

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 12/16/2014 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: Kevin Reece, Bryant Giorgi, Mike Ford, Aaron Miller

Reclamation: Jason Hassrick, Russ Yaworsky, Josh Israel

NMFS: Barb Byrne, Jeff Stuart, Meiling Roddam

USFWS: Craig Anderson

CDFW: Bob Fujimura, Ken Kundargi

Agenda Items

1. Agenda review and introductions
2. Fish Monitoring
3. Current Operations
4. SPECIAL TOPIC: Debris management at the fish collection facilities
5. SPECIAL TOPIC: Spring run surrogate releases
6. SWG update
7. RPA Implementation review
8. DOSS Advice

Agenda Item 2.

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	Chipps Is. Midwater Trawl ^A	Prisoners Pt ^B	Jersey Pt. ^B	Sacramento Trawls ^A	Mossdale Kodiak Trawl ^A	GCID RST ^C	Knights Landing RST ^D	Tisdale RST ^E	Beach Seines
Sample Date	12/8, 12/10, 12/12	12/8, 12/10, 12/12, 12/14	12/9, 12/13, 12/15	12/8, 12/9, 12/12, 12/15	12/8, 12/10, 12/12		12/8-12/10, 12/12-12/14	12/8-12/10, 12/14	12/8, 12/10, 12/12
Total Catch	41	3	20	61	0		90 (30mm-98mm)	46 (26mm-93mm)	84
FR Chinook	1 (175mm)	1		31			22	23	13
WR Chinook	2 (70mm-84mm)	1		8			3	7	13
SR Chinook				4			56	14	40
LFR Chinook	7 (111mm-168mm)		1	3			2		3
Ad-Clipped Chinook	30			15			7	2	13
Delta Smelt		2	19						
Splittail									1
Longfin Smelt	1 (115mm)								
Steelhead (ad-clip)									
Steelhead (wild)									1
Green Sturgeon									
W. Temp. (avg. °F)	57				57		55	53	
Flows (avg. cfs)							18,438	19,427	
Turbidity (avg. NTU)	21.3				10.7		162	157	

^A Full DAT data were sent to DOSS after the call. Catch data for Sacramento Trawls, Prisoners Pt. and Jersey Pt. Kodiak Trawls, and Beach seines were reported during the call; catch data for Chipps Island Midwater Trawl and Mossdale Kodiak Trawl were not reported during the call.

^B Catch data for non-salmonid species (*i.e.*, smelts) were not reported during the call.

^C Trap cones lifted the morning of 12/3 due to forecasted increase in flow and subsequent stage change, so no catch available since then.

^D Sampling period is from 12/8 at 11:30 hours to 12/10 at 14:00 hours, and from 12/12 at 12:00 hours to 12/14 at 14:00 hours. Throughout sampling period, both RSTs were modified to 50% catch, with the exception of the sampling period from 12/9 at 15:45 hours to 12/10 at 10:15 hours where only one RST was fishing.

^E From 12/8-12/10 both RSTs were modified to 50% catch, and were fishing during daylight only. On 12/10 trap was pulled at 1600 hrs. Trap was reset on 12/14.

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 on the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

DOSS Weekly Salvage Update
Reporting Period: December 8-14, 2014
Prepared by Bob Fujimura on December 15, 2014 2200
Preliminary Results - Subject to Revision

Criteria	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0.95	0	0	↗	0.14
Wild steelhead	0	0	0	0	0	0	0	→	0.00
Exports									
SWP daily export	10,718	12,544	13,128	11,960	12,457	13,328	13,342	↗	12,497
CVP daily export	1,723	3,313	4,543	4,980	6,102	7,848	8,155	↗	5,238

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)

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	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	4	18	↗	4	18
Fall Run	0	0	→	0	0
Unclassified	24	NC	→	24	NC
Total	28	18		28	18
Hatchery					
Winter Run	4	18	↗	4	18
Spring Run	0	0	→	0	0
Late Fall Run	16	26	↗	16	26
Fall Run	19	83	↗	19	83
Unclassified	0	0	→	0	0
Total	39	127		39	127

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 12/8/14-12/14/14.

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.

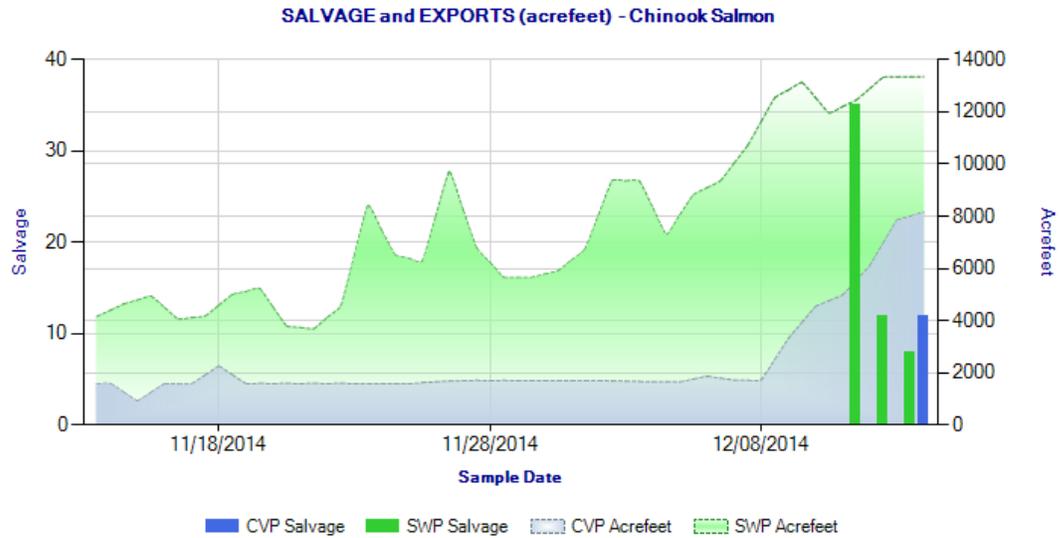


Figure 2. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during November 14 through Dec 14, 2014.

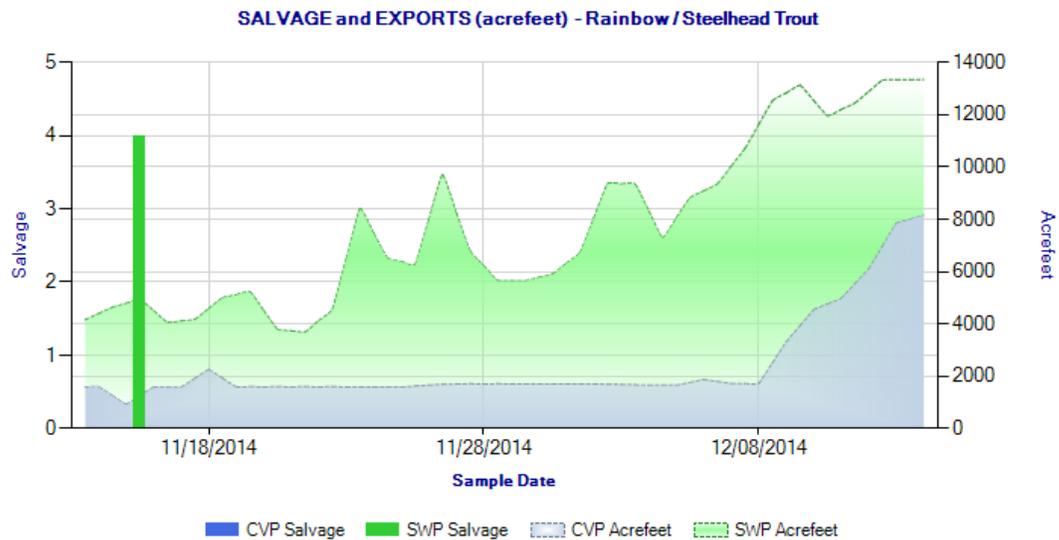


Figure 3. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during November 14 through Dec 14 , 2014.

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. A strong signal in fish catch, flow, and turbidity were observed over the past week, and DOSS estimated that most of the winter-run Chinook salmon juveniles have entered the Delta past Knights Landing. Though no yearling spring-run Chinook have been observed in monitoring, the recent

conditions (high flow, turbidity) in the tributaries to the Sacramento River are associated with yearling outmigration and so DOSS updated the distribution of spring-run yearling based on those observed physical conditions. DOSS also expects the recent and upcoming rain events to further cue salmonid emigration over the next week.

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>	< 10% (last week: 25% -50%)	>90% last week: 50% - 75%)	0% (last week: same)
<i>YOY spring-run Chinook salmon</i>	85% - 90% (first estimate of the season)	< 10% - 15% (first estimate of the season)	0% (first estimate of the season)
<i>Yearling spring-run Chinook salmon*</i>	< 25% (last week: no specific estimate**)	>75% (last week: no specific estimate**)	0% (last week: no specific estimate**)

* No yearling spring-run Chinook salmon have been observed in monitoring, but few are usually observed because of their relatively large size and strong swimming (and associated gear avoidance) abilities.

** last week we didn't provide specific estimate for each area, but had a general statement: "Some fraction may have moved during the turbidity event in late October."

Agenda Item 3.

Current Operations (12/16/2014)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	4200*	Jones Pumping Plant	2,600*
Reservoir Releases (cfs)			
Feather - Oroville	950	American - Nimbus	900
		Sacramento - Keswick	3,250
		Stanislaus - Goodwin	200
Reservoir Storage (in TAF)			
San Luis (SWP)	453	San Luis (CVP)	216
Oroville	1,153	Shasta	1,445
New Melones	530	Folsom	370
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	~52,700
Outflow Index (cfs)	~60,000	San Joaquin River at Vernalis (cfs)	~1,600
E:I	30% (14 day Avg.)		

*May be reduced throughout the week to target an OMR flow of ~-6,000 cfs for turbidity management.

Voluntary turbidity management is currently controlling exports; exports are expected to be managed to maintain an OMR flow of no more negative than -6,000 cfs. The storm on Wednesday night through Saturday greatly increased runoff and river flows throughout the Central Valley, which improved water quality in the Delta. The project operators do not expect water quality concerns (and potential Delta Cross Channel opening) to be an issue through at least December.

Water might still be spilling into Sutter Bypass; Fremont weir into Yolo Bypass did not spill.

Agenda Item 4.

Debris management at the fish collection facilities: While not implemented last week, the CVP's Tracy Fish Collection Facility mentioned the possibility that louver panels might be lifted, as a last resort, to manage debris at higher pumping levels. DOSS provided some thoughts on that potential operation:

- Lifting any louver panel introduces a mechanism of loss that is not accounted for in the loss equation. Lifting louvers for cleaning has a similar issue, but the total time for cleaning is estimated as < 1 hour/day, while the louver-lifting for debris management had the potential to be much longer, up to ~12 hours.
- The proposal to lift louver #4 makes sense since debris accumulates in the downstream "corner" by Louver panel #4 and the side of the canal, but that's also where fish accumulate. Stuart (NMFS) recalled that up to 50% of the fish might go through bypass #4 (associated with Louver #4), vs. the 25% expected if fish entered all four bypasses uniformly.
- DOSS agreed that for fish protection (minimizing actual loss) and for the loss estimates to be most correct (minimizing loss uncertainty), facility efficiencies should be preserved by reducing exports to keep debris manageable *before* louvers are lifted (beyond the current cleaning practices) for debris management. For example, if debris can't be managed at the CVP while pumping at 5 units without lifting louvers, pumping could be reduced to fewer units.
- If a louver is ever lifted, measured fish loss will be underestimated by an unknown amount.
- If a louver is ever lifted, actual fish loss might (but DOSS is not sure) be less if a louver other than #4 were lifted.
- The storm brought lots of fish into the delta, including listed winter-run and spring-run, so lifting louvers in a way that reduces facility efficiency in a manner not accounted for in the current loss equation may be especially risky now.

Agenda Item 5.

Spring run surrogate releases: Because recent conditions (high flows and turbidity in the tributaries to the Sacramento) are associated with yearling spring-run migration, and conditions after this week may be dry, DOSS agreed to ask Coleman National Fish Hatchery to release the second spring-run surrogate group this week.

Agenda Item 6.

Smelt Working Group

Bartoo (FWS) provided the following e-mail update:

“The Working Group did not make a recommendation in projected operations based on a review of current Delta Smelt distribution and salvage data, and current Delta conditions, but noted that potential changes in hydrology this week will require an additional meeting later this week to discuss Delta Smelt entrainment risk. Additionally, the Service requested the Working Group discuss and respond an additional question that will assist the Service in making a decision for Delta Smelt regarding current entrainment risk. The Working Group will meet again Thursday, December 18, 2014.”

Because of the observed delta smelt catch in the sampling on Monday, the SWG decided to meet sooner than Thursday and will have a meeting the afternoon of Tuesday, 12/16/14.

Agenda Item 7.

RPA Implementation Review

Delta RPA Actions in effect during December:

Action IV.1.2² (DCC gate operations):

- DCC gates are closed.

Action IV.3³ (Reduce likelihood of entrainment or salvage at the export facilities, including alert that indicates that export operations may be need be altered)

- Third alert has not been triggered.
- No salvage-based triggers that would require export reduction have been exceeded over the past week.

Agenda Item 8.

DOSS Advice

DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next DOSS conference call will be on 12/23/14 at 9am.

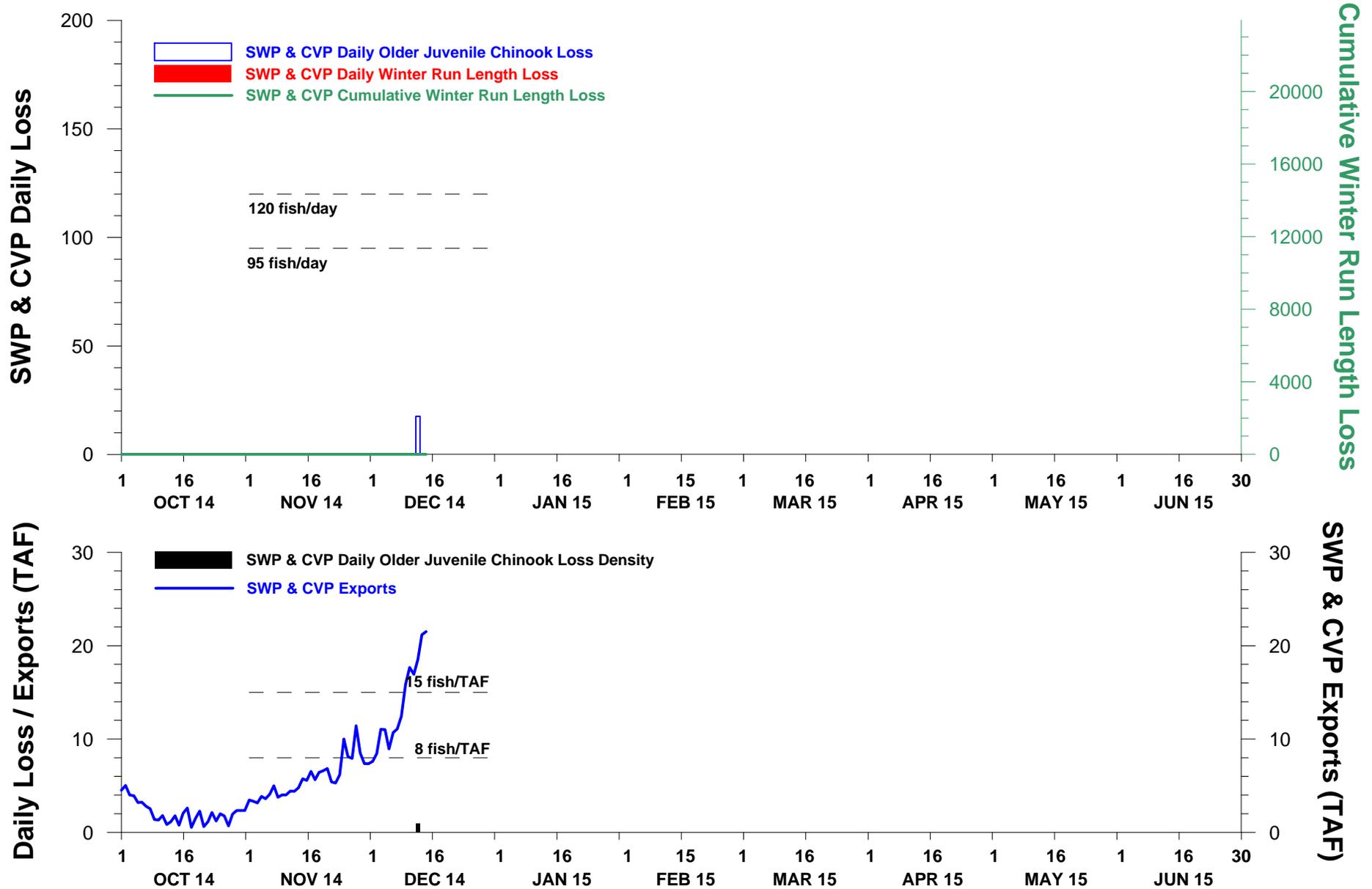
The following graphs were provided by DWR for Chinook salmon and steelhead observed at monitoring locations in the Sacramento and San Joaquin rivers and Delta. For additional graphs, please visit the DWR website at:

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

² For details, see pages 62-66 in Enclosure 2 of the 2011 Amendments to the 2009 RPA document at: http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations.%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf

³ For details, see pages 79-80 in Enclosure 2 of the 2011 Amendments to the 2009 RPA document at: http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations.%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf

NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 14 DEC 2014

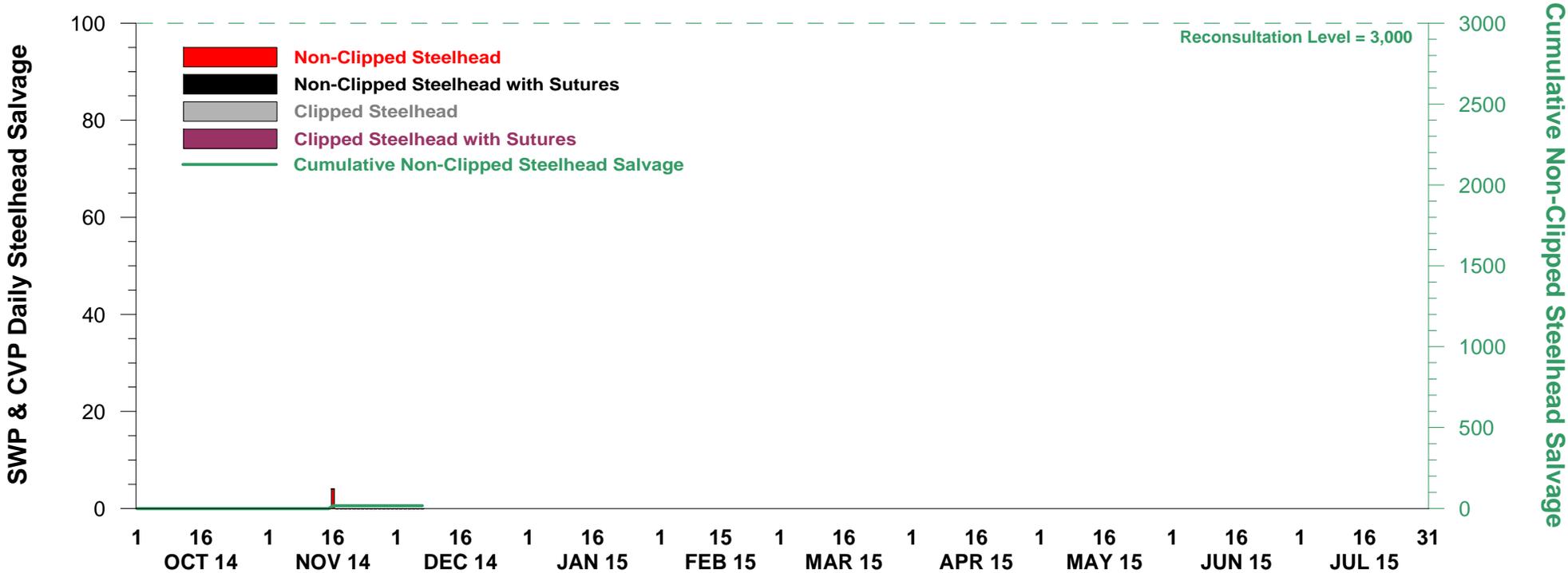


DWR-DES 15 DEC 2014

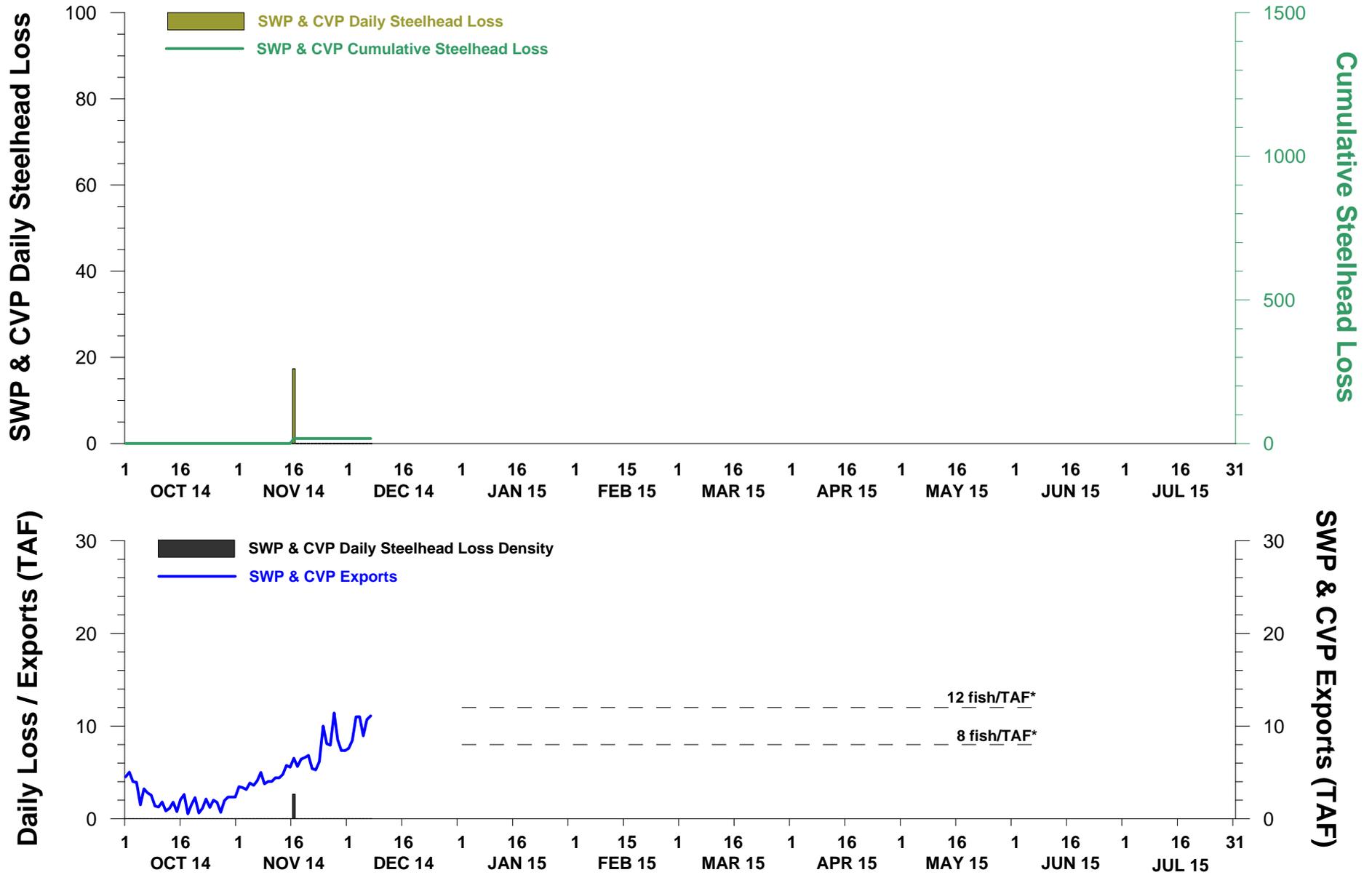
Preliminary data from DFW; subject to revision.

*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 (Delta model) for which a race is assigned on a given sampling date.

STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 14 DECEMBER 2014



NON-CLIPPED STEELHEAD LOSS AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 14 DECEMBER 2014



DWR-DES 15 DECEMBER 2014

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.

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	118.59	853,100	n/a	0.014	n/a	n/a	n/a	12/12/2014	12/14/2014
12/4/2014	LF	Coleman NFH	Battle Creek	Spring Surrogate	0.00	77,000	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	0.00	0.00	0.00	0.00	0
CVP	7.81	0.00	0.00	0.00	0
TOTAL	7.81	0.00	0.00	0.00	0

SWP and CVP adipose-fin clipped Chinook lost from 10/1/2014 through 12/14/2014.

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.

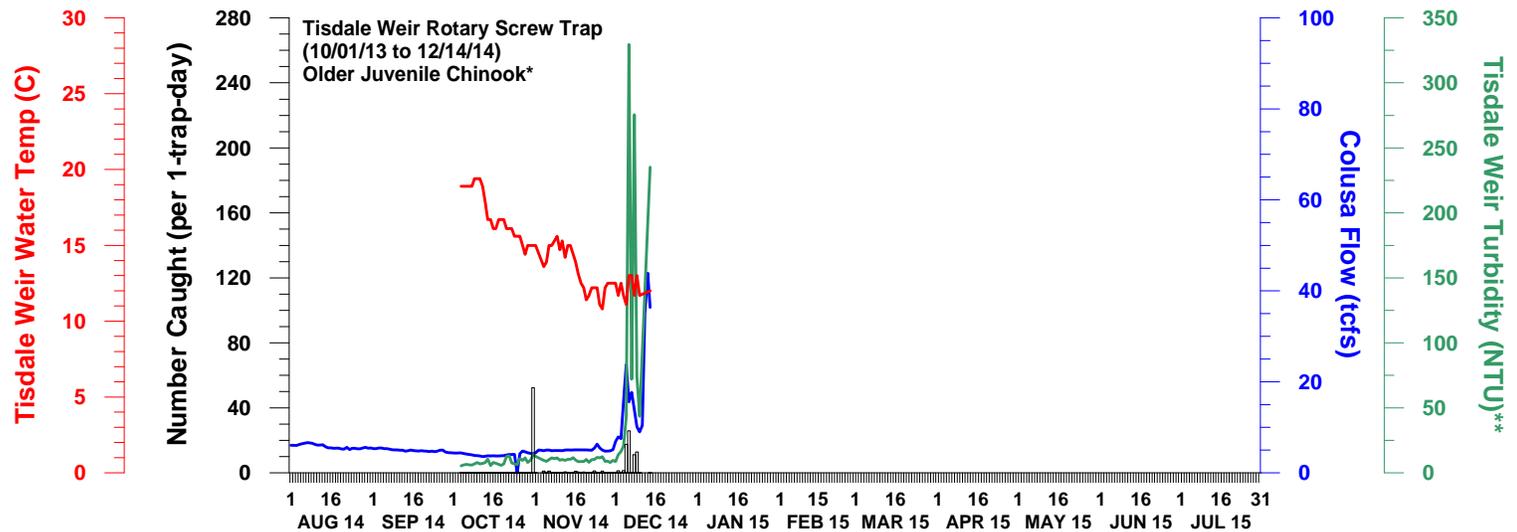
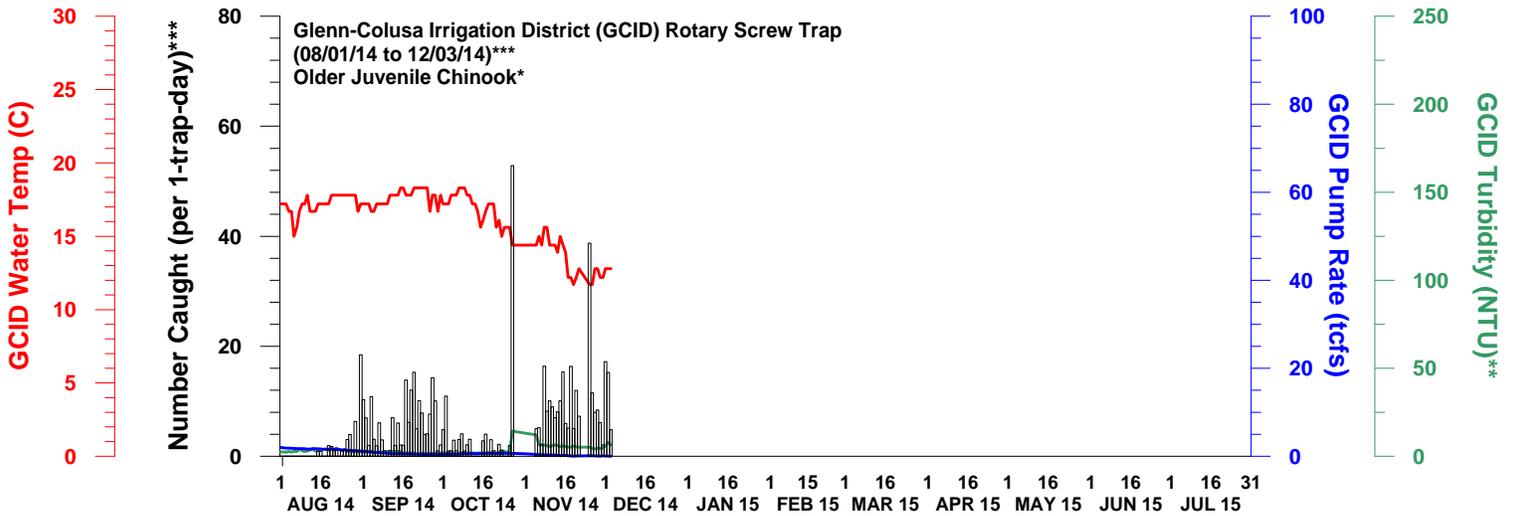
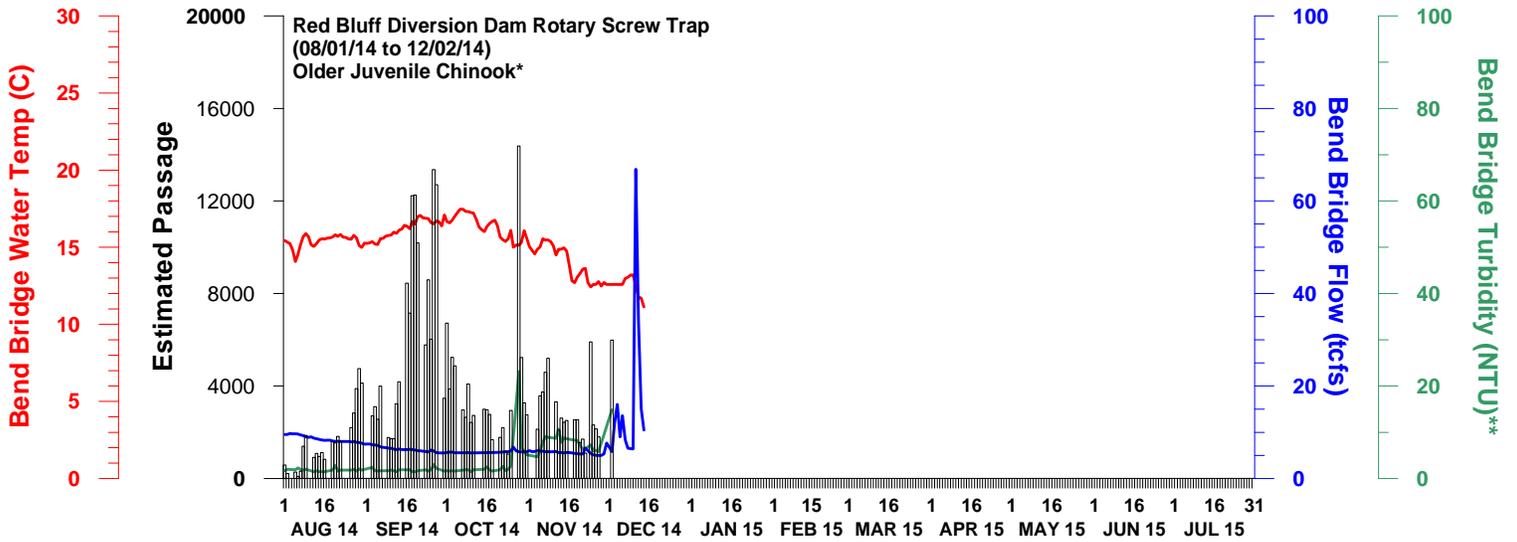
⁹CWT cannot currently be assigned to a salvage record with certainty since the CWT was lost and then found. CWT may be assigned to a salvage record if new information is available.

** Information not yet available.

DWR-DES Revised 12/15/2014

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

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 15 DECEMBER 2014

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

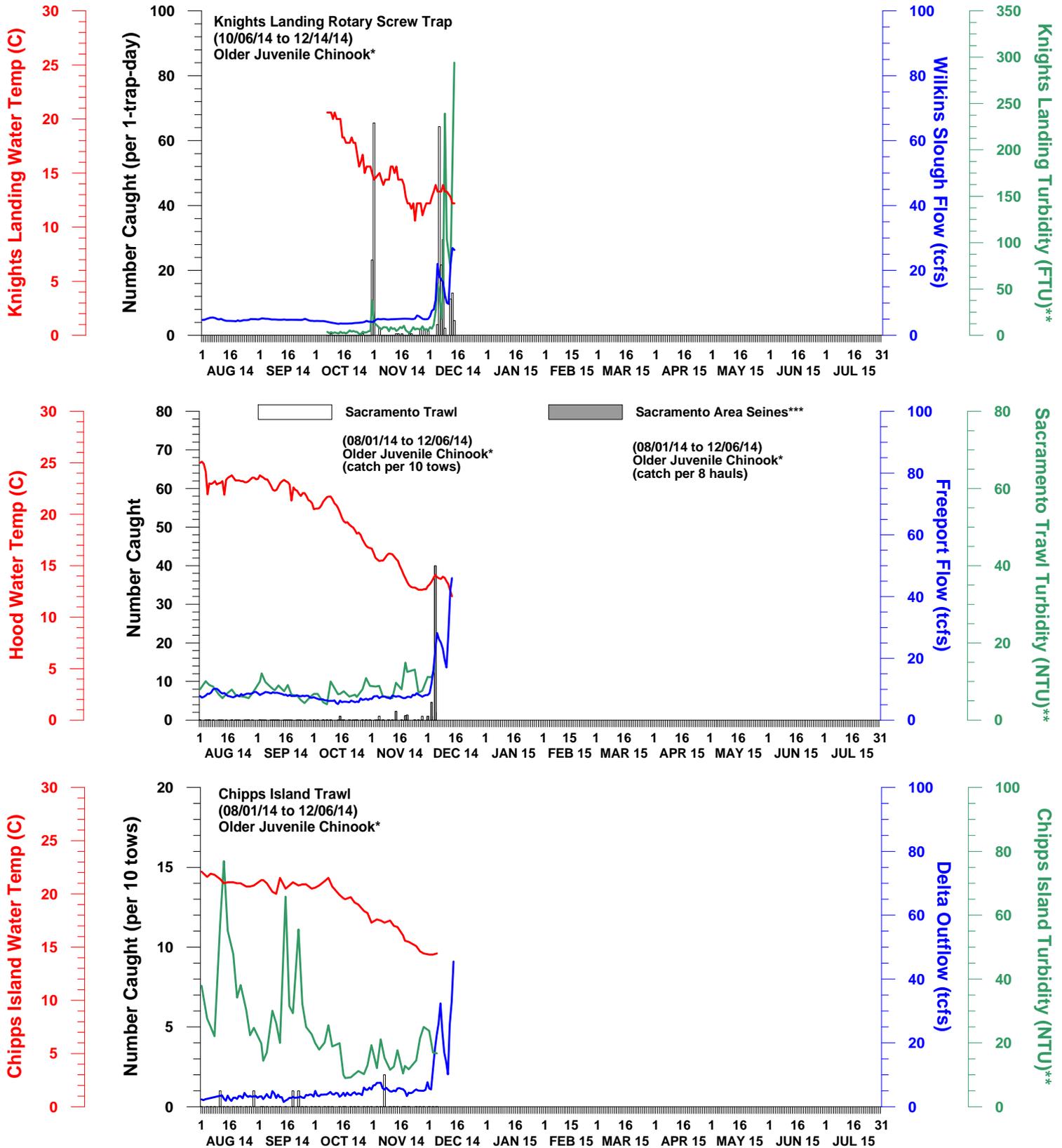
*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher model) for which a race is assigned on a given sampling date.

**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.

***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 has been pulled again on 12/2/14 due to forested debris in flow and subsequent obstruction.

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



DWR-DES 15 DECEMBER 2014

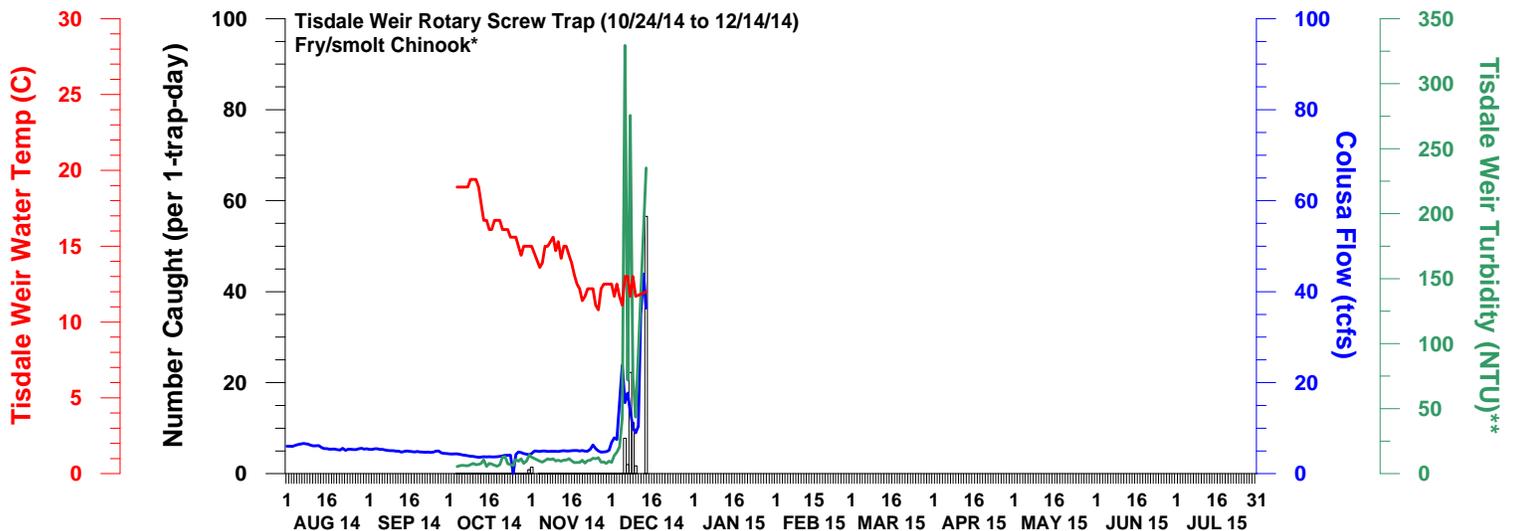
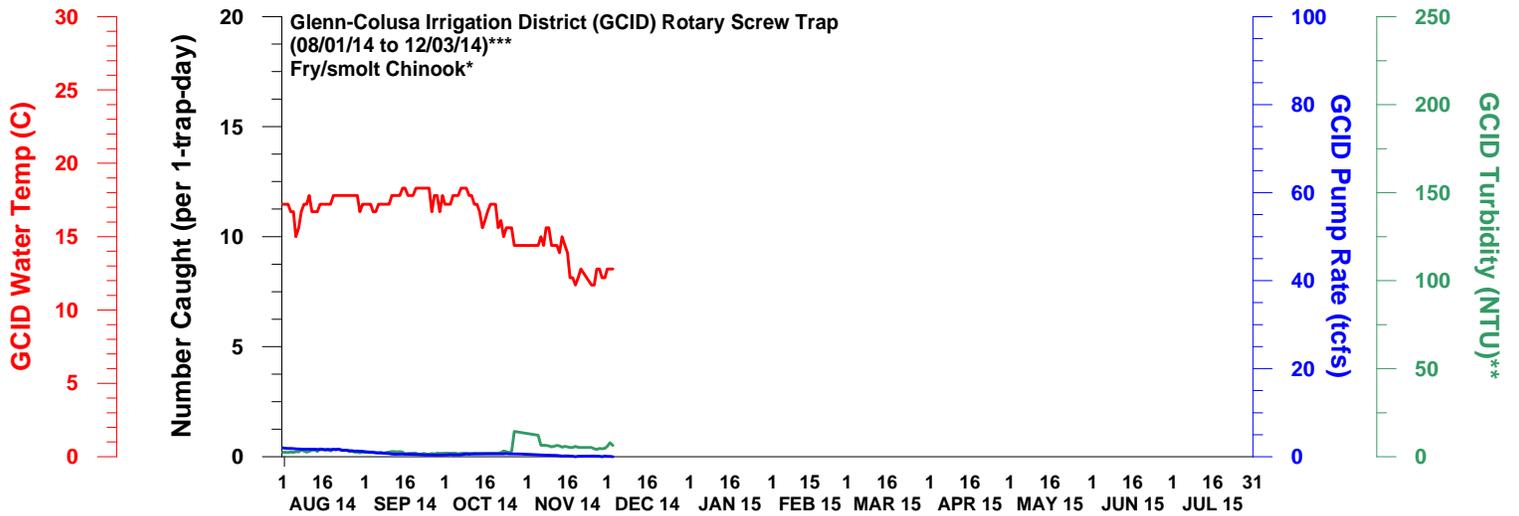
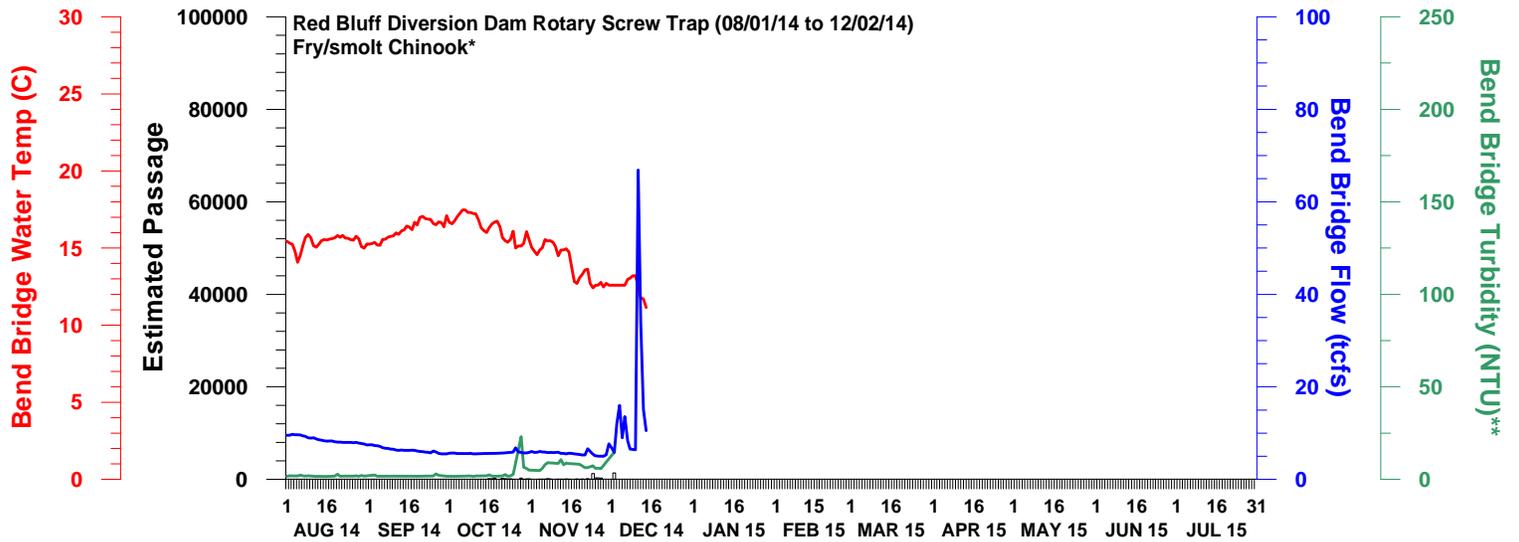
Preliminary data from DFW, FWS, and CDEC; subject to revision.

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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 SACRAMENTO RIVER



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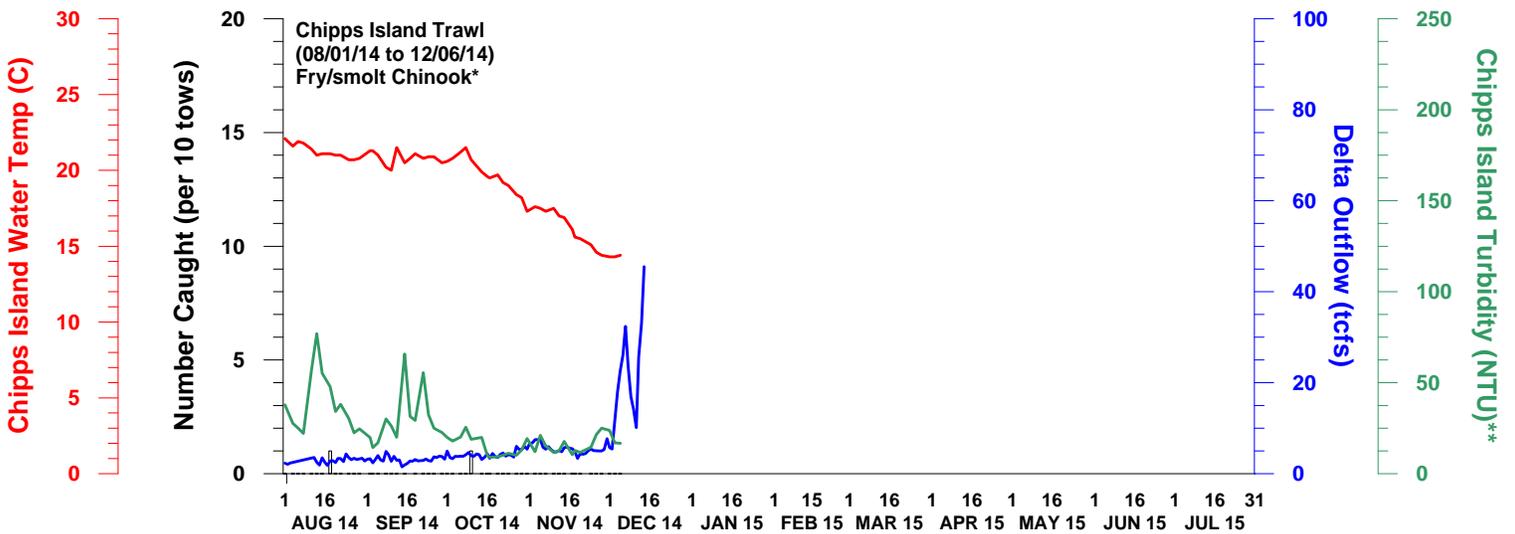
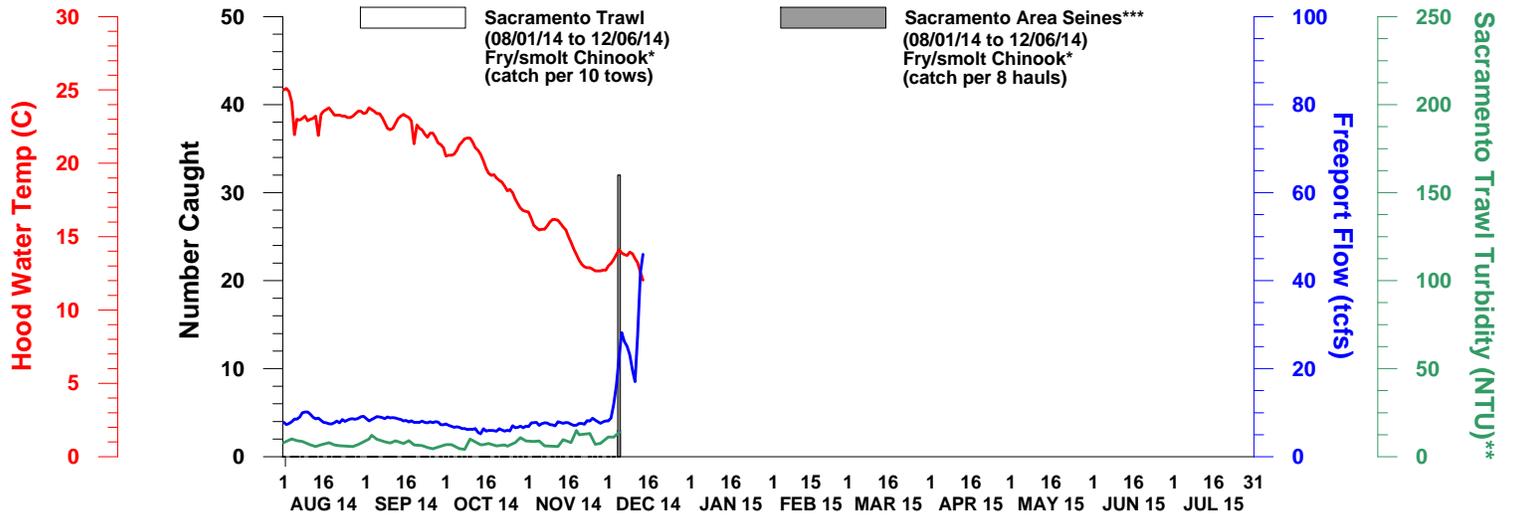
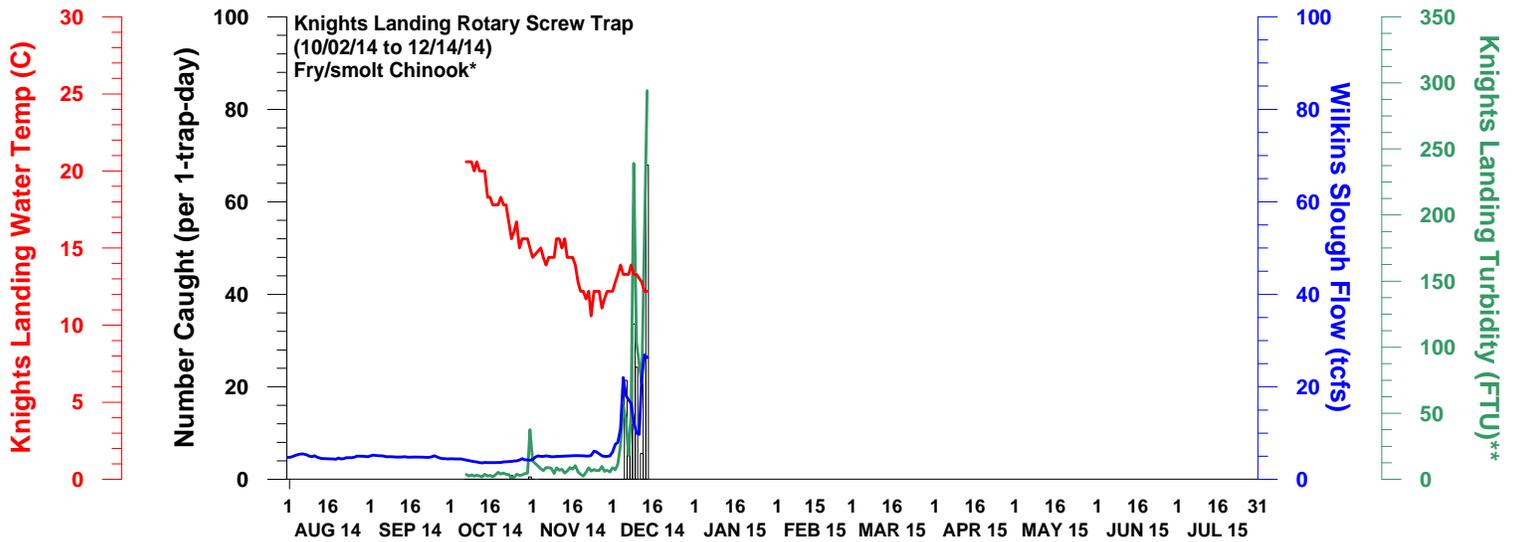
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

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



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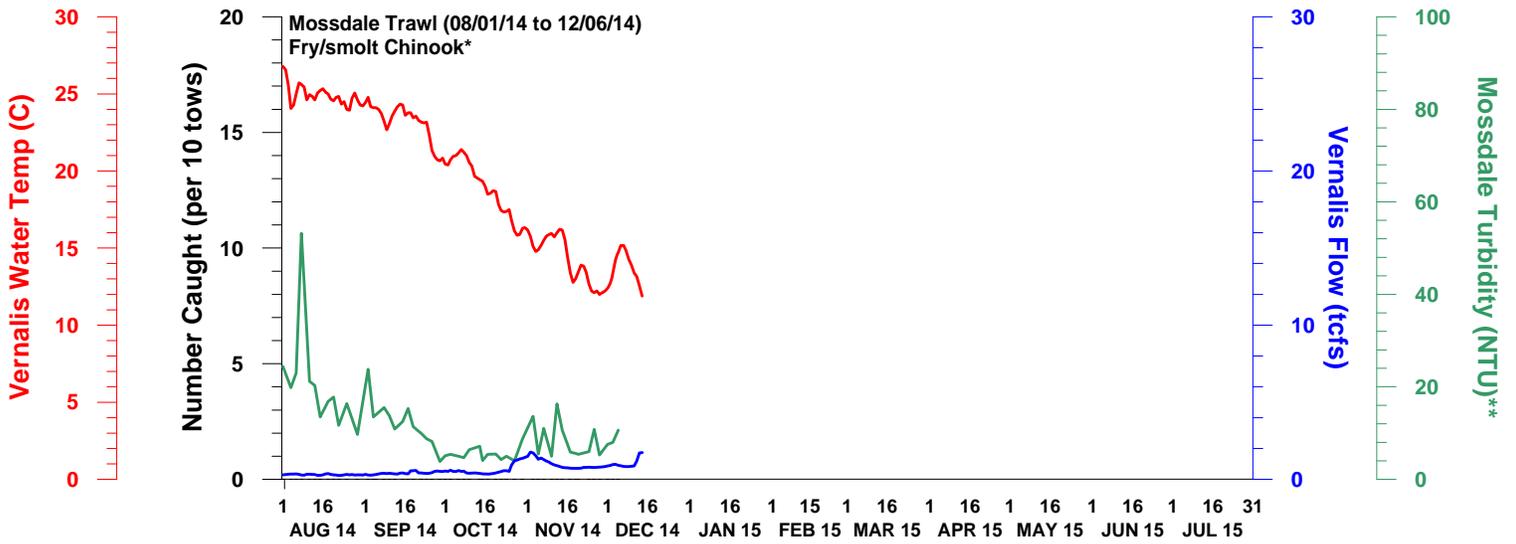
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NUMBER OF UNMARKED FRY/SMOLT CHINOOK MEASURED IN THE SAN JOAQUIN RIVER



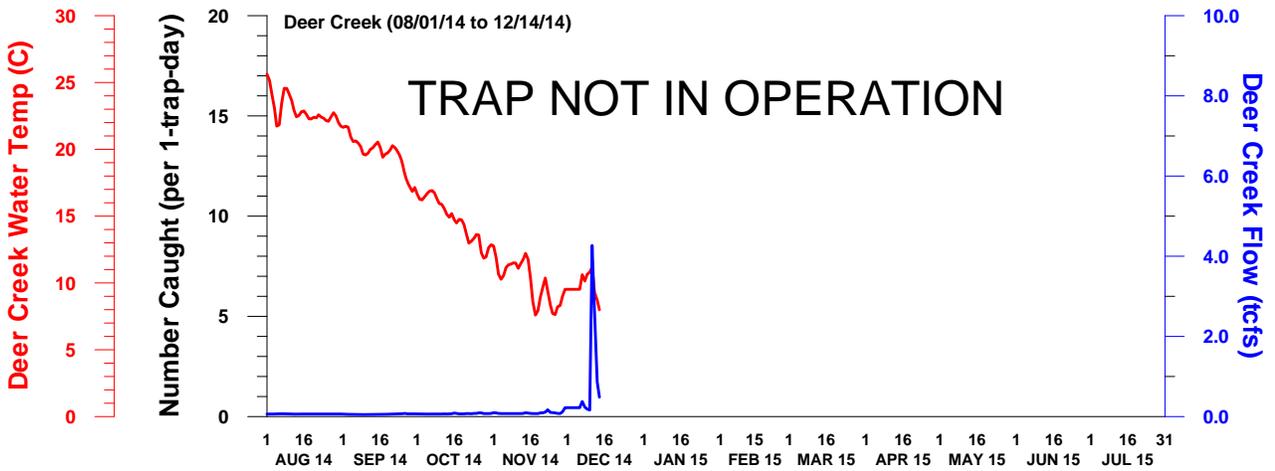
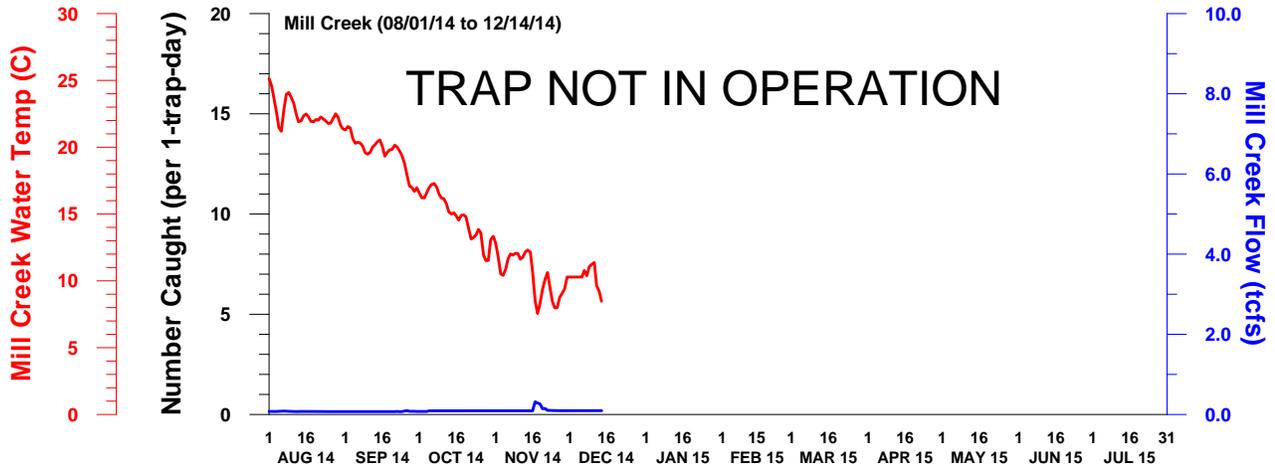
DWR-DES 15 DECEMBER 2014

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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).