

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 11/25/2014 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: Aaron Miller, Farida Islam, Mike Ford, Rhiannon Mulligan, Kevin Reece, Dan Yamanaka

Reclamation: Jason Hassrick, Michele Palmer, Russ Yaworsky

NMFS: Barb Byrne, Jeff Stuart, Meiling Roddam

USFWS: Craig Anderson

CDFW: Duane Linander, Bob Fujimura, Ken Kundargi

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. Spring-run surrogate release schedule (surrogates are late-fall run Chinook from Coleman NFH)
7. Fish Facility Sampling assignment
8. DOSS Advice

Agenda Item 2.

Red Bluff Diversion Dam (RBDD)

USFWS biweekly report (November 5, 2014- November 18, 2014) 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: 32,276
- Winter run Chinook salmon brood year 2014 total: 354,876

Fish Monitoring: The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. See also:

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

Location	Chippis Is. Midwater Trawl	Sacramento Trawls	Mossdale Kodiak Trawl	GCID RST*	Knights Landing RST**	Tisdale RST**	Beach Seines
Sample Date	11/17-11/19	11/17-11/20	11/17-11/20	11/18-11/22	11/17-11/24	11/17-11/24	11/17-11/22
Total Catch	1	0	0	48 (40mm-127mm)	2 (51mm-61mm)	3(47mm-91mm)	2 (47mm-56mm)
FR Chinook							
WR Chinook				32	2	3	2
SR Chinook				1			
LFR Chinook				15		1	
Ad-Clipped Chinook							
Delta Smelt							
Splittail	1 (130mm)						
Longfin Smelt							
Steelhead (ad-clip)							
Steelhead (wild)							
Green Sturgeon							
W. Temp. (avg. °F)	60	56	56	54	54	54	
Flows (avg. cfs)				855	5,246	5,162	
Turbidity (avg. NTU)	11.6	11.8	5.6	5.4	5.7	9.2	

* 11/22/14 Cone raised based on projected peak in flows to minimize potential for mortalities associated with debris. Cone lowered, and sampling resumed, on 11/24/14.

**For Tisdale on 11/22-11/24 and Knight's Landing on 11/23-11/24, the "half cone" sampling method was used in which one of the two perforated walls of the RST cone was removed and entry into the live well from the back of the cone was partially blocked. Rotation speed was normal.

Fish Salvage¹: From 11/17 – 11/24, no listed species have been salvaged at either the CVP or SWP fish collection facilities.

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. No spikes in fish catch, flow, or turbidity were observed over the past week, so the estimated distribution of winter-run is the same as that estimated last week.

Of the 75% of winter-run Chinook estimated upstream of the Delta, DOSS further estimated that approximately 1/3 (25% overall) of winter run Chinook salmon are currently distributed above Red Bluff Diversion Dam (RBDD), and approximately 2/3 (50% overall) of winter-run

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.

Chinook salmon are between RBDD and Knights Landing. This estimated distribution is based in part on an assumption that the low RBDD passage is indicative of high mortality upstream of RBDD.

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>	~75% (last week: same)	~25% (last week: same)	0% (last week: same)
<i>Yearling spring-run Chinook salmon</i>	Some fraction may have moved during the turbidity event in late October.* (last week: same)		

* 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.

Agenda Item 3.

Current Operations (11/25/2014)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	3500	Jones Pumping Plant	800
Reservoir Releases (cfs)			
Feather - Oroville	950	American - Nimbus	1050*
		Sacramento - Keswick	3800**
		Stanislaus - Goodwin	200
Reservoir Storage (in TAF)			
San Luis (SWP)	261	San Luis (CVP)	185
Oroville	903	Shasta	1051
New Melones	509	Folsom	281
Delta Operations			
DCC	Open***	Sacramento River at Freeport (cfs)	~8100
Outflow Index (cfs)	~4400	San Joaquin River at Vernalis (cfs)	~800

*Will be reduced to 900 on 12/1/14

**Will be reduced in 100 cfs increments in early December to 3250 cfs by 12/11/14

***Will be closed on 12/1/14 per Action IV.1.2

Reclamation reported that the modified D-1641 Vernalis pulse flow requiring a 31-day pulse flow of at least 800 cfs was met with a 31-day average of over 1000 cfs.

Water quality management is currently controlling export operations.

Agenda Item 4.

Smelt Working Group

The Smelt Working Group and Delta Conditions Team had their first meetings of WY 2015 on Monday (11/24/14). No regular meetings scheduled; information will be shared weekly with the SWG and meetings will be convened as needed.

Agenda Item 5.

Delta RPA Actions in effect during November:

Action IV.1.1 (Alerts that indicate the Delta Cross Channel (DCC) gate operations may be triggered soon):²

- Recent (11/17/14-11/24/14) conditions for:
 - Wilkins Slough flow: 5,019-6,123 cfs (range of mean daily flow at WLK CDEC station)
 - Knights Landing temperature: 51-55°F (range of temperatures from 11/17-11/23 reported at the rotary screw traps during trap checks)
 - Mill Creek and Deer Creek flows [highlighted cells exceed the first component (95 cfs flow threshold) or second component (>50% flow change) in first alert]:

Date	Mill Creek (MLM)		Deer Creek (DCV)	
	mean daily flow	% increase in mean daily flow	mean daily flow	% increase in mean daily flow
11/17/2014	95	-1.0%	77	-3.8%
11/18/2014	95	0.0%	87	13.0%
11/19/2014	97	2.1%	92	5.7%
11/20/2014	109	12.4%	100	8.7%
11/21/2014	112	2.8%	105	5.0%
11/22/2014	185	65.2%	128	21.9%
11/23/2014	176	-4.9%	162	26.6%
11/24/2014	120	-31.8%	111	-31.5%

- The first component of the first alert has been triggered based on (either or both) Mill and Deer Creek flows >95 cfs from 11/19/14-11/24/14.
- The second alert was not triggered over the past week --Knight's Landing water temperature dropped below 56.3 °F, but the Wilkins Slough flow has not gone over 7,500 cfs.

Action IV.1.2³ (DCC gate operations):

- No catch triggers that would require DCC gate closure have been exceeded over the past week.
- DCC gates are open, but will close on 12/1/14.

² For details, see pages 60-61 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 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

Action IV.3⁴ (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 6.

Spring-run surrogate release schedule (surrogates are late-fall run Chinook from Coleman NFH)

Coleman National Fish Hatchery (CNFH) has set aside three batches of late-fall-run Chinook salmon (with ~75,000 fish in each batch) to be released as surrogates for spring-run Chinook yearlings in late 2014 and early 2015. DOSS was asked to provide guidance to CNFH for their release schedule. The spring-run Chinook surrogates are used to track incidental take at the export facilities, and, if the estimated loss of any spring-run surrogate release group at the export facilities exceeds 0.5% of the release group size, an action response is required per Action IV.3 (export reduction; this action ends December 31) and Action IV.2.3 (OMR management; this action does not take effect until January 1).

Last year, DOSS asked that the three surrogate groups be released in mid-December, early January, and late January, ideally coincident with rainfall events. Because of the limited precipitation, the surrogate releases ended up being released on 1/7/14, 1/13/14, and 1/23/14, not necessarily with rainfall.

The DOSS discussion focused on several key factors:

Migration timing of naturally-produced spring-run Chinook yearlings

Because these fish are surrogates for spring-run yearlings, the migration timing of naturally produced yearling spring-run migration is relevant. The fact that outmigration of yearling Chinook is associated with flow events in tributaries to the Sacramento River (e.g. Mill Creek, Deer Creek) is one argument for releasing the surrogates on a flow event. However, DOSS also noted that a potential benefit of *not* releasing the surrogates with a flow event would be that surrogate fish would have time to acclimate and mix with naturally produced spring-run yearlings before a flow event cued both wild and surrogate fish to migrate downstream. If spring-run surrogates hold for a time before migration (as they might do if released into steady “base flow” conditions), they may experience greater mortality.

Timing of the late fall-run production release

CNFH expects to release approximately 800,000 late fall-run Chinook with the first precipitation event in early December. Some felt that releasing the surrogates at a time different from that of the CNFH production releases might be detrimental because predation could be higher without the potential of the production release to “swamp” predators. If the goal was to improve survival of the surrogate groups, one might choose to release the surrogates with the production release; if naturally-produced yearling spring-run are not associated with 800,000 hatchery fish, a surrogate

⁴ 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

release that is offset from the production release might better represent natural spring-run survival.

DOSS suggested the following guidance regarding the release schedule for the spring-run surrogate groups at CNFH, based on the information that the production release would occur during the first significant rainfall event in December:

- **Production release:** early December, with first significant precipitation event
- **1st surrogate release:** ~3 days after the production release, regardless of precipitation events.
- **2nd surrogate release:** Late December, ideally preceding (by ~3-7 days) a precipitation event and at least a week after the previous surrogate release.
- **3rd surrogate release:** Mid-January, ideally preceding (by ~3-7 days) a precipitation event and at least a week after the previous surrogate release.

DOSS will monitor the weather forecasts and CNFH releases and may refine this guidance as the season progresses.

Agenda Item 7.

Touch base re: "Fish Facility Sampling" assignment

- Details on this assignment are included in the DOSS notes from 11/12/14.
- Next steps:
 - DOSS will review some feedback received from Tracy Fish Collection Facility staff over the next week, and discuss it during the next DOSS meeting.
 - Fujimura (CDFW) noted that actual salvage is much lower than the hypothetical example in the shared salvage estimation spreadsheet and that the impact of sampling duration might be different at much lower salvage.

Agenda Item 8.

DOSS Advice

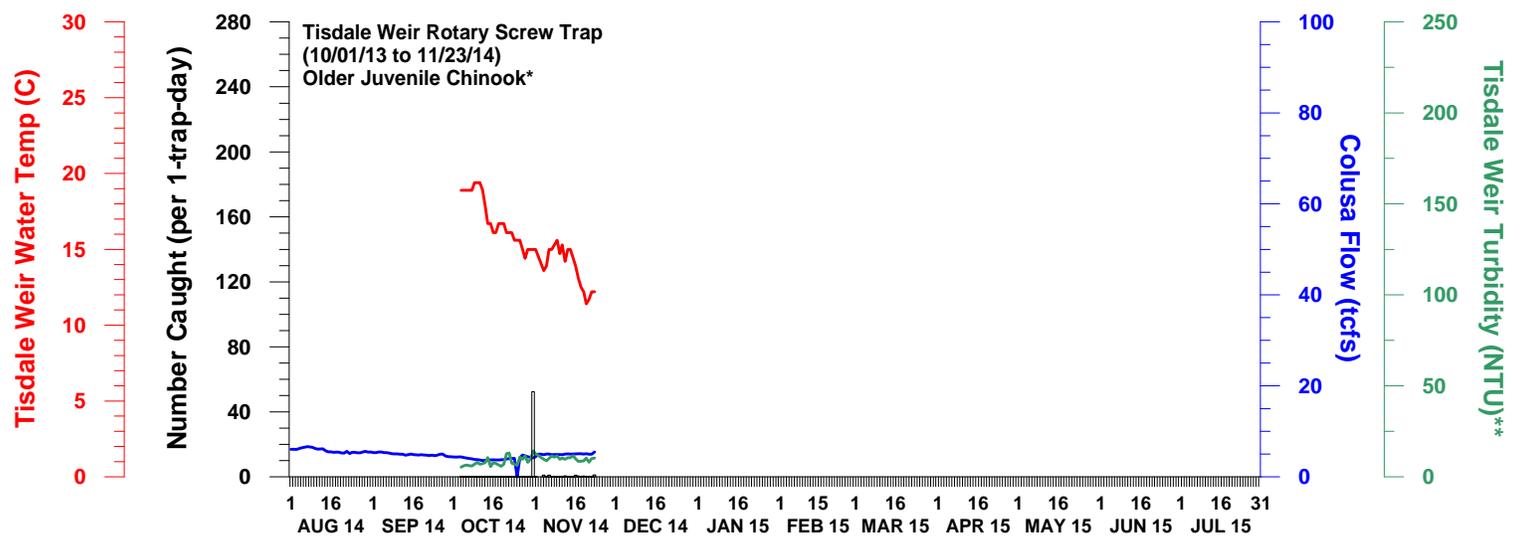
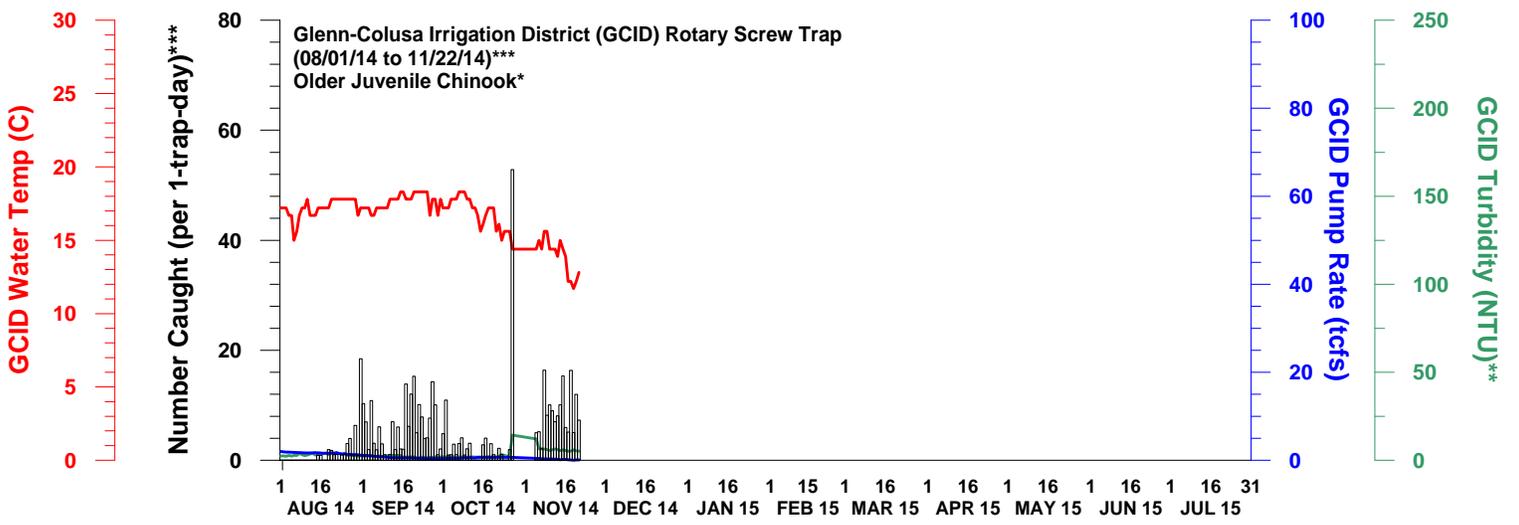
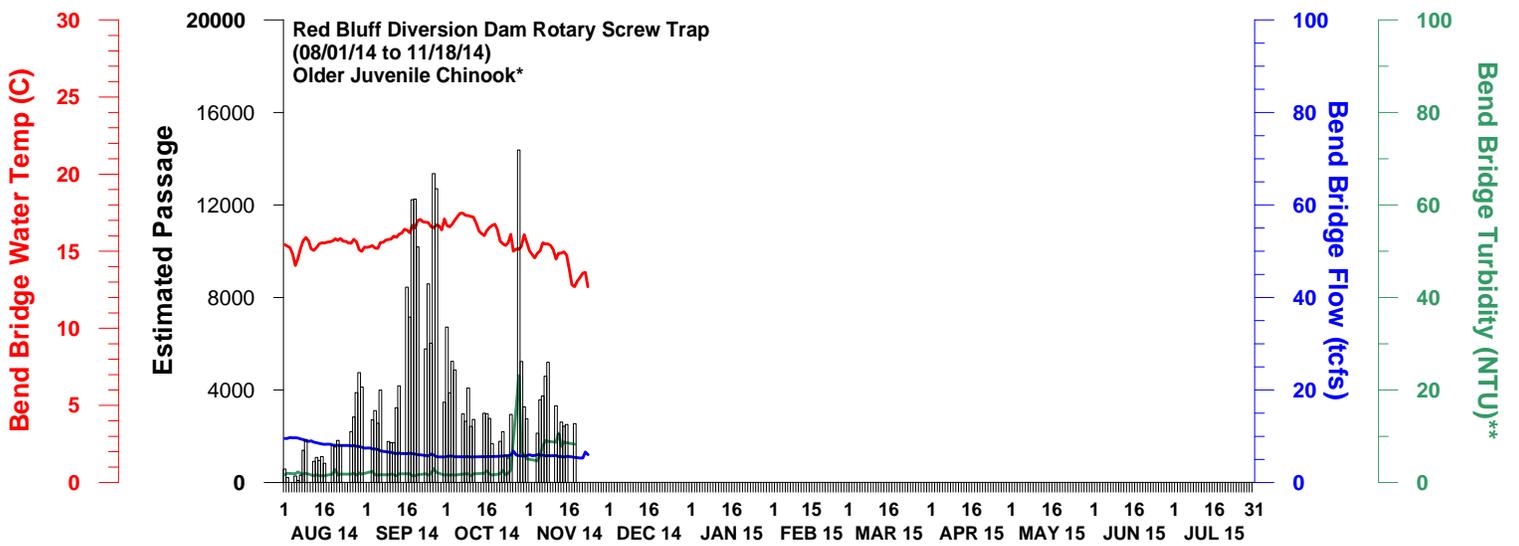
DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next DOSS conference call will be on 12/2/14 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>.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 24 NOVEMBER 2014

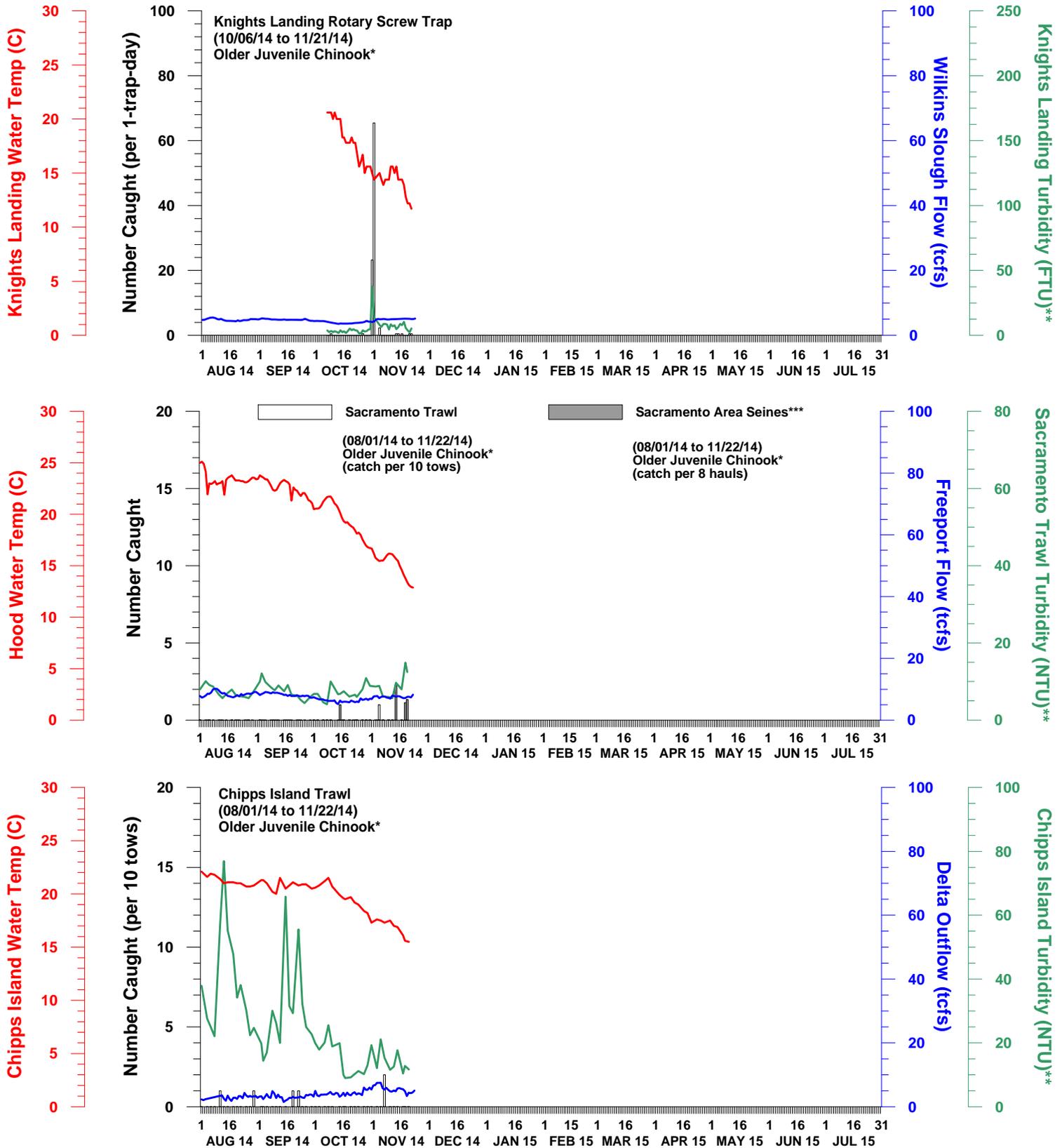
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

*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.

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



DWR-DES 24 NOVEMBER 2014

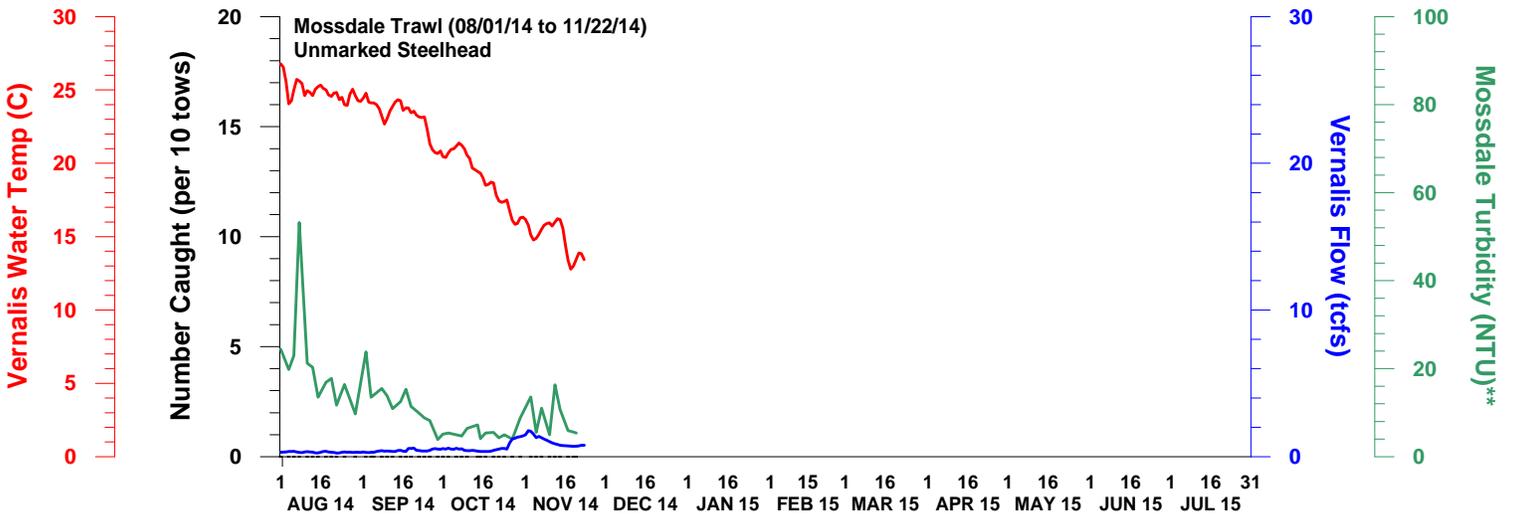
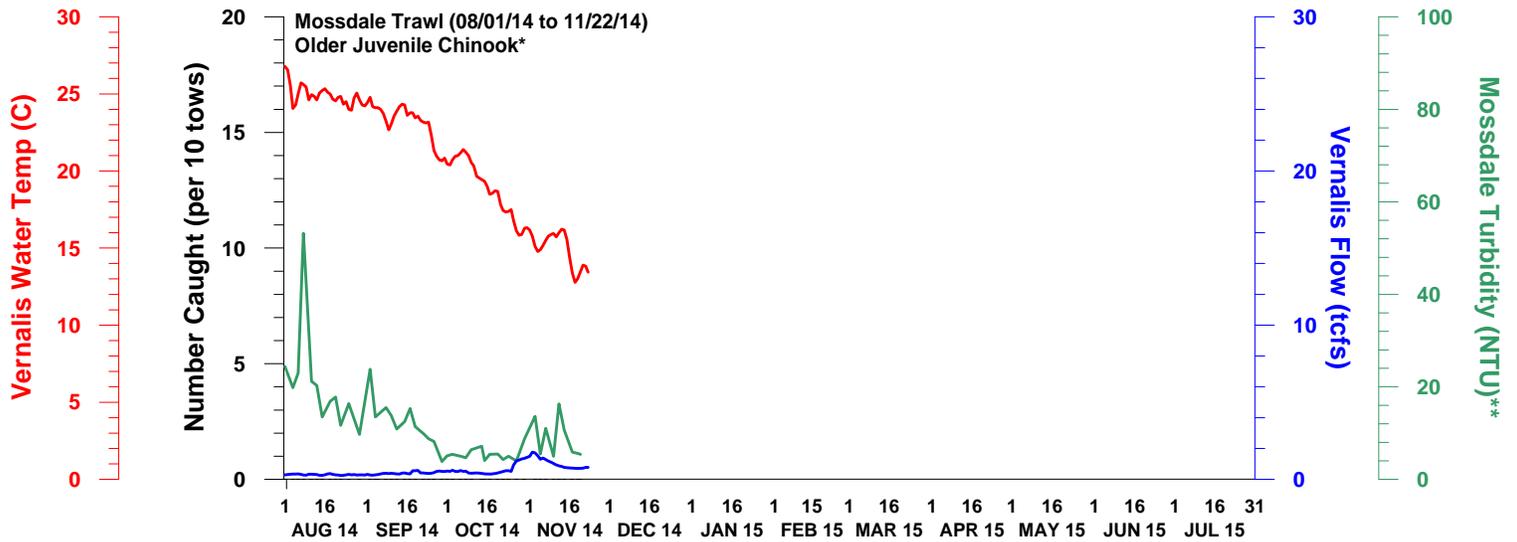
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***Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK AND STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER

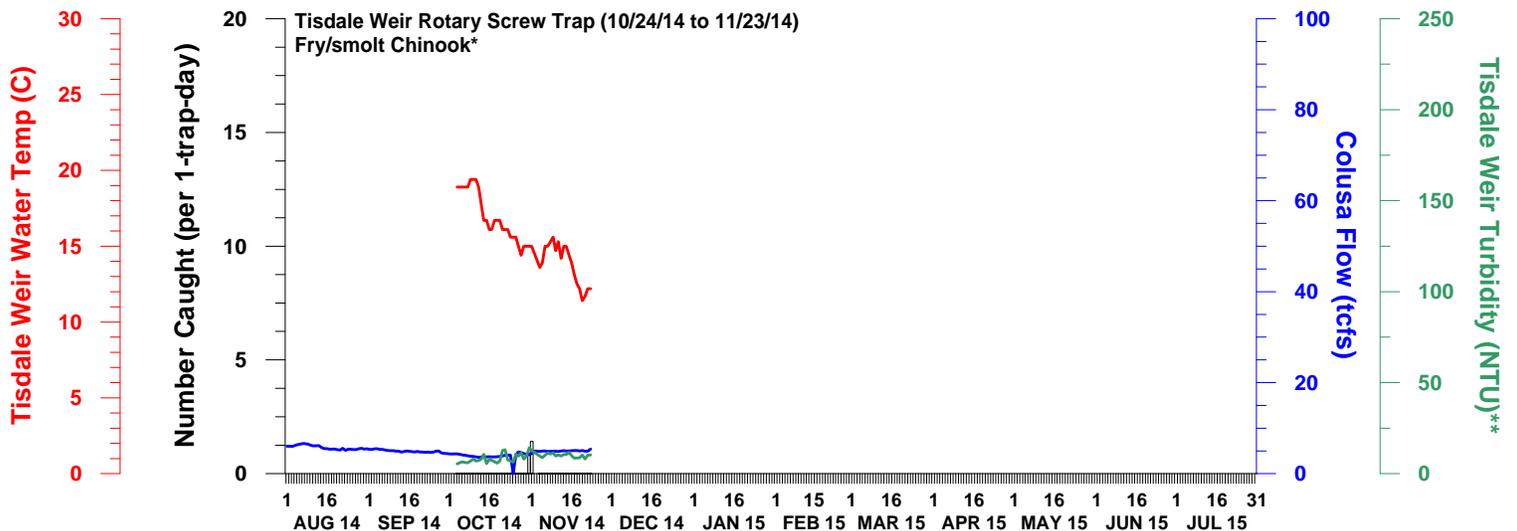
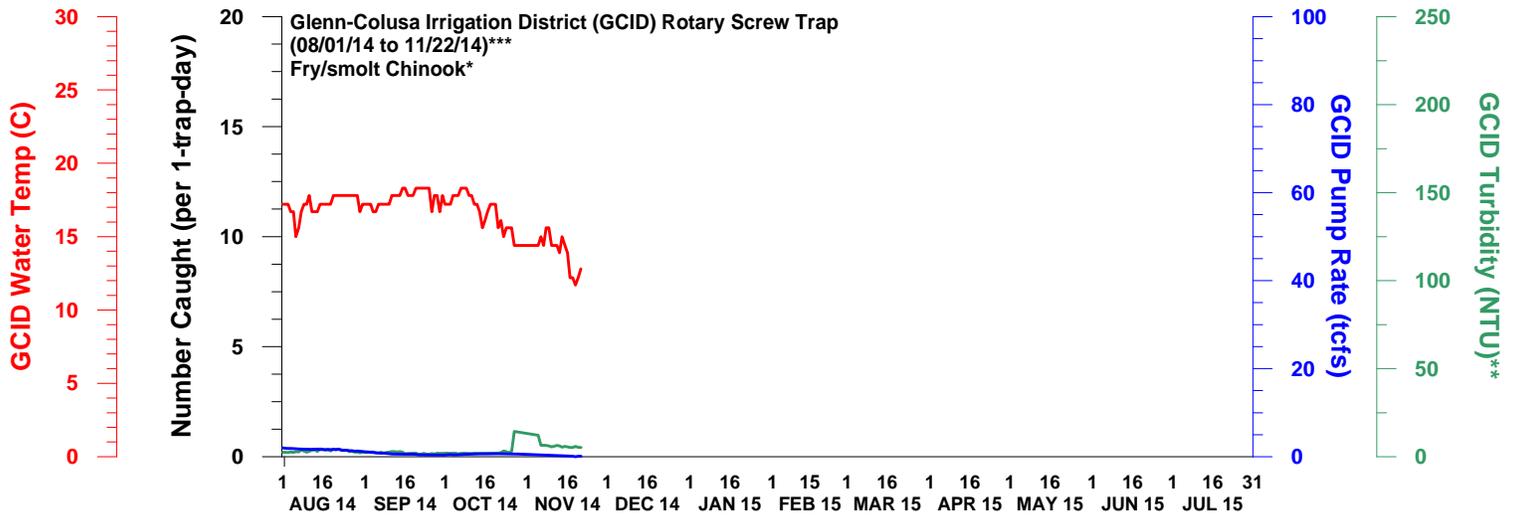
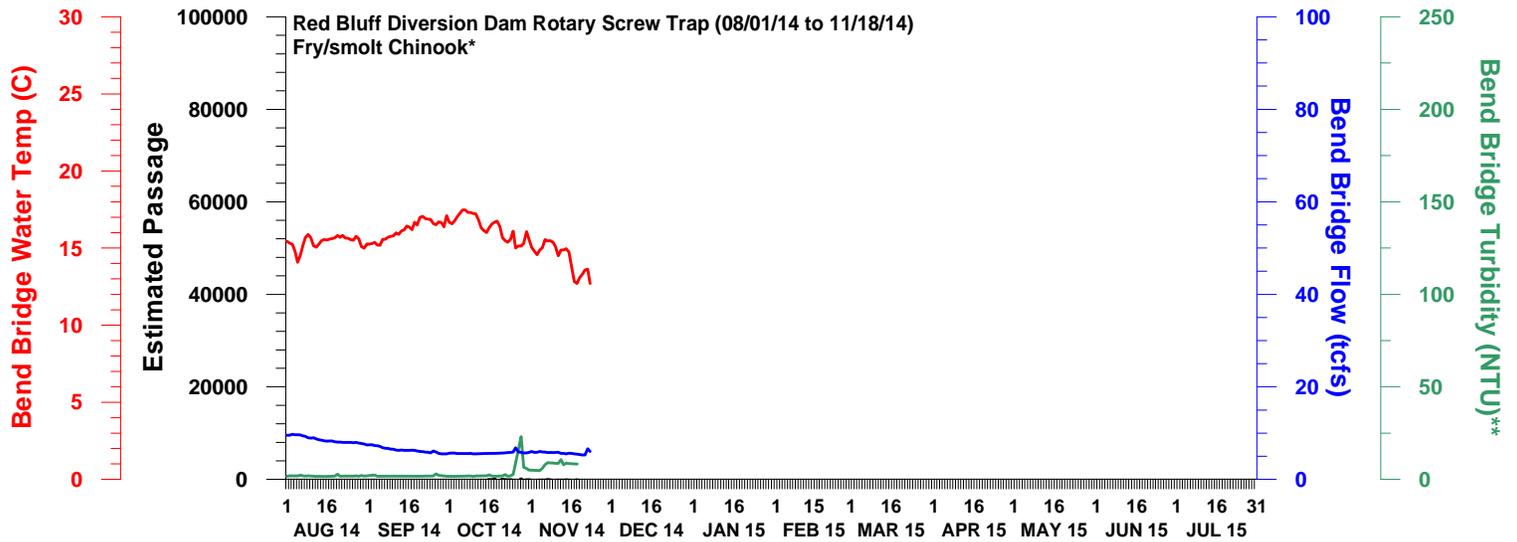


DWR-DES 24 NOVEMBER 2014
Preliminary data from FWS and CDEC; subject to revision.

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NUMBER OF UNMARKED FRY/SMOLT CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 24 NOVEMBER 2014

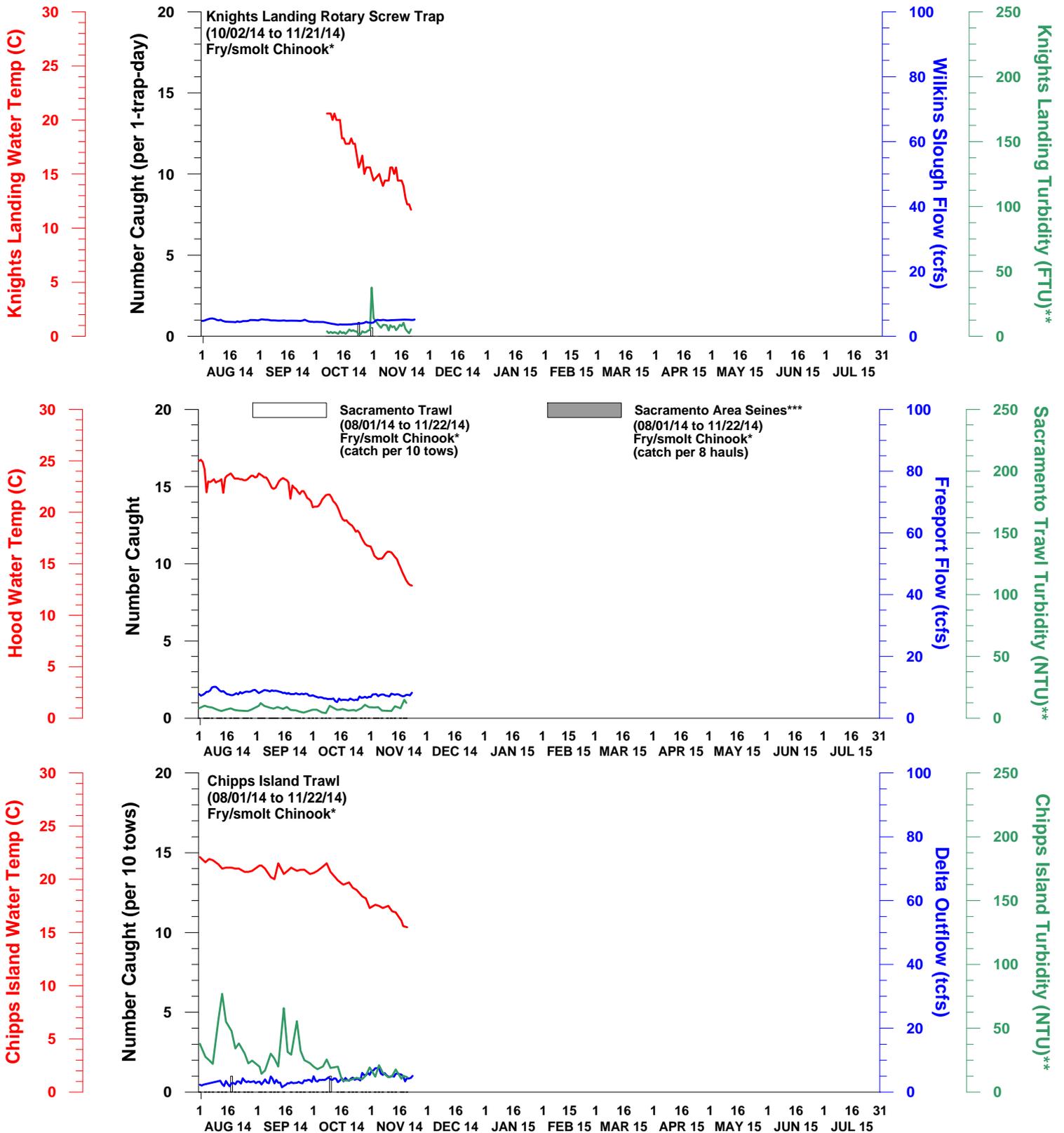
Preliminary data from DFW, FWS, GCID, and CDEC; subject to revision.

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



DWR-DES 24 NOVEMBER 2014

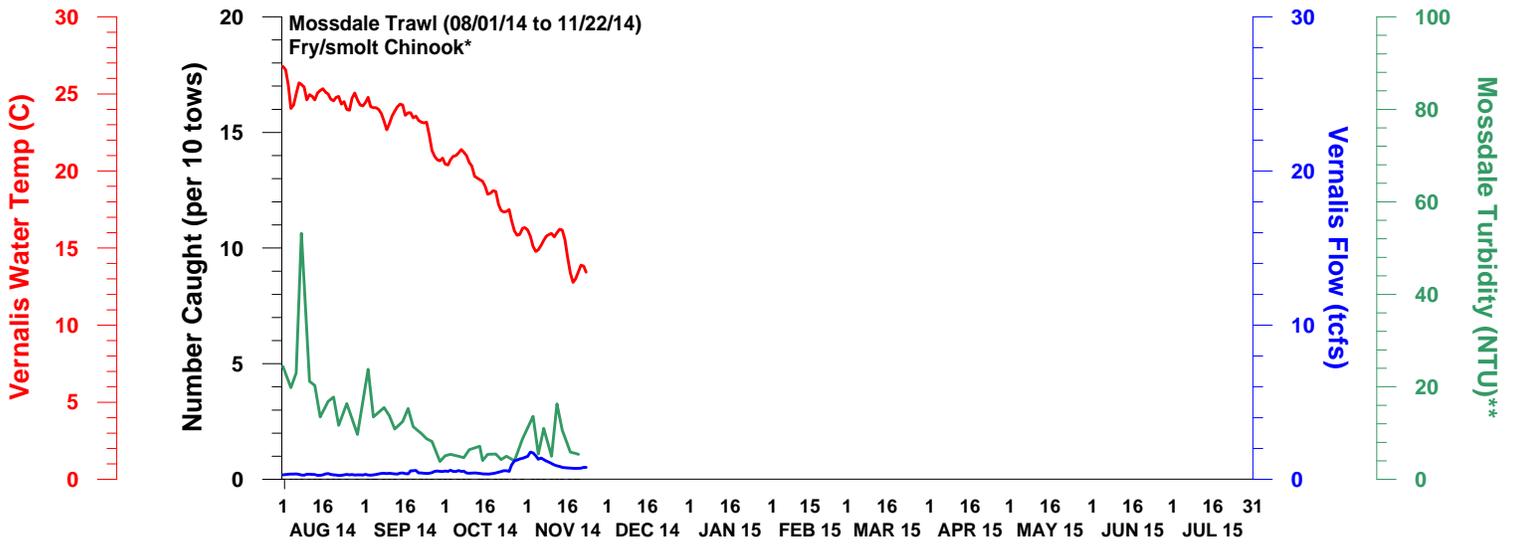
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NUMBER OF UNMARKED FRY/SMOLT CHINOOK MEASURED IN THE SAN JOAQUIN RIVER



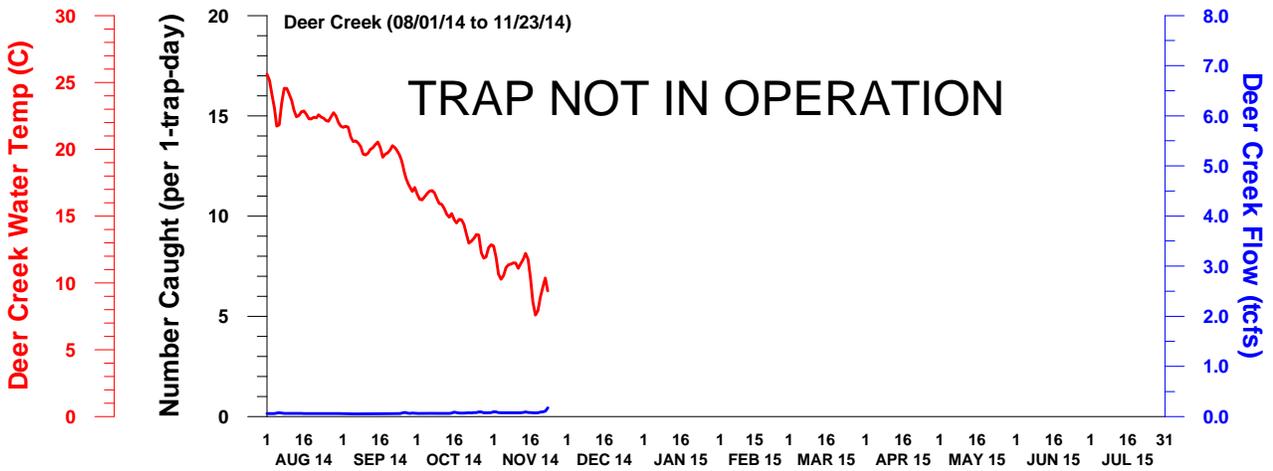
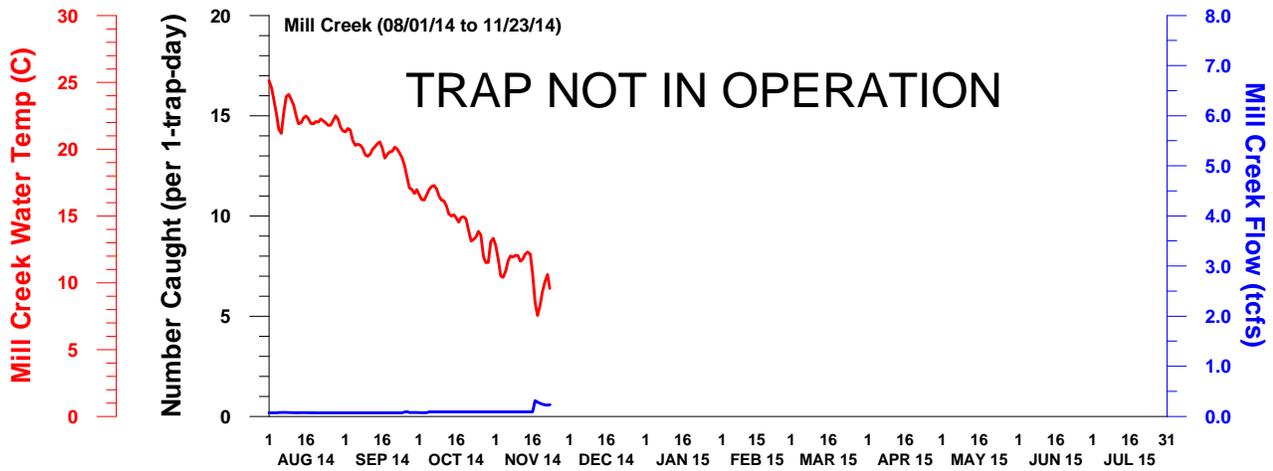
DWR-DES 24 NOVEMBER 2014

Preliminary data from FWS and CDEC; subject to revision.

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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.

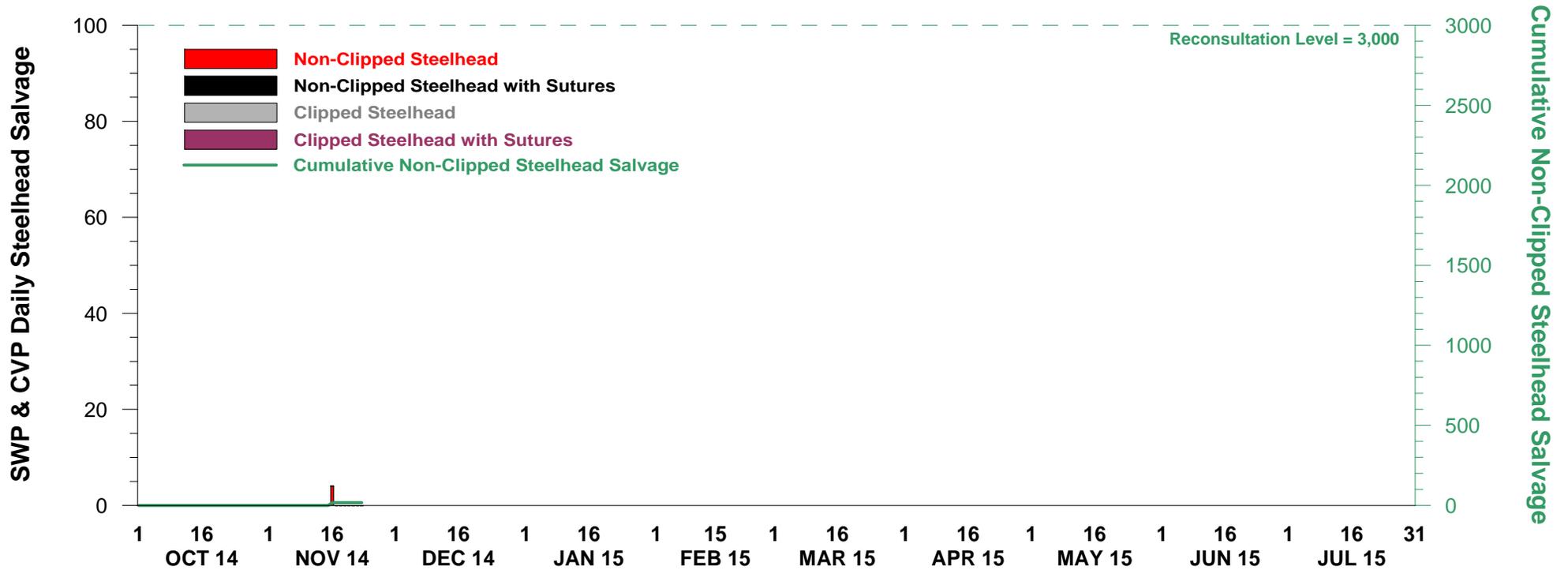
Sacramento River Trawl, Sacramento Area Beach Seine, and Chipps Island Trawl data were obtained directly from FWS, Stockton Fish and Wildlife Office (<http://www.fws.gov/stockton/ifmp/>).

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

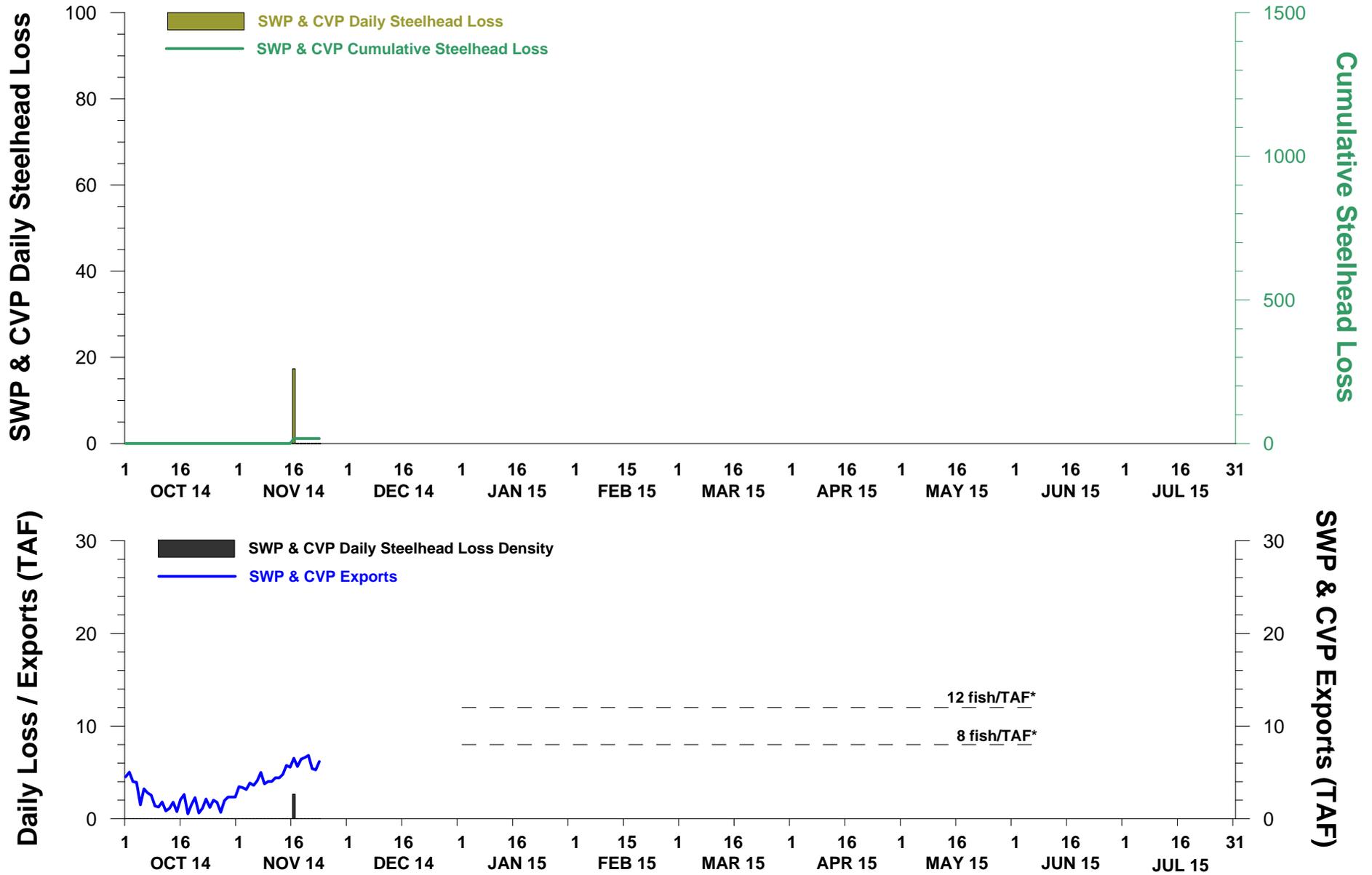
The hydrology data were either downloaded from the California Data Exchange Center (CDEC) (<http://cdec.water.ca.gov>) or obtained directly from the California Department of Water Resources, Operations Control Office.

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

STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 23 NOVEMBER 2014



NON-CLIPPED STEELHEAD LOSS AT THE DELTA FISH FACILITIES 01 OCT 2014 THROUGH 23 NOVEMBER 2014



DWR-DES 24 NOVEMBER 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.