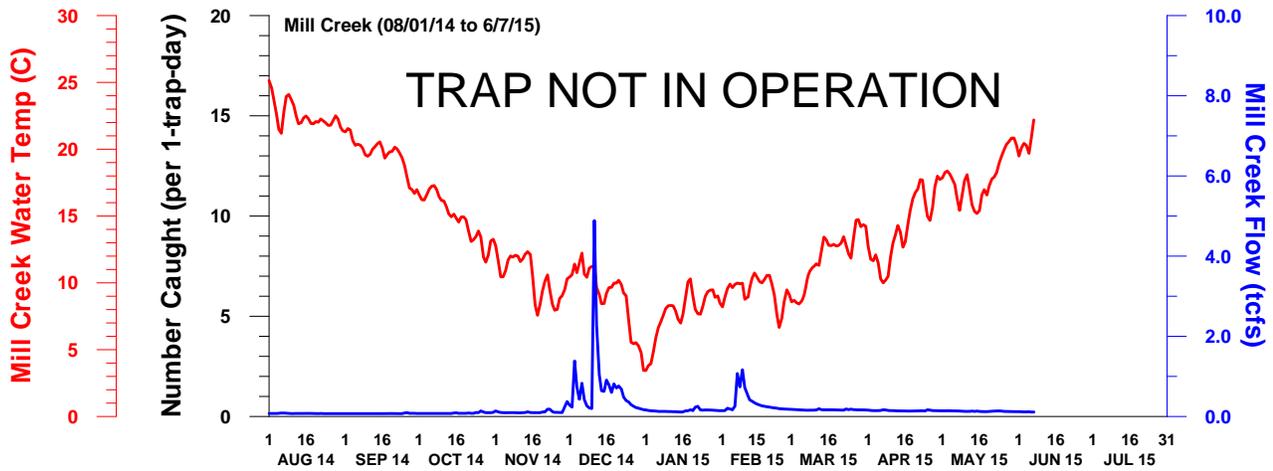
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

*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.

***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. Traps were not in operation on 12/3/14 - 1/6/15, 2/5/15 - 2/16/15, and 4/25/15 - 5/4/15 due to various reasons.

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.

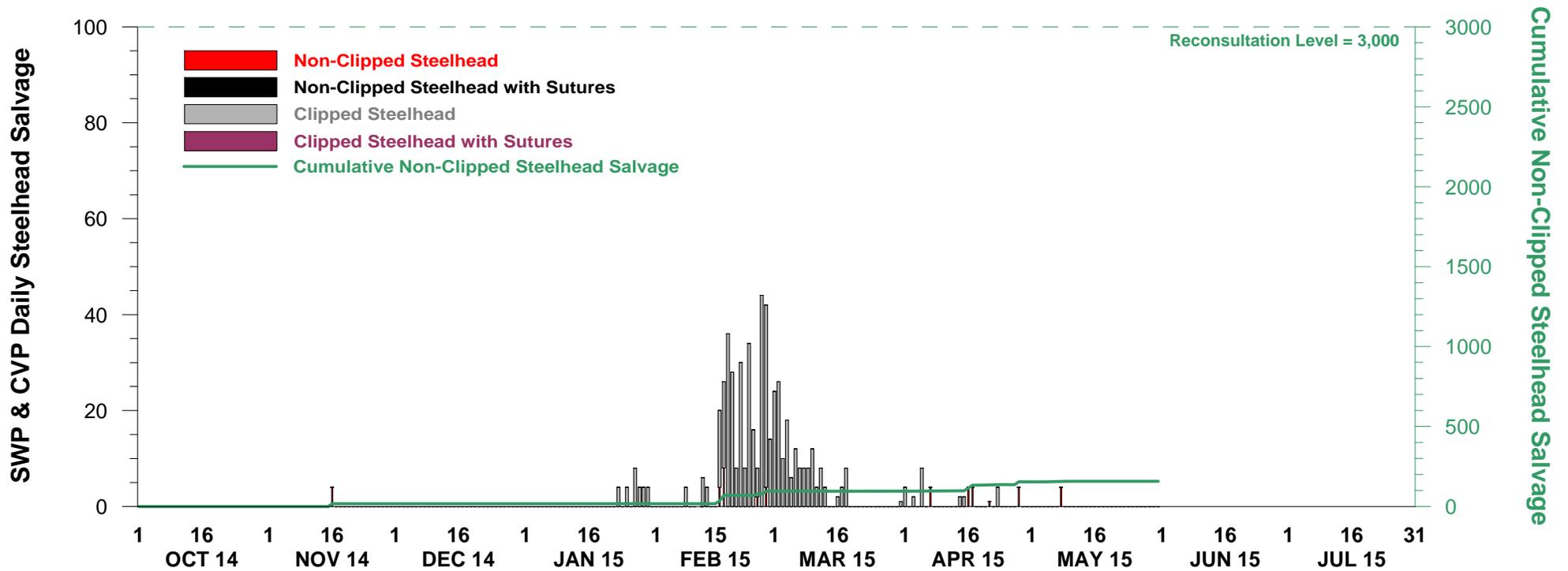
Sacramento River Trawl, Sacramento Area Beach Seine, and Chipps Island Trawl data were obtained directly from FWS, Stockton Fish and Wildlife Office (<http://www.fws.gov/stockton/ifmp/>).

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

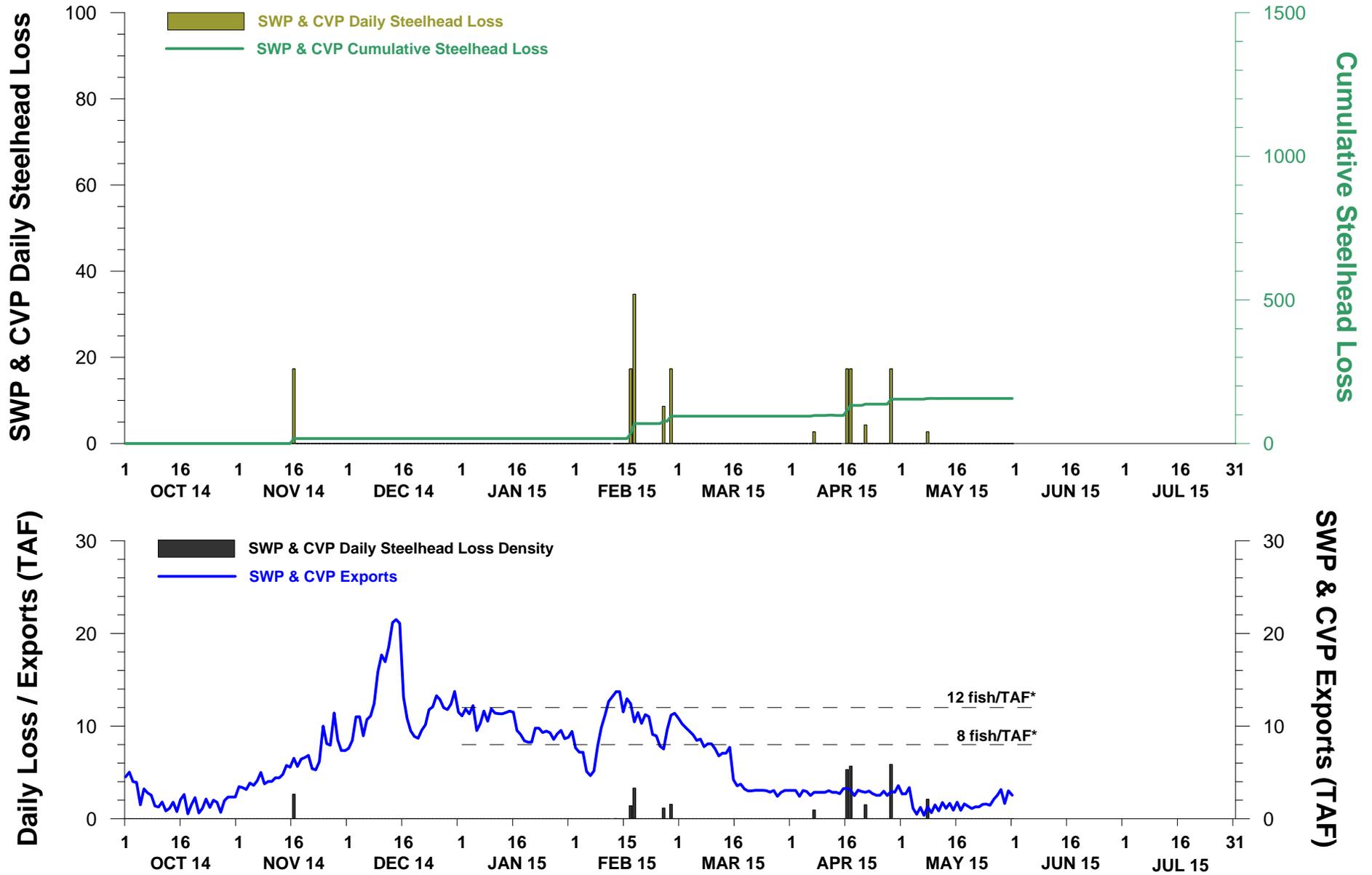
The hydrology data were either downloaded from the California Data Exchange Center (CDEC) (<http://cdec.water.ca.gov>) or obtained directly from the California Department of Water Resources, Operations Control Office.

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

STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 7 MAY 2015



NON-CLIPPED STEELHEAD LOSS AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 7 MAY 2015



DWR-DES 8 JUNE 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.