

Delta Operations for Salmonids and Sturgeon (DOSS) Group

Conference call: 3/19/13 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: Kevin Reece, Andy Chu, Edmund Yu, Mike Ford

FWS: Roger Guinee, Craig Anderson

NMFS: Barbara Rocco, Jeff Stuart, Bruce Oppenheim, Garwin Yip

Reclamation: Russ Yaworsky, Josh Israel

DFW: Bob Fujimura, Joe Johnson, Robert Vincik, Krystal Acierto

SWRCB: Christine Rico

EPA, USGS: not present

Agenda

1. Fish monitoring
2. Current operations
3. Action IV.3 language clarification

Action: DOSS will wait until the Tisdale report comes out to make a decision on whether to continue to use Tisdale as a monitoring site. **Pending.**

Action: NMFS will provide the RPA Action IV.3 clarifications to DOSS. **Done.**

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	Tisdale RST	Beach Seines
Sample Date	3/11, 12, 15	3/11, 13, 15	3/11, 13, 15	3/13, 14, 18	3/11–1/14
Total Catch	33	1	2	2	85
FR		1	2 (51 & 52 mm on 3/11)	2	78
WR	4				
SR					4
LFR					
Ad-Clipped Chinook	1				1
DS	4 (no expression)				
Splittail	1				
Longfin	23 (6 w/eggs; 23 with no expression)				

SH (ad-clip)					1
SH (wild)					1
W. Temp. (avg. °F)	56.1	55.9	60.6		58.3
Flows (avg. cfs)					
Turbidity (avg. NTU)	39.7	8.6	13.6		14.9
WR/LFR Avg. CPUE					
FR/SR Avg. CPUE					

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; ACT = acoustic tag; N/A = not available

Tisdale (Johnson [DFW]): Traps were fished last Wednesday, Thursday, and yesterday (Monday). Two fall-run Chinook were caught last night but more complete information from that catch will be available later today. One non-ad-clipped winter run was caught on Wednesday. The trap is now being fished at night for at least 8 hours until midnight; therefore, the data analysis is not completed and provided until the following afternoon.

Mossdale: Fry-sized juvenile fall-run Chinook are beginning to show up in the trawl (see DWR graph: “Number of Fry/Smolt in the San Joaquin River at Mossdale).

Fish Salvage: Geir Aasen (DFW) provided the fish salvage report covering 3/11–3/17/13 and emailed it 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 Fujimura (DFW) for March 11–17, 2013

The weekly total of non-ad-clipped older juvenile Chinook salvaged decreased compared to that of the previous week. Twenty non-ad-clipped juvenile Chinook salmon were salvaged during the reporting period. Fourteen were in the winter-run size range and 2 were in the fall-run size range. Four non-ad-clipped spring-run-sized Chinook were also salvaged, the first of this run this season. Daily loss densities of older juvenile salmon ranged from 0.55 to 2.78 fish/TAF from 3/12 through 3/15.

Conversely, the number of ad-clipped Chinook increased last week. Eight ad-clipped juvenile Chinook in the winter-run size range were salvaged. One ad-clipped Chinook, which accounted for 4 salvaged, was released because it had suture marks. The numbers of salvaged steelhead also decreased. Eight non-ad-clipped steelhead were salvaged during the reporting period. The estimated daily loss densities were 1.69 and 0.27 fish/TAF for 3/11 and 3/12, respectively. Sixteen ad-clipped steelhead were also salvaged during the reporting period.

No green or white sturgeon were seen at either facility.

Preliminary data for March 18, 2013

Both ad-clipped and non-ad-clipped steelhead were observed at the SWP and CVP. The CVP results from yesterday are still unclear; no data sheets received. Approximately 12 ad-clipped and 4–8 non-ad-clipped steelhead were salvaged; 4 non-ad-clipped fall-run Chinook were also salvaged. Steelhead with suture marks (indicating acoustic tags) were released. The cumulative

year-to-date combined loss of non-ad-clipped steelhead is 118 since October 1, 2012. The incidental take limit for non-ad-clipped steelhead is 3,000.

Stanislaus River (Stuart, NMFS): Two *O. mykiss* passed upstream of the weir since 3/11/13; 10 since 3/1/13. Since 2/1/13, 22 non-ad-clipped *O. mykiss* have passed upstream of the weir. The last ad-clipped fish was on 1/3/13. Of those moving upstream, only 1 steelhead was >16 inches; no sizes were provided for the adult Chinook that have passed upstream since 3/1/13.

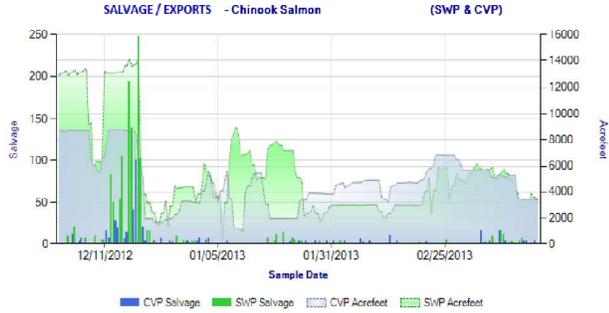


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during December 1, 2012 through March 17, 2013. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

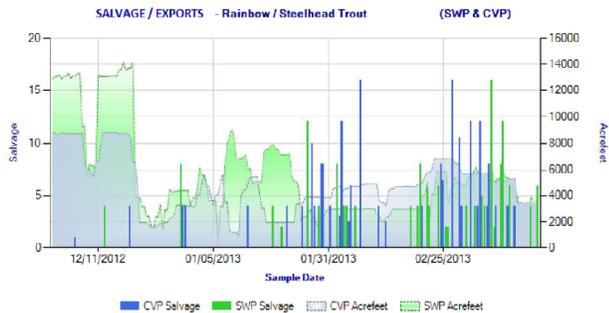


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during December 1, 2012 through March 17, 2013. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

DOSS Weekly Salvage Update
 Reporting Period: March 11-17, 2013
 Prepared by Bob Fujimura on March 18, 2013
 Preliminary Results - Subject to Revision

Criteria	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	Trend	
Loss Densities									
Wild older juvenile CS	0	0.69	2.78	0.56	0.55	0	0	↘	0.7
Wild steelhead	1.69	0.27	0	0	0	0	0	↘	0.3
Exports									
SWP daily export	4,975	4,502	2,968	2,877	2,968	3,877	3,338	↘	3,701
CVP daily export	5,252	5,278	3,495	3,377	3,427	3,409	3,376	↘	

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipse 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 = adipse fin missing;

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild					
Winter Run	14	35	↘	167	538
Spring Run	4	3	↘	4	3
Late Fall Run	0	0	↘	85	278
Fall Run	2	9	↘	41	108
Unclassified	0	0	↘	8	5
Total	20	47		325	932
Hatchery					
Winter Run	8	36	↘	157	504
Spring Run	0	0	↘	0	0
Late Fall Run	0	0	↘	761	2,898
Fall Run	0	0	↘	415	1,522
Unclassified	0	0	↘	0	0
Total	8	36		1,353	4,924

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	8	20	↘	118	314
Hatchery	16	55	↘	253	541
Total	24	75		371	855

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

Hatchery CWT Results (see table below): One ad-clipped Chinook was accidentally released (249 mm) and a second was released because of presence of sutures (207 mm); there is currently no new CWT information. No ad-clipped winter run have been caught.

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 ¹	Total Entering Delta	% Loss ²	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
11/7/2012	LF	Coleman NFH	Battle Creek	Production	4080.76	805,847	n/a	0.506	n/a	n/a	12/6/2012	1/20/2013
12/18/2012	LF	Coleman NFH	Battle Creek	Spring Surrogate	53.20	72,974	n/a	0.080	0.5%	1.0%	12/31/2012	1/23/2013
1/6/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	132.91	79,000	n/a	0.168	0.5%	1.0%	1/20/2013	3/5/2013
1/25/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	12.14	85,600	n/a	0.014	0.5%	1.0%	2/3/2013	2/14/2013
2/7/2013	W	Livingston Stone NFH	Caldwell Park	Production	0.00	182,662	96,525	0.000	0.5%	1.0%	-	-

Facility	Unknown CWT Loss ³	Unread CWT Loss ⁴	Unknown Hatchery Loss ⁵	Acoustic Tag Loss ⁶
SWP	26.96	0.00	0.00	17.93
CVP	5.20	0.00	0.00	0.00
TOTAL	32.16	0.00	0.00	17.93

SWP and CVP adipose fin clipped Chinook lost from 10/1/2012 through 3/17/2013.

¹Number released with the adipose fin clipped and a CWT.

²LF & F % Loss = (Confirmed Loss/Number Released)*100; W % Loss = (Confirmed Loss/Total Entering Delta)*100.

³Adipose 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 accidentally released).

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

⁵CWT has been read, but hatchery release information not yet available.

⁶Adipose fin clipped Chinook released due to presence of sutures.

** Information not yet available.

DWR-DES Revised 3/18/2013

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

Operations (3/19/13)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	3,000 (will maintain at approx. 2,500 on Thurs. and Fri.)	Jones Pumping Plant	1,700 (up on Thurs. to 4,200 for 24 hr, down on Fri. to 2,900 for 24 h, and down again on Sat. to 1,000. Will know after Sat. what the pumping level will be for Sun.)
Reservoir Releases (cfs)			
Feather - Oroville	3,500 (down to 2,500 by end of today; will hold at 2,500)	American - Nimbus	1,500 (down to 1,250 on Wed.)
		Sacramento - Keswick	4,600 (reduce by 200/day to 4,000 by Fri.)
		Stanislaus - Goodwin	300
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	502 (<50)	San Luis (CVP)	772 (80)
Oroville	2,880	Shasta	3,694
New Melones		Folsom	559
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	15,800

Outflow Index (cfs)	12,000	San Joaquin River (cfs) at Vernalis	1,540
Total Delta Inflow (cfs)		OMR (daily) (cfs)	-3,300
Water Temperature (°F)		OMR 5-day avg (cfs)	-2,978
X2 (km)	73 (west of Chipps)	OMR 14-day avg (cfs)	-3,666
E/I (%)	27.5 (14-d avg.)		

Water Quality: Balanced conditions were declared on 3/13/13. DWR is meeting both the daily salinity and 3-day outflow requirement. The projects need to meet 18 days of X2 compliance (per D-1641) at Chipps Island for March; they have met 16 days so far. QWEST is near -300 or -400 cfs as of yesterday; probably -700 cfs today, but not confirmed.

Weather: Forecast is dry after tonight’s system (showers) passes through.

Action IV.3 Clarification of Language: Byrne (NMFS) sent the latest version of revisions from the DOSS subgroup to DOSS yesterday evening and Yip (NMFS) reviewed and provided additional revisions to Byrne. That version will be sent to DOSS after today’s call and should be used as the “semi-final” for review. DOSS will review today and send comments or acceptance to Oppenheim (NMFS) and Rocco (NMFS) by COB today. If there are substantial comments (*i.e.*, those that would change the “meaning” of the text), DOSS will revisit them on next week’s call. If not, the final language will be attached to this week’s notes.

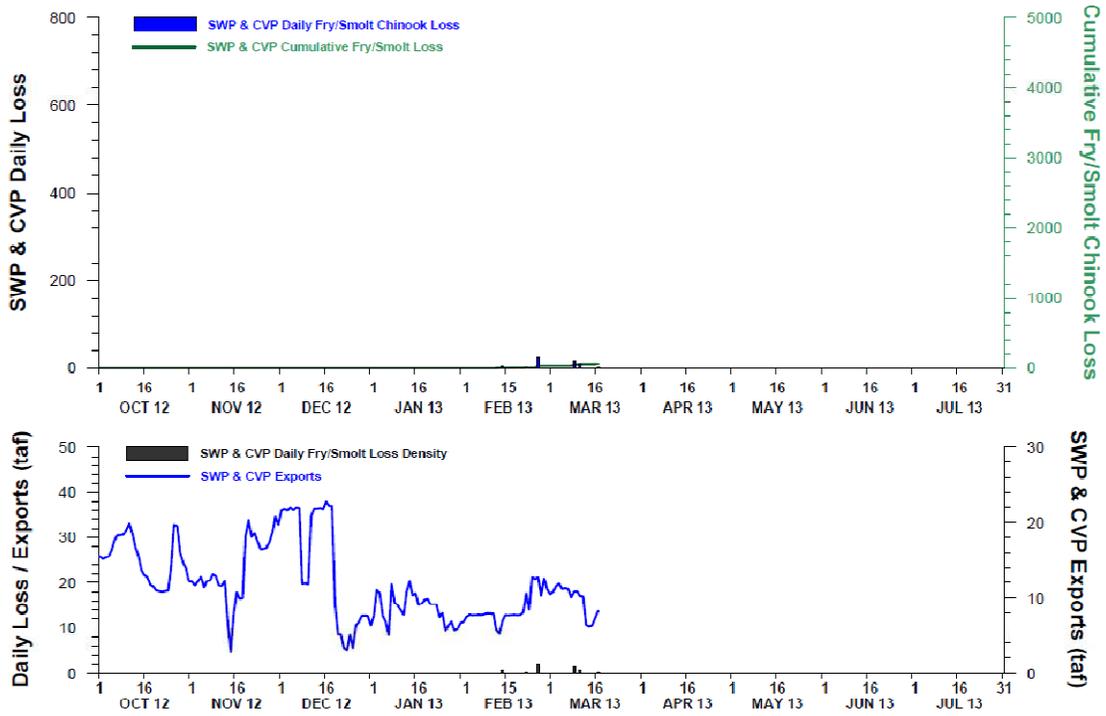
Smelt Working Group (SWG): Fujimura reported that the recent field surveys on smelt larvae revealed nothing unusual. There has been no increase in longfin smelt in the south and central Delta; numbers seem to be declining. Weekly salvage for adult delta smelt is also declining. There was no indication of young-of-year delta smelt in any surveys at that time. SWG is comfortable with maintaining the recommendation of no more negative than -5,000 cfs OMR, but will continue to closely monitor salvage numbers.

DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next DOSS meeting will be Tuesday, 3/26/13, at 9:00 a.m.

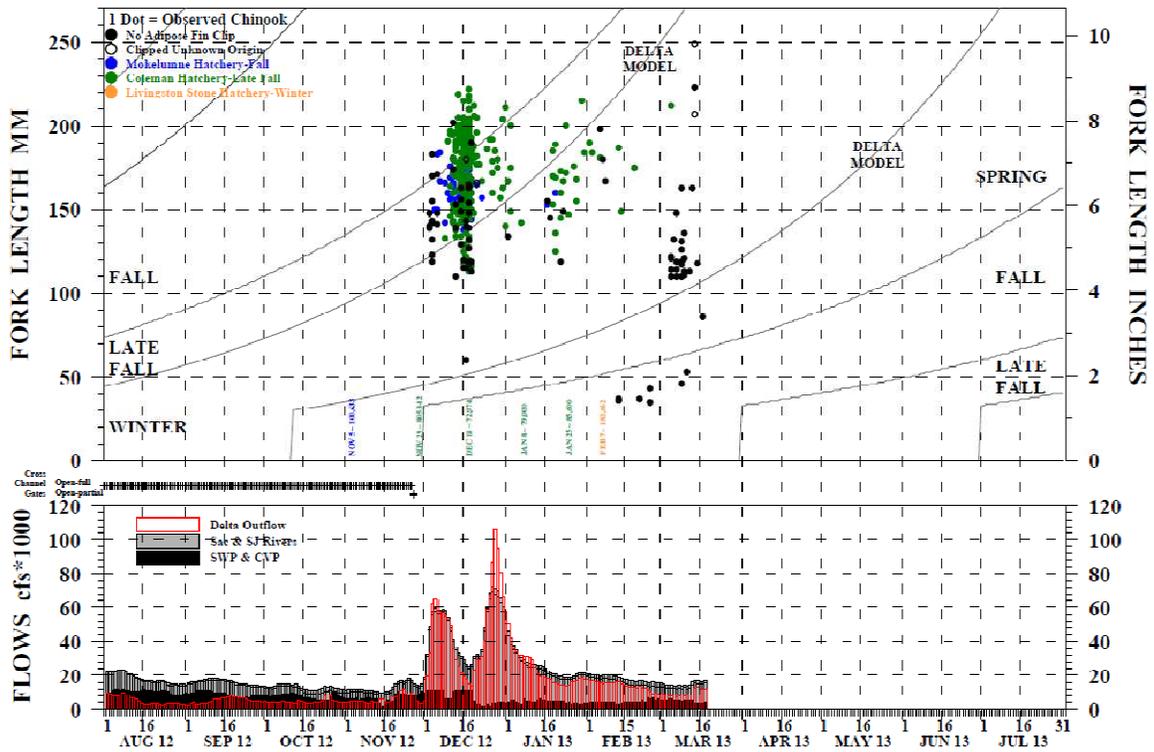
Below are graphs provided by DWR for Chinook salmon salvaged at the Delta fish facilities and for older juvenile Chinook salmon and steelhead observed in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: <http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm>.

NON-CLIPPED FRY/SMOLT CHINOOK AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 17 MAR 2013



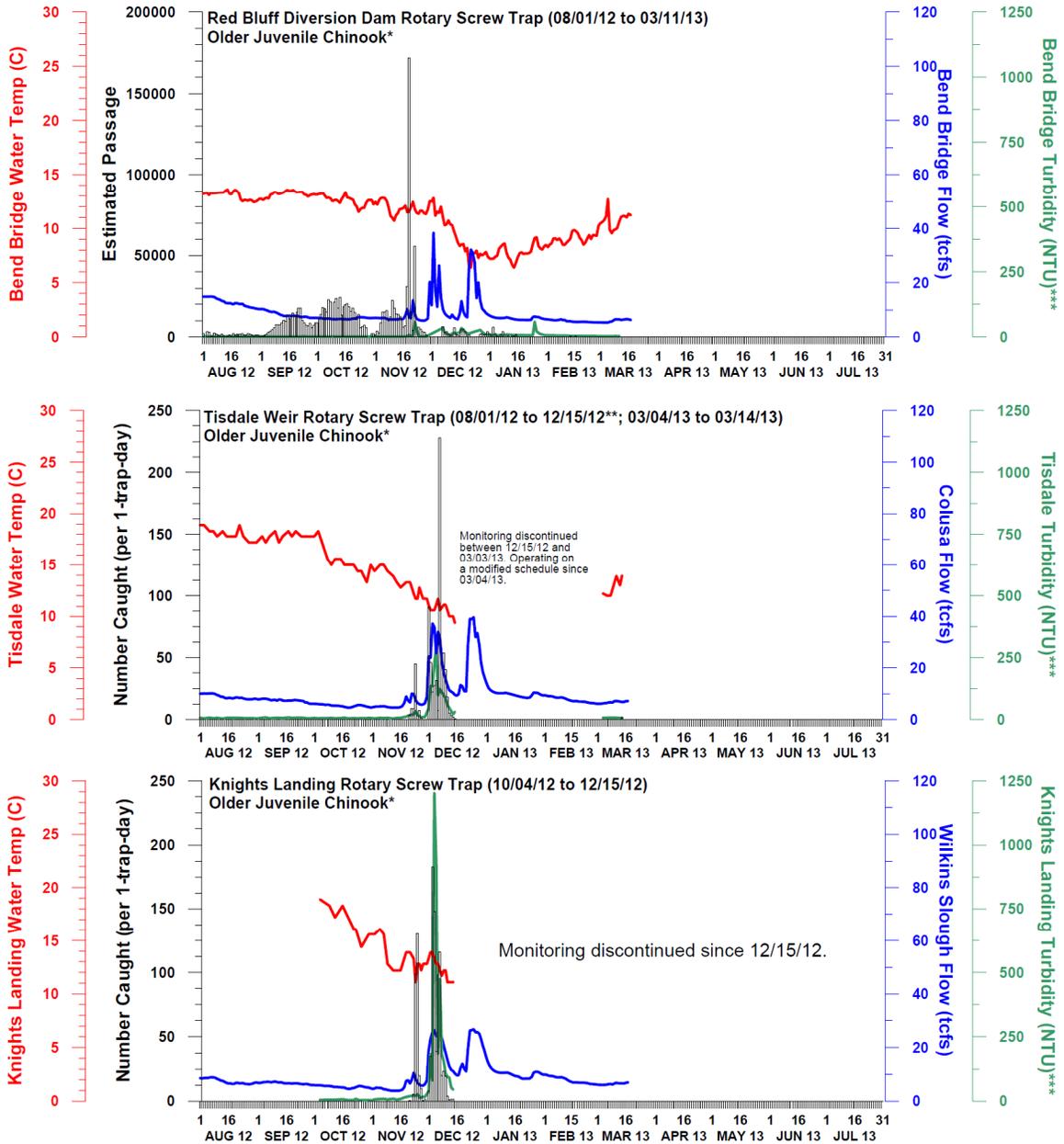
DWK-UES 18 MAR 2013
 Preliminary data from DFW; subject to revision.
 * Fry/smolt Chinook defined as all Chinook below the minimum winter run length-at-date criteria (Delta model).

OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2012 THROUGH 03/17/2013



DWR-DES 18 MAR 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.

NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 18 MAR 2013

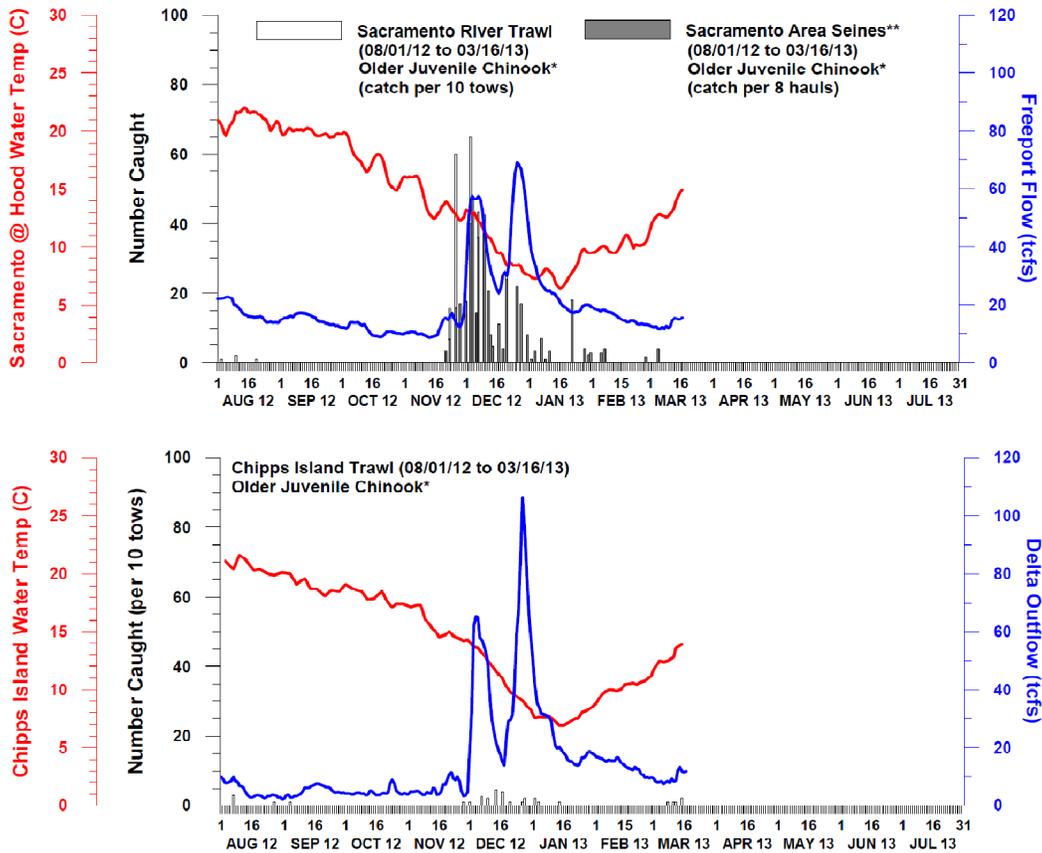
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*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



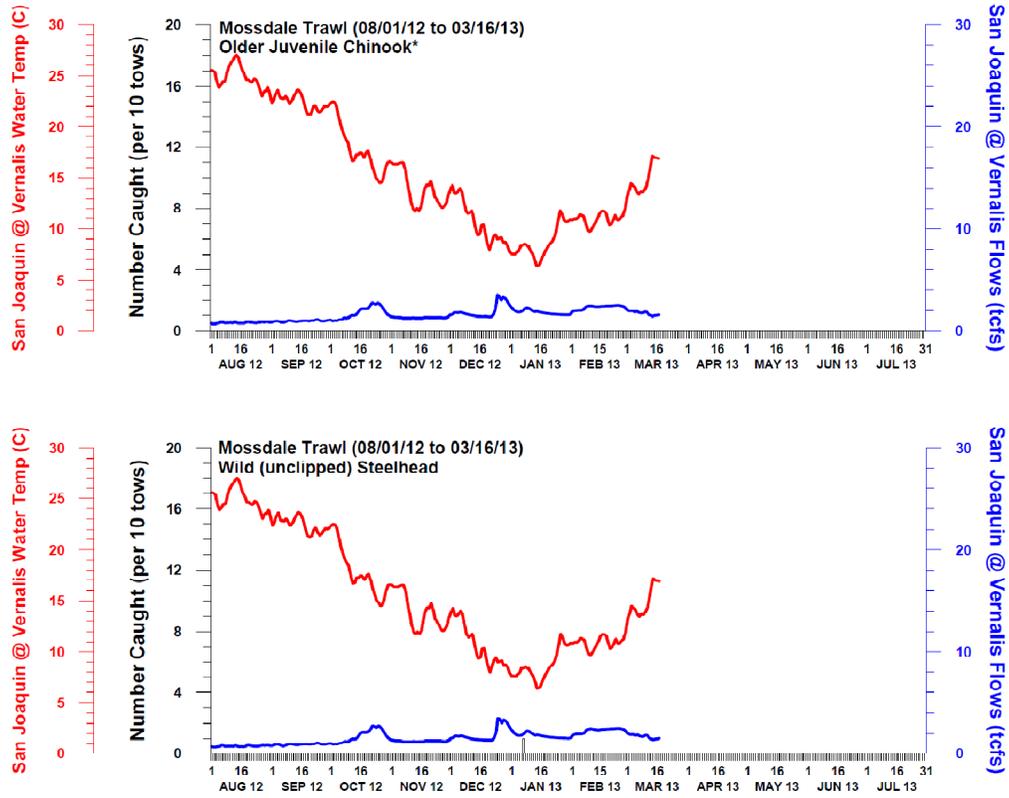
DWR-DES 18 MAR 2013

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 18 MAR 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).

Attachment 1

Clean Version of the Action IV.3 Text from the 2011 Amendments to the Reasonable and Prudent Alternative Revised to Include Clarifications.

Action IV.3 Reduce Likelihood of Entrainment or Salvage at the Export Facilities

Objective: Reduce losses of winter-run, spring-run, CV steelhead, and Southern DPS of green sturgeon by reducing exports when large numbers of juvenile Chinook salmon are migrating into the upper Delta region, at risk of entrainment into the central and south Delta and then to the export pumps in the following weeks.

Action: From November 1 through April 30, operations of the Tracy and Skinner Fish Collection Facilities shall be modified according to monitoring data from upstream of the Delta. In conjunction with the two alerts for closure of the DCC (Action IV.1.1), the Third Alert shall be used to signal that export operations may need to be altered in the near future because of large numbers of juvenile Chinook salmon migrating into the upper Delta region, increasing their risk of entrainment into the central and south Delta and then to the export pumps.

Third Alert: Either the Knights Landing Catch Index¹ or Sacramento Catch Index², based on catch of older juvenile Chinook³, is greater than 10 fish per day from November 1 to February 28, or greater than 15 fish per day from March 1 to April 30.

Response: From November 1 through December 31, when loss numbers reach the action triggers, exports shall be reduced as follows:

¹The Knights Landing Catch Index is based on reported catch of older juveniles at the Knights Landing rotary screw trapping location and is calculated as the total catch of older juveniles divided by the number of “trap days” (adjusted, as necessary, for downtime resulting from, for example, debris removal) since the last sampling event.

²Both the Sacramento trawl and Sacramento seine data are used to generate a Sacramento Catch Index (one for the seine data; one for the trawl data). The seine version of the catch index is standardized to eight hauls; therefore, the index is calculated as: (total number of older juveniles captured/# hauls)*8. The trawl version of the catch index is standardized to 10 tows; therefore, the index is calculated as: (total number of older juveniles captured/# tows)*10.

³Juvenile Chinook salmon at or above the minimum winter-run size based on the length-at-date model used at a particular sampling location, and below the maximum size considered by the length-at-date model, on a given sampling date, are considered “older juveniles”.

Date	Action Triggers	Action Responses ⁴
November 1 – December 31 First-Stage Trigger	(1) Daily SWP/CVP older juvenile Chinook salmon loss density is greater than 8 fish/thousand acre feet (TAF), or (2) daily losses of older juvenile Chinook salmon are greater than 95 fish per day, or (3) cumulative loss of Coleman National Fish Hatchery coded wire tagged late fall-run Chinook salmon (CNFH CWT LFR) spring-run Chinook salmon surrogates is greater than 0.5% for each individual release group ⁵ , or (4) cumulative loss of Livingston Stone National Fish Hatchery CWT'd winter-run (LSNFH CWT WNT) is greater than 0.5% for the release group ⁵ .	Reduce combined exports to no more than 6,000 cfs for 3 consecutive days. Export reductions are required when any one of the four criteria is met.
November 1 – December 31 Second-Stage Trigger (increasing level of concern)	(1) Daily SWP/CVP older juvenile Chinook salmon loss density is greater than 15 fish/TAF, or (2) daily loss is greater than 120 fish per day.	Reduce combined exports to no more than 4,000 cfs for 3 consecutive days. Export reductions are required when either of the two criteria is met.

Implementation procedures: A new action response is not required if the same or a less-restrictive trigger is exceeded on the first or second day of an action response, or during the allowed period between the trigger exceedance and the initiation of the action response. A new action response is required if a more-restrictive trigger is exceeded on the first or second day of an action response, or during the allowed period between the trigger exceedance and the initiation of the action response. If the daily SWP/CVP older juvenile loss density or daily loss exceeds any of the action triggers on the third day of an action response, a new action is triggered, and a new 3-day action response is required.

⁴The Projects may continue to operate to the old limit for a maximum of 2 additional days upon data verification from CDFW and a concurrence notification from NMFS to allow for power scheduling changes.

⁵ The cumulative loss for each CNFH CWT LFR spring-run Chinook salmon surrogate or LSNFH CWT WNT release group can trigger an action only once (*i.e.* there is only one action response per release group exceedance).

From November 1 through December 31, these actions will be taken in coordination with the USFWS RPA for delta smelt and state-listed longfin smelt 2081 incidental take permit, and the most conservative operation for the protection of listed fish species shall be implemented.

From January 1 through April 30, implement Action IV.2.3, which includes restrictions on OMR flows rather than sets levels of combined export pumping. Alert triggers will remain in effect to notify operators of the CVP and SWP that large numbers of juvenile Chinook salmon are entering the Delta system.

Rationale: As explained previously, juvenile salmonids and green sturgeon have a lower chance of survival to the ocean if they are diverted from their migratory routes on the main Sacramento and San Joaquin rivers into the central and south Delta. Export pumping changes flow patterns and increases residence time of these diverted fish in the central Delta, which increases the risk of mortality from predation, water diversions, poor water quality, and contaminant exposure, as well as the likelihood of entrainment at the pumps. When more fish are present, more fish are at risk of diversion and losses will be higher. The Third Alert is important for the real-time operation of the export facilities because the collection and dissemination of field data to the resource agencies and coordination of response actions might take several days. This action is designed to work in concert with the OMR action in IV.2.3.

Attachment 2

Track Changes Version of the Action IV.3 Text from the 2011 Amendments to the Reasonable and Prudent Alternative Revised to Include Clarifications.

Action IV.3 Reduce Likelihood of Entrainment or Salvage at the Export Facilities

Objective: Reduce losses of winter-run, spring-run, CV steelhead, and Southern DPS of green sturgeon by reducing exports when large numbers of juvenile Chinook salmon are migrating into the upper Delta region, at risk of entrainment into the central and south Delta and then to the export pumps in the following weeks.

Action: From November 1 through April 30, operations of the Tracy and Skinner Fish Collection Facilities shall be modified according to monitoring data from upstream of the Delta. In conjunction with the two alerts for closure of the DCC (Action IV.1.1), the Third Alert shall be used to signal that export operations may need to be altered in the near future ~~due to~~because of large numbers of juvenile Chinook salmon migrating into the upper Delta region, increasing their risk of entrainment into the central and south Delta and then to the export pumps.

Third Alert: ~~Either the~~ Knights Landing eCatch Index¹ or Sacramento Catch Index², based on catch of older juvenile Chinook³, is greater than 10 fish ~~captured~~ per day from November 1 to February 28, or greater than 15 fish ~~captured~~ per day from March 1 to April 30, ~~from either the Knights Landing catch index or the Sacramento catch index.~~

Response: From November 1 through December 31, when ~~salvage-loss~~ numbers reach the action triggers, exports shall be reduced as follows:

¹The Knights Landing Catch Index is based on reported catch of older juveniles at the Knights Landing rotary screw trapping location and is calculated as the total catch of older juveniles divided by the number of “trap days” (adjusted, as necessary, for downtime resulting from, for example, debris removal) since the last sampling event.

²Both the Sacramento trawl and Sacramento seine data are used to generate a Sacramento Catch Index (one for the seine data; one for the trawl data). The seine version of the catch index is standardized to eight hauls; therefore, the index is calculated as: (total number of older juveniles captured/# hauls)*8. The trawl version of the catch index is standardized to 10 tows; therefore, the index is calculated as: (total number of older juveniles captured/# tows)*10.

³Juvenile Chinook salmon at or above the minimum winter-run size based on the length-at-date model used at a particular sampling location, and below the maximum size considered by the length-at-date model, on a given sampling date, are considered “older juveniles”.

Date	Action Triggers	Action Responses ⁴
<p>November 1 – December 31 <u>First-Stage Trigger</u></p>	<p>(1) Daily SWP/CVP older juvenile <u>Chinook salmon</u> loss density <u>is</u> greater than 8 fish/thousand acre feet (TAFtaf), or (2) daily losses of older juvenile Chinook salmon <u>are is</u> greater than 95 fish per day, or (3) <u>cumulative loss of</u> Coleman National Fish Hatchery coded wire tagged late fall-run Chinook salmon (CNFH CWT LFR) <u>spring-run Chinook salmon surrogates is greater than 0.5% for each individual release group⁵</u>, or (4) <u>cumulative loss of</u> Livingston Stone National Fish Hatchery eoded-wire taggeCWT'd winter-run (LSNFH CWT WNT) cumulative loss is greater than 0.5% <u>for the release group⁵</u>.</p>	<p>Reduce <u>combined</u> exports to <u>no more than a combined</u> 6,000 cfs for 3 <u>consecutive</u> days, or until <u>CVP/SWP daily density is less than 8 fish/taf</u>. Export reductions are required when any one of the four criteria is met.</p>
<p>November 1 – December 31 <u>Second-Stage Trigger (increasing level of concern)</u></p>	<p>(1) Daily SWP/CVP older juvenile <u>Chinook salmon</u> loss density <u>is</u> greater than 15 fish/tafTAF, or (2) daily loss is greater <u>than</u> 120 fish per day, or <u>CNFH CWT LFR or LSNFH CWT WNT cumulative loss greater than 0.5%</u>.</p>	<p>Reduce <u>combined</u> exports to a combined<u>no more than</u> 4,000 cfs for 3 <u>consecutive</u> days, or until <u>CVP/SWP daily density is less than 8 fish/taf</u>. Export reductions are required when <u>any one</u>either of the two<u>four</u> criteria is met.</p>

Implementation procedures: A new action response is not required if the same or a less-restrictive trigger is exceeded on the first or second day of an action response, or during the allowed period between the trigger exceedance and the initiation of the action response. A new action response is required if a more-restrictive trigger is exceeded on the first or second day of an action response, or during the allowed period between the trigger exceedance and the initiation of the action response. If the daily SWP/CVP older juvenile loss density or daily loss exceeds any of the action triggers on the third day of an action response, a new action is triggered, and a new 3-day action response is required.

⁴The Projects may continue to operate to the old limit for a maximum of 2 additional days upon data verification from CDFW and a concurrence notification from NMFS to allow for power scheduling changes.

⁵ The cumulative loss for each CNFH CWT LFR spring-run Chinook salmon surrogate or LSNFH CWT WNT release group can trigger an action only once (*i.e.* there is only one action response per release group exceedance).

From November 1 through December 31, these actions will be taken in coordination with the USFWS RPA for delta smelt and state-listed longfin smelt 2081 incidental take permit, and the most conservative operation for the protection of listed fish species shall be implemented.

From January 1 through April 30, implement Action IV.2.3, which includes restrictions on OMR flows rather than sets levels of combined export pumping. Alert triggers will remain in effect to notify ~~the~~ operators of the CVP and SWP that large numbers of juvenile Chinook salmon are entering the Delta system.

Rationale: As explained previously, juvenile salmonids and green sturgeon have a lower chance of survival to the ocean if they are diverted from their migratory routes on the main Sacramento and San Joaquin ~~r~~Rivers into the central and south Delta. Export pumping changes flow patterns and increases residence time of these diverted fish in the central Delta, which increases the risk of mortality from predation, water diversions, poor water quality, and contaminant exposure, as well as the likelihood of entrainment at the pumps. When more fish are present, more fish are at risk of diversion and losses will be higher. The Third Alert is important for the real-time operation of the export facilities because the collection and dissemination of field data to the resource agencies and coordination of response actions ~~may-might~~ take several days. This action is designed to work in concert with the OMR action in IV.2.3.