

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**Conference call: 1/23/13 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.swr.noaa.gov/ocap/doss.htm>.

**DWR:** Edmund Yu, Kevin Reece, Dan Yamanaka, Mike Ford, Andy Chu  
**FWS:** Roger Guinee, Craig Anderson, Leigh Bartoo  
**NMFS:** Bruce Oppenheim, Barbara Rocco  
**Reclamation:** Russ Yaworsky, Josh Israel  
**DFW:** Bob Fujimura, Mary Olswang  
**SWRCB:** Scott Ligare  
**EPA, IEP, USGS:** not present

**Agenda**

1. Fish monitoring
2. Current operations
3. RPA Action IV.3 clarification language
4. 6-Year Study Plan (Israel)

**DOSS Participation:** Scott Ligare (SWRCB) will confirm whether Kari Daniska and Larry Lindsay will continue to participate and, if so, whether Daniska will continue being the official SWRCB member to the DOSS.

**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	Beach Seines
<b>Sample Date</b>	1/14, 16, 18	1/14, 16, 18	1/14, 16, 18	1/14–1/17
<b>Total Catch</b>	<b>62</b>	<b>11</b>	<b>0</b>	<b>773</b>
<b>FR</b>		10		728
<b>WR</b>	1			5
<b>SR</b>				37
<b>LFR</b>				
<b>Ad-Clipped Chinook</b>	1			1
<b>DS</b>	16			
<b>Splittail</b>	8			
<b>Longfin</b>	29			
<b>SH (ad-clip)</b>	7	1		2

<b>SH (wild)</b>				
<b>W. Temp. (avg. °F)</b>	7.0	6.6	6.8	6.4
<b>Flows (avg. cfs)</b>				
<b>Turbidity (avg. NTU)</b>	51.8	20.9	21.1	31.8
<b>WR/LFR Avg. CPUE</b>				
<b>FR/SR Avg. CPUE</b>				

**Key:** FR = Fall run; LFR = Late-fall run; SR = Spring run; WR = Winter run; SH = Steelhead; DS = Delta smelt; LFS = Longfin smelt; CPUE = catch per unit of effort; N/A = not available

**Monitoring:** The Sacramento trawl shows a decline in older juvenile Chinook entering the Delta. We are beginning to see a shift to Chinook fry now, which is expected this time of year.

**Sacramento River Monitoring:** Trapping at Knights Landing and Tisdale weir stopped because the take limit for winter run had been reached. DFW is currently working on amending its ESA Section 10 research and monitoring permit; it is not anticipating that the traps would go back into the water until October 1, 2013 (beginning of next water year).

Israel (Reclamation) expressed concern about the take level and what the approach would be to manage monitoring in the future. He asked whether DOSS could provide advice to NMFS regarding future monitoring by looking at the Knights Landing data from this year. The concern is that DOSS will miss an opportunity to monitor juvenile Chinook entering the Delta, and this information is useful and important to DOSS. The beach seines and trawls can sometimes miss the pulses. Oppenheim (NMFS) will talk to Amanda Cranford (NMFS), the Section 10 coordinator, about the status of the permit.

**Fish Salvage:** The fish salvage report covering 1/14/13–1/21/13 was provided by Geir Aasen (DFW) and emailed to DOSS participants. This report is posted at <ftp://ftp.delta.dfg.ca.gov/salvage> and you can locate the table under folder “DOSS salvage tables” (also try <http://www.dfg.ca.gov/delta/apps/salvage/Default.aspx> and click on “salvage FTP site”).

*Report from Bob Fujimura (DFW) for January 14–21, 2013.*

This week there was an increase in the number of salmonids salvaged, and all of the salvaged fish were at the SWP. Four wild (non-ad-clipped) Chinook salmon in the winter-run size range were salvaged on both 1/17 and 1/18. The loss densities for these days were 2.0 and 1.9 fish/TAF, respectively. Thirty hatchery (ad-clipped) Chinook salmon in the winter- and late-fall-run sizes were salvaged during 1/17–1/20. Four juvenile Chinook salmon in the winter-run size range were actually fall-run based on CWT information. The number of hatchery Chinook salmon salvaged last week (30) was higher compared to that of the previous week (4).

Four wild steelhead were salvaged at the SWP on 1/19 and two more on 1/21. The estimated loss densities were 1.8 and 1.0 fish/TAF, respectively. No Chinook salmon or steelhead were salvaged at the CVP during the reporting period.

No sturgeon (white or green) were observed last week.

Preliminary salvage data from yesterday (1/22/13): a combined total of nine Chinook salmon were salvaged from the fish facilities. Official loss density calculations from DFW were not yet available; therefore, DWR provided a rough estimate of the daily loss density calculations. Two wild Chinook salmon in the winter-run size were salvaged at the SWP for a loss density of 0.95 fish/TAF, and four wild steelhead were salvaged at the CVP for a loss density of 0.30 fish/TAF.

**Note:** After the DOSS call, the official DFW loss density was calculated to be 0.99 fish/TAF.

The following daily summary graphs and table were prepared by Bob Fujimura (DFW) as of 1/22/13.

Compiled by Bob Fujimura on January 22, 2013

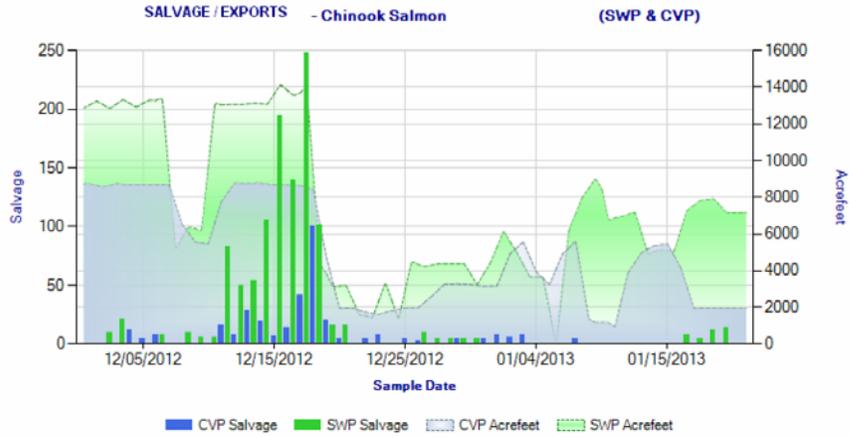


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during December 1 through January 21, 2013. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

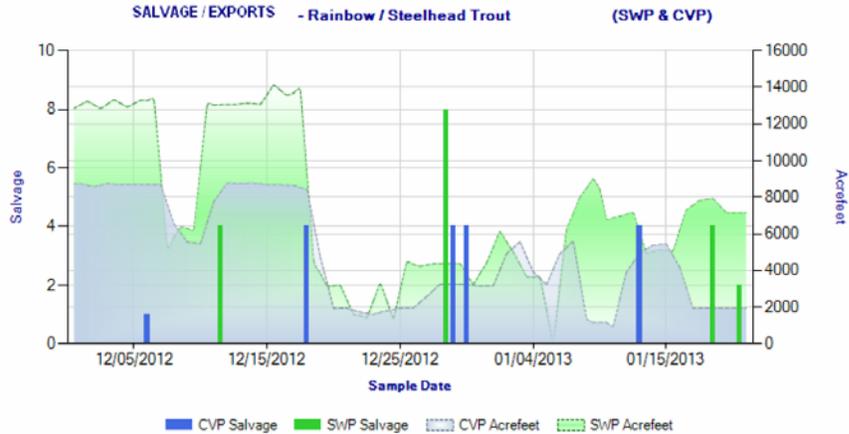


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during December 1 through January 21, 2013. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

**DOSS Weekly Salvage Update**  
 Reporting Period: January 14-20, 2013  
 Prepared by Bob Fujimura on January 22, 2013  
 Preliminary Results - Subject to Revision

Criteria	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan	20-Jan	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0	2.0	1.9	0	0	↗	0.6
Wild steelhead	0	0	0	0	0	1.8	0	↗	0.3
<b>Exports</b>									
SWP daily export	4,956	5,133	5,067	7,273	7,821	7,915	7,168	↘	6,476
CVP daily export	5,380	5,440	4,167	1,949	1,947	1,949	1,955	↗	3,255

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
<b>Wild</b>					
Winter Run	8	36	↗	82	278
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	85	277
Fall Run	0	0	→	19	52
Unclassified	0	0	→	8	5
<b>Total</b>	<b>8</b>	<b>36</b>		<b>194</b>	<b>612</b>
<b>Hatchery</b>					
Winter Run	24	110	↗	95	354
Spring Run	0	0	→	0	0
Late Fall Run	6	27	↗	773	2,877
Fall Run	0	0	→	415	1,522
Unclassified	0	0	→	0	0
<b>Total</b>	<b>30</b>	<b>137</b>		<b>1,283</b>	<b>4,753</b>

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

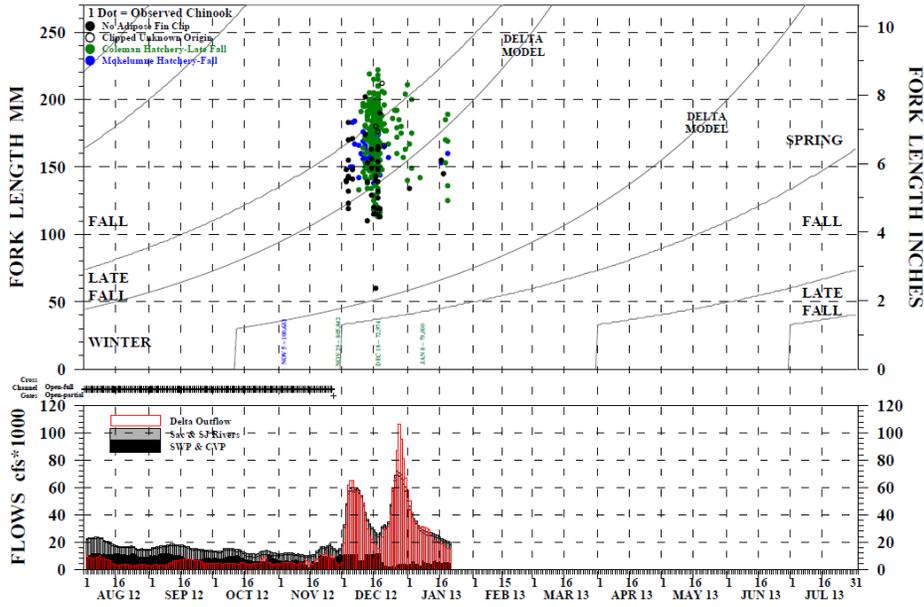
**Steelhead Weekly/Season Salvage and Loss**  
 Combined salvage and loss for both CVP and SWP fish facilities

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild	4	17	↗	37	98
Hatchery	0	0	→	0	0
<b>Total</b>	<b>4</b>	<b>17</b>		<b>37</b>	<b>98</b>

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

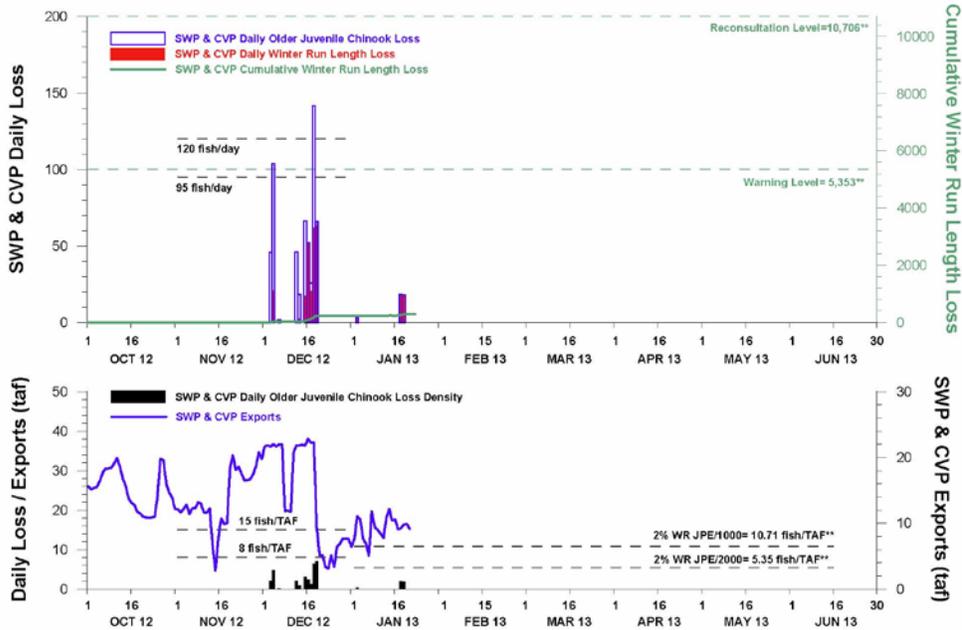
Below are graphs provided by DWR through 1/22/13 for Chinook salmon salvaged at the Delta fish facilities and for older juvenile Chinook salmon and steelhead observed in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: <http://www.water.ca.gov/swp/operationscontrol/calFed/calFedMonitoring.cfm>.

### OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2012 THROUGH 01/21/2013



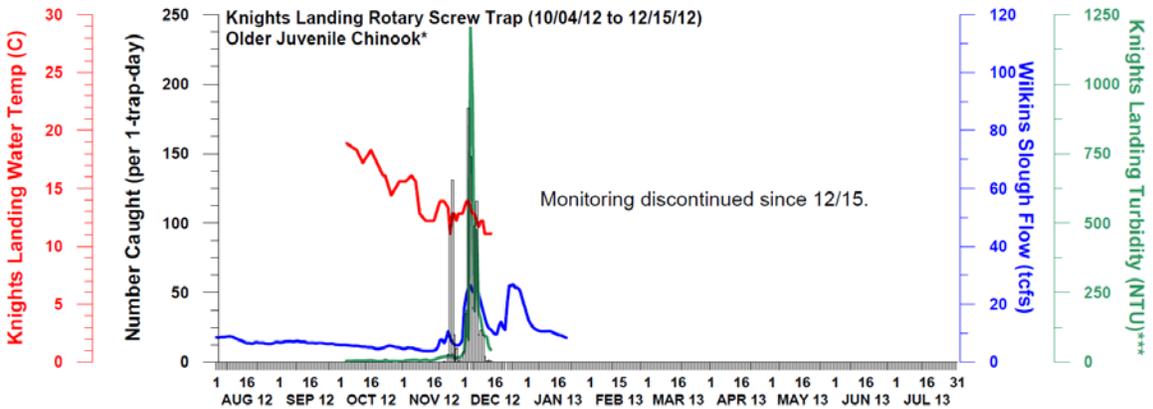
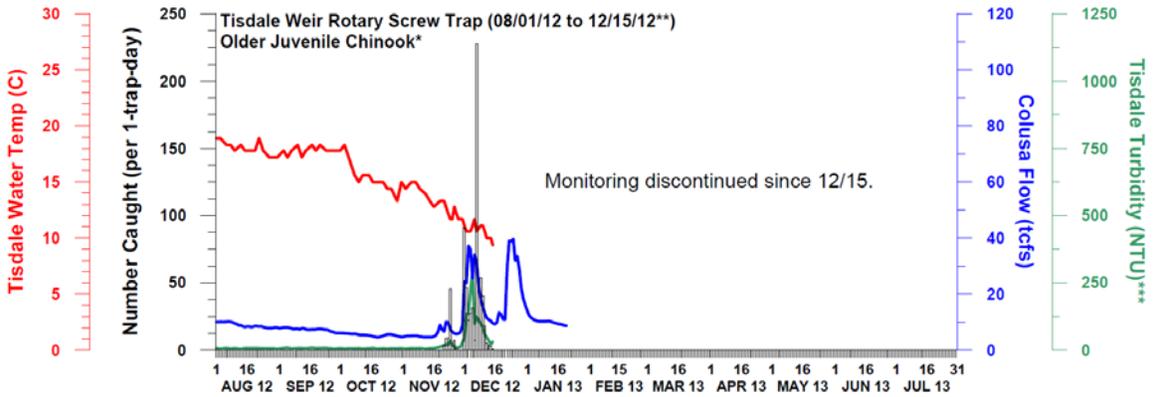
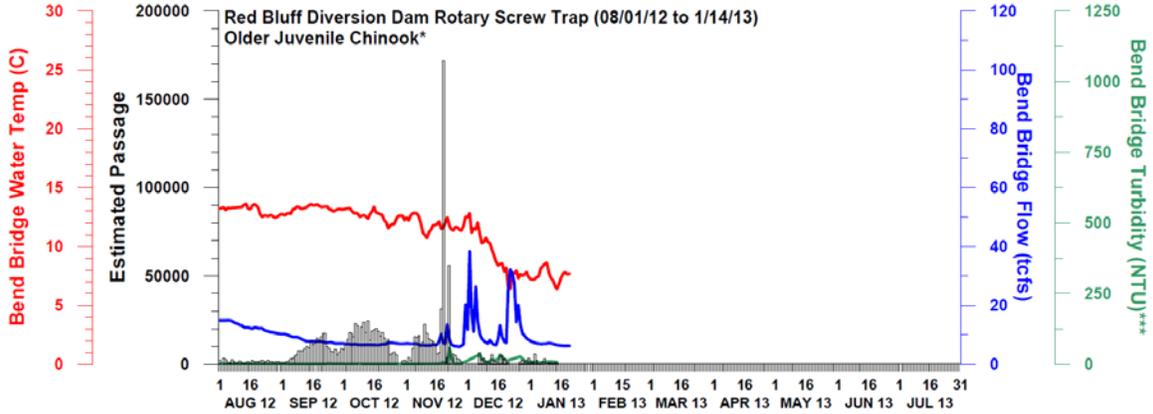
DWR-DES 22 JAN 2013  
 Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.  
 \*Chinook outside of the length-at-date criteria (Delta model) are not reported.

### NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 21 JAN 2013



DWR-DES 22 JAN 2013  
 Preliminary data from DFW; subject to revision.  
 \*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Delta model).  
 \*\*Based on a preliminary JPE and subject to change when JPE is finalized.

## NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 22 JAN 2013

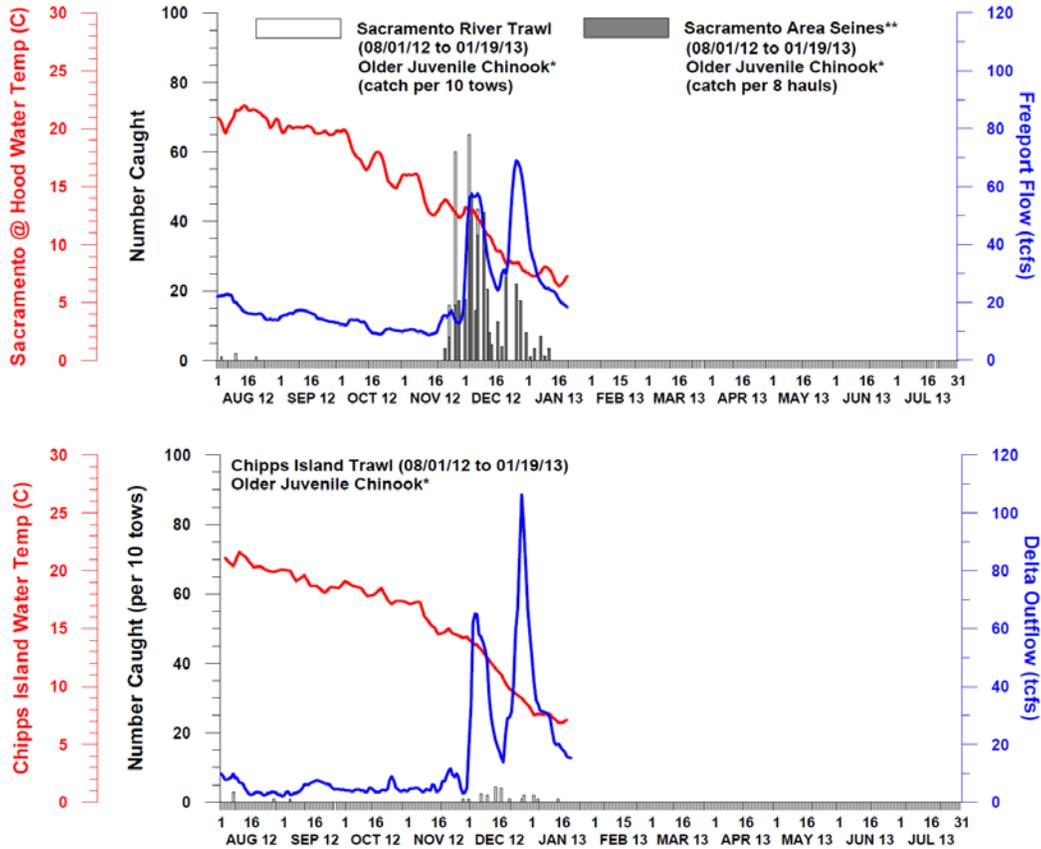
Preliminary data from DFW, FWS, and CDEC; subject to revision.

\*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).

\*\* Tisdale Weir: One older juvenile caught on 9/14 and 43 older juveniles caught on 11/25. However, CPUE was not calculated due to problems with the cone clickers. As a result, data are not presented on the graph.

\*\*\*Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured.

## NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER & CHIPPS ISLAND



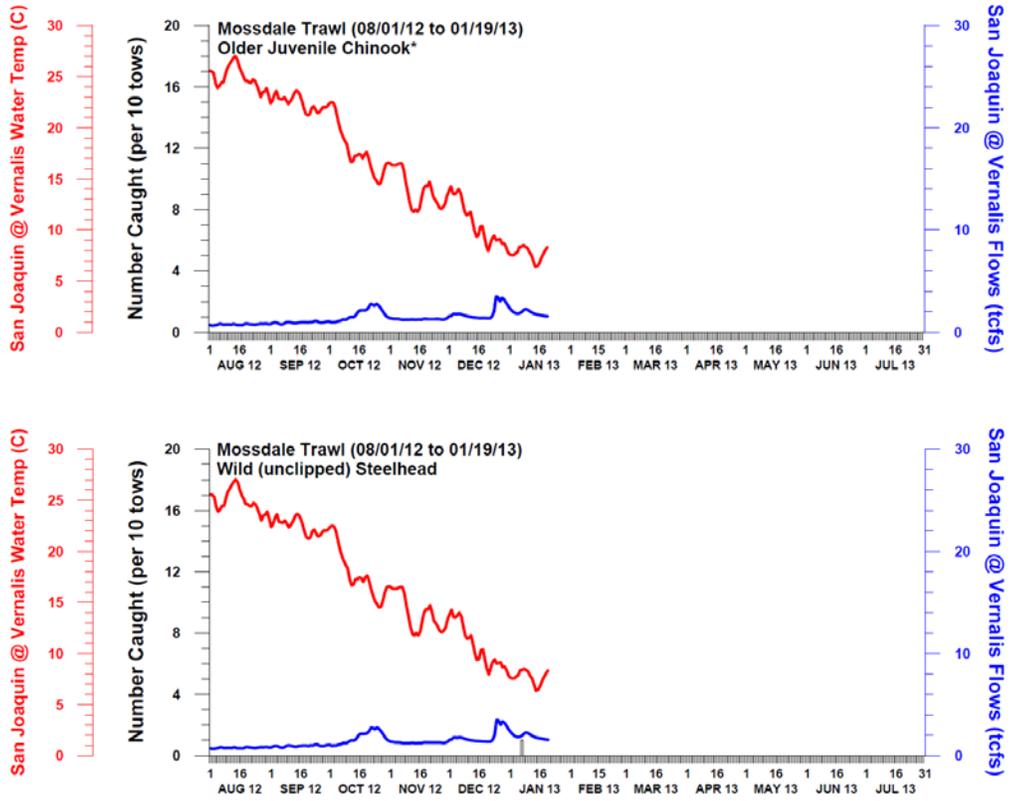
DWR-DES 22 JAN 2013

Preliminary data from FWS and CDEC; subject to revision.

\*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).

\*\*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 OLDER JUVENILE CHINOOK AND STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER



DWR-DES 22 JAN 2013  
 Preliminary data from FWS and CDEC; subject to revision.  
 \*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).

**Coded Wire Tag (CWT) Results:** From 1/14/13 to 1/21/13, hatchery Chinook were salvaged at the SWP (see table below for loss percentages). As indicated on the table, loss percentages for both spring-run surrogate releases are below the 0.5% trigger. All CWTs have been processed through 1/21/13. According to the table, the first fish recovered at the facilities from each of the surrogate releases was approximately 2 weeks after being released.

A winter-run hatchery release is scheduled for 2/7/13 at Caldwell Park on the upper Sacramento River and should comprise approximately 180,000 fish, of which 150 will be tagged with acoustic tags (JSAT). Transceivers are being placed in the Sacramento River to monitor those tags. Oppenheim (NMFS) asked at the winter-run project work team meeting that transceivers be placed in Georgiana Slough so that DOSS can get some idea of when those fish actually turn toward the pumps; however, all transceivers are currently planned for placement in the mainstem Sacramento River.

Oppenheim will check with Jason Hassrick, NMFS Southwest-Fisheries Science Center, on how the fish facilities should handle these tagged fish if they are observed in the salvage. It is up to the study proponents to coordinate with the fish facilities regarding tagged fish collection and release. Jason is interested in wild winter run as well; however, this year, they are tagging only hatchery fish. This is the first of a 3-year study and they hope to be able to tag more fish next year.

**Action item:** Oppenheim will contact Hassrick and put him in contact with appropriate fish facility staff.

HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released <sup>1</sup>	Total Entering Delta	% Loss <sup>2</sup>	First Concern Level	Second Concern Level	Date of First Loss	Date of Last Loss
11/5/2012	F	Mokelumne River Hatchery	Mokelumne River	**	590.68	100,633	n/a	0.587	n/a	n/a	12/5/2012	1/20/2013
11/29/2012	LF	Coleman NFH	Battle Creek	Production	4007.66	805,842	n/a	0.497	n/a	n/a	12/9/2012	1/20/2013
12/18/2012	LF	Coleman NFH	Battle Creek	Spring Surrogate	49.14	72,974	n/a	0.067	0.5%	1.0%	12/31/2012	1/19/2013
1/8/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	18.16	79,000	n/a	0.023	0.5%	1.0%	1/20/2013	1/20/2013

Facility	Unknown CWT Loss <sup>3</sup>	Unread CWT Loss <sup>4</sup>	Unknown Hatchery Loss <sup>5</sup>
SWP	9.03	0.00	73.10
CVP	5.20	0.00	0.00
<b>TOTAL</b>	<b>14.23</b>	<b>0.00</b>	<b>73.10</b>

SWP CWTs read from 10/1/2012 through 1/21/2013.

CVP CWTs read from 10/1/2012 through 1/21/2013.

<sup>1</sup>Number released with the adipose fin clipped and a CWT.

<sup>2</sup>L F & F % Loss = (Confirmed Loss/Number Released)\*100; W % Loss = (Confirmed Loss/Total Entering Delta)\*100

<sup>3</sup>Adipose 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).

<sup>4</sup>Adipose fin clipped Chinook was collected during fish count and has not been processed yet.

<sup>5</sup>CWT has been read, but hatchery release information not yet available.

\*\* Information not yet available.

DWR-DES Revised 1/22/2013

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

## Operations (1/23/13)

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	3,500	Jones Pumping Plant	1,000 (go up to 2,000 at 7:00 a.m. Thursday)
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	1,750	Nimbus	2,250 (will remain at this level through January)

		Sacramento - Keswick	4,500 (will remain at this level through January)
		Stanislaus - Goodwin	275
<b>Reservoir Storage (in TAF, % of capacity)</b>			
San Luis (SWP)	503	San Luis (CVP)	709 (73)
Oroville	1,633	Shasta	3,424
New Melones		Folsom	557
<b>Delta Operations</b>			
DCC	Closed	Sacramento River at Freeport (cfs)	17,410
Outflow Index (cfs)	13,800	San Joaquin River (cfs) at Vernalis	1,510
Total Delta Inflow (cfs)	19,666	OMR (daily) (cfs)	-3,400
Water Temperature (°F)		OMR 5 day (cfs)	-3,588
X2 (km)	73	OMR 14 day (cfs)	-3,197
E/I (%)	18.6 (14-d avg)		

Delta outflow and turbidity are dropping. X2 is west of Chipps Island.

**Weather:** Rain is expected today and through the weekend but all systems are fairly weak; there is not much moisture associated with them. Conditions will be dry after the weekend.

**Smelt Working Group (SWG):** SWG met on Tuesday, 1/22/13. It had previously recommended that OMR be no more negative than -2,500 cfs on a 14-d average; no formal determination was made by FWS last week. The operators continue to target a 14-day average OMR of no more negative than -3,500 cfs. The conditions this week are similar to those of the previous week; concern for delta smelt was high so SWG again recommended that OMR be no more negative than -2,500 cfs. Delta smelt continue to be caught at the SWP, bringing the water year-to-date total to 149, which is close to one-half of the incidental take limit of 305 adults for the year. There is no trigger associated with reaching 50% of the incidental take for the year but it is being tracked; the fraction of the annual take limit observed to date is relatively high compared to historical patterns. Spawning has a lot to do with water temperature; early spawning could begin in 2 weeks. Typically, there will be signs of spawning at the end of February and in early March.

**RPA Action IV.3 Language Clarification:** Last week, Byrne (NMFS) provided DOSS with a version of the suggested revisions to the RPA Action IV.3 language in “Track Changes” format. Comments from DOSS to Byrne are due tomorrow (Thursday) and will be discussed on the 1/29/13 DOSS call. As a reminder, we are clarifying the revisions to the RPA language. Chu (DWR) mentioned that he had not yet had a chance to submit his comments but that he and Byrne discussed them this past week.

**Six-Year Study:** Israel provided an update on the 6-year study for 2013, which is going into its 3<sup>rd</sup> year now. Reclamation will complete the procurement process this month. Israel will be using steelhead at the Mokelumne Fish Hatchery and will do the tagging there. He will do a tag-effects study at the DWR lab at Clifton Court Forebay, holding 30 fish that have been implanted

with dummy tags and monitoring them for 90 days to assess whether any of the surgical methods cause some kind of mortality at a time later than what is observed at the release site. They will perform two battery-life tests as well. Three steelhead releases will be tagged by FWS. The fish will be transported from the Mokelumne River to Durham Ferry (San Joaquin River) and released 24 hours later. The surgeries are scheduled for 3/5–3/7, 4/2–4/4, and 5/7–5/9. Each release will comprise 480 steelhead. Based on previous studies in the south Delta, they need 480 fish to reach a specific level of precision in the survival estimate. Rebecca Buchanan, University of Washington, will pool data from all 480 fish and estimate a group survival rate for each release group. Within the 24-hour release period, two or three batches every 4 hours will be released, which equals about 24–36 fish every 4 hours over a 3-day period. Israel is using 180 kHz Vemco receivers because he can tag steelhead with tags that last 90 days and the Chinook with fairly small tags.

Concurrently, Pat Brandes (FWS) will do a single release of Chinook salmon and is attempting to get additional funding for a second release, but time is running out. Surgeries for the FWS release are being done at the Merced Hatchery and released at Durham Ferry. University of Washington statisticians developed a multi-branching survival model for the south Delta that is fairly unique and Israel will deploy the model in the same way and put receivers in the same locations to get survival through multiple routes in the Delta: Durham Ferry through Old River, to the facilities and also along the San Joaquin from Durham Ferry to Chipps Island. Buchanan is analyzing the 2011 steelhead data; she is finding that compared to tagged Chinook, steelhead are showing higher survival and entering Turner Cut in greater numbers.

Buchanan developed a component survival model so that they can get survival through Turner Cut and to the facilities and are using, in general, the same model in 2013 as was used in 2011 and 2012 as far as receiver locations. The changes discussed are to add receivers around Rough and Ready Island (off the mainstem San Joaquin). The Stockton Deep Water Ship Channel and lower portion of the San Joaquin in Stockton have some of the highest mortality rates within the Delta. It would be good to get more information about steelhead entering that area and also use that information for predator filters. Everything else is much the same. The technology being used at the fish facilities works on a different kind of Vemco coding scheme. There have been problems with detecting tags at the fish facilities because of tag collisions with the 69-kHz frequency; the new technology provides for a shorter tag-code identification period to increase the potential for collecting information off the tags going by. If there are 25 tags defecated by predators at the location and one tag that goes by in 45 seconds, there are only 45 seconds to get all the information. 2011 data are being analyzed; 2012 data are processed and should be available once the 2011 results are complete.

Israel can send more information to anyone who wants it. The data set from 2012 has been used by other studies so data has been provided from some of the receivers for Head of Old River and the stipulation study teams. He is happy to share the data but requests a study plan that includes objectives and narrative of the intended analysis. He has received a request from DFW for the data because they caught some of the tagged steelhead at Mossdale.

There was a question about the expected size of the steelhead and whether there were different sizes within and among the three separate releases and any problems with striped bass or other predators at the release site.

The fish in the three releases are not appreciably larger from each other; they are generally from 220 to 275 mm and Israel is not preferentially selecting larger fish, which ensures a broad distribution in each released group. In VAMP studies, there was not a lot of mortality within the reach associated with the release site, which could suggest tagger effects. The release site is not in the survival model (i.e., the model begins at Mossdale) because the study team wants to ensure that fish can acclimate. By the time fish get to Mossdale, there are 480 minus some fish that were lost. In tidal channels, there are some major predator issues. The review panel discussed tidal dynamics influencing predator/prey interactions, which is good because it develops some ideas about what we're observing. Israel focused on the larger landscape survival from Mossdale to Chipps Island and Mossdale through the fish facilities to Chipps Island.

There was a question about what would be anticipated for flows and export operations and whether it was a concern in the steelhead monitoring study. Operations during spring are subject to both the NMFS BiOp RPA (particularly the OMR action and E/I action) and the FWS BiOp RPA. It is not as with the VAMP study during which mainstem flows and exports were established to provide for experimental conditions. In 2013, there will be periods when facilities might be not working to perform maintenance.

What are projections of flow at Vernalis during April and May? The base flow at Vernalis is 2,280 cfs and Reclamation is attempting to maintain that level. It is assumed that exports will be low in April and May.

Israel mentioned that the RPA is not active in setting exports and river flows to test the influence of these factors in an adaptive management framework, and is not certain what group would set up the approach to actively decide on exports, although even when setting it up, the flows do not always cooperate. Maybe it is DOSS? Maybe it is WOMT? The critical part is attempting to get stable periods of operation and inflow to allow fish to behave through the study area under "static" operations conditions.

When the E/I ratio is in place, exports will be some ratio of Vernalis flow. It should be more predictable at that point. If the E/I ratio is controlling, the maximum export is 100% of the flow at Vernalis. We would not expect OMR to be controlling some percentage of Vernalis flow.

Israel stated that there is a study team that includes those with whom Reclamation has contracts to do the work. There are no DOSS subgroups to figure out whether there are more important questions. NMFS has several study teams working in the south Delta, although the study is discussed within these groups, collaboration with the 6-year study is unclear. This comes up with the south-Delta collaborative salmon research group, predator studies, etc.; there is interest but not through DOSS specifically.

The 6-year study plan has not changed since it underwent a review by Delta Science Program (DSP) independent science advisors in winter 2011. The plan will be shared with DOSS with the kmz file of receiver deployments. Oppenheim asked Israel to email questions to him after the call. He also wanted Jeff Stuart (NMFS) to review the plan and provide feedback. It is an important part of our RPA, so we need to have both NMFS and DOSS more involved.

Israel mentioned that if DOSS wants to make significant changes, the study team would take it back to the Implementation Management Team. The DSP had an independent review of the

study plan and Reclamation changed it based on input of the independent science advisors. The first year was modeled on VAMP and the temporary barriers study team collaboration. If DOSS wants to change the scale that we're studying and physical processes we're studying, Israel suggested that we get an independent review by some experts and make sure that the more than \$1 million Reclamation is spending is being spent most effectively. The DSP suggested having a side-by-side comparison of acoustic and CWT studies. Study team members are trying to coordinate a CWT release in the south Delta but it's not clear whether this is part of the Merced Hatchery release strategy. The 6-year study uses steelhead and there's no hatchery steelhead in the San Joaquin. We don't know what kind of releases of steelhead we would need to compare with the CWT fish, but we don't have a stock we can use.

Please send any questions to Israel.

**DWR Graphs:** DOSS was queried about whether to continue to include the DWR graphs in the notes. DOSS decided to continue this practice because the DWR website is not archived and graphs are replaced each week.

**DOSS advice to WOMT and NMFS:** None.

**Next Meeting:** The next DOSS meeting will be Tuesday, 1/29/13, at 9:00 a.m.