Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 3/5/13 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, James Gleim, Dan Yamanaka, Tracy Pettit
FWS: Craig Anderson, Leigh Bartoo, Roger Guinee
NMFS: Barbara Rocco, Jeff Stuart, Bruce Oppenheim, Garwin Yip
Reclamation: Josh Israel, Russ Yaworsky
DFW: Bob Fujimura, Krystal Acierto, Robert Vincik, Joe Johnson, Jason Roberts
SWRCB: Scott Ligare, Christine Rico
EPA, USGS: not present

Agenda
1. Fish monitoring
2. Current operations

Action Item: Mill & Deer creek recommendations for monitoring—Acierto (DFW) will send the DOSS comments to Low (DFW) who will compile and provide them to DOSS.

Discussion: There were four comments from DOSS that were provided to Acierto. Low (DFW) will compile all comments and send them to DOSS to be included as an attachment to these notes.

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	Sacramento Trawls	Mossdale Kodiak Trawl	Beach Seines
Sample Date	2/25, 2/28, 3/1	2/25, 2/27, 3/1	2/25, 27, 28	2/26–2/28, 3/1
Total Catch	**14**	**2**	**1**	**244**
FR		2	1	220
WR				7
SR				9
LFR	4			
Ad-Clipped Chinook				7
DS	5 (68–80 mm)			
Splittail	3			
Longfin				
SH (ad-clip)	2 (124 &			1

	262 mm)			
SH (wild)				
W. Temp. (avg. °F)	52.3	50.9	52.2	51.1
Flows (avg. cfs)				
Turbidity (avg. NTU)	28.8	8.65	12.33	20.45
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

Winter-Run Chinook: Of the 7 non-ad-clipped winter-run Chinook reported in the beach seines; 3 were from Wards Landing upstream of Sacramento, 1 was from Garcia Bend downstream of Sacramento, and 3 were from Wimpy's near Walnut Grove, indicating that some winter-run are still moving downstream and into the Delta.

The 7 ad-clipped Chinook reported in the beach seines were from Wards Landing. Based on preliminary coded wire tag information, FWS verified that 5 of the ad-clipped Chinook were hatchery-released winter-run from this year's Livingston Stone release. This indicates that some ad-clipped winter-run Chinook are also still moving downstream and into the Delta.

Tisdale (Johnson [DFW]): Rotary screw trapping began on Monday 3/4/13. The cones (traps) were fished for 8 hours. No fish were captured and the cones were then lifted. They will go back into the water tomorrow (Weds) and will be fished for another 8 hours. The trapping schedule has been modified to 3 days/week with someone always at the trap for the rest of the sampling season.

Knights Landing (Johnson): Over the next several months, the protocol for the Knights Landing RSTs will be assessed and possibly modified.

Fish Salvage: The fish salvage report covering 2/25–3/4/13 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 February 25–March 3, 2013

Six non-ad-clipped juvenile Chinook salmon were salvaged on 2/25. These salmon were in the fall-run size range. No non-ad-clipped Chinook were salvaged over the following 6 days since last Monday. Similarly, no ad-clipped Chinook were salvaged last week. Three non-ad-clipped steelhead were salvaged on 2/25. The estimated daily loss density was 0.1 fish/TAF. Fifty-five hatchery steelhead were salvaged during the reporting period. No sturgeon were observed last week at either facility.

Preliminary results for yesterday (3/4/13): 4 non-ad-clipped steelhead were salvaged at the CVP and 4 hatchery steelhead were salvaged at the SWP. No salmon or sturgeon were salvaged yesterday. The daily loss for non-ad-clipped steelhead was 0.23 fish/TAF on Monday, 3/4/13.

Compiled by Bob Fujimura on March 4, 2013

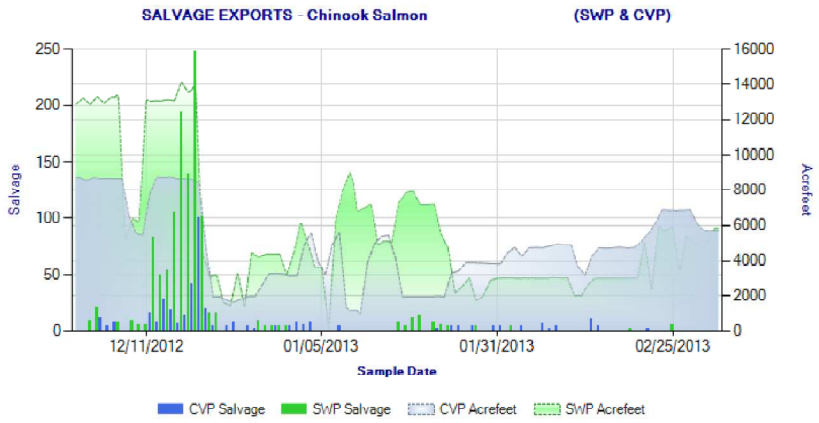


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during December 1, 2012 through March 3, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

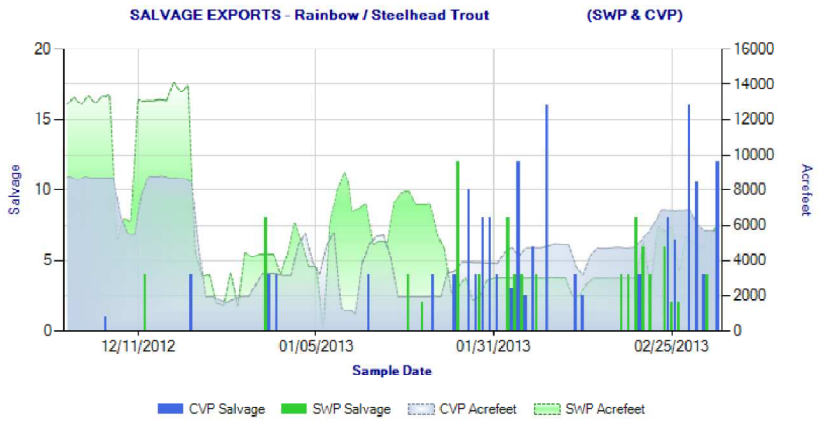


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during December 1, 2012 through March 3, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

DOSS Weekly Salvage Update

Reporting Period: February 25-March 3, 2013
Prepared by Bob Fujimura on March 5, 2013
Preliminary Results -Subject to Revision

Criteria	25-Feb	26-Feb	27-Feb	28-Feb	1-Mar	2-Mar	3-Mar	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.0
Wild steelhead	0.1	0	0	0	0	0	0	↘	0.0
Exports									
SWP daily export	5,882	3,447	5,371	5,041	4,783	5,087	5,829	↗	5,063
CVP daily export	6,850	6,854	6,871	6,062	5,696	5,686	5,699	↗	6,245

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;

		Weekly Total			Season Total	
Category		Salvage	Loss	Trend	Salvage	Loss
Wild						
	Winter Run	0	0	→	97	312
	Spring Run	0	0	→	0	0
	Late Fall Run	0	0	→	85	277
	Fall Run	6	25	↗	35	83
	Unclassified	0	0	→	8	5
	Total	**6**	**25**		**225**	**677**
Hatchery						
	Winter Run	0	0	↘	148	464
	Spring Run	0	0	→	0	0
	Late Fall Run	0	0	→	781	2,898
	Fall Run	0	0	→	415	1,522
	Unclassified	0	0	→	0	0
	Total	**0**	**0**		**1,344**	**4,884**

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

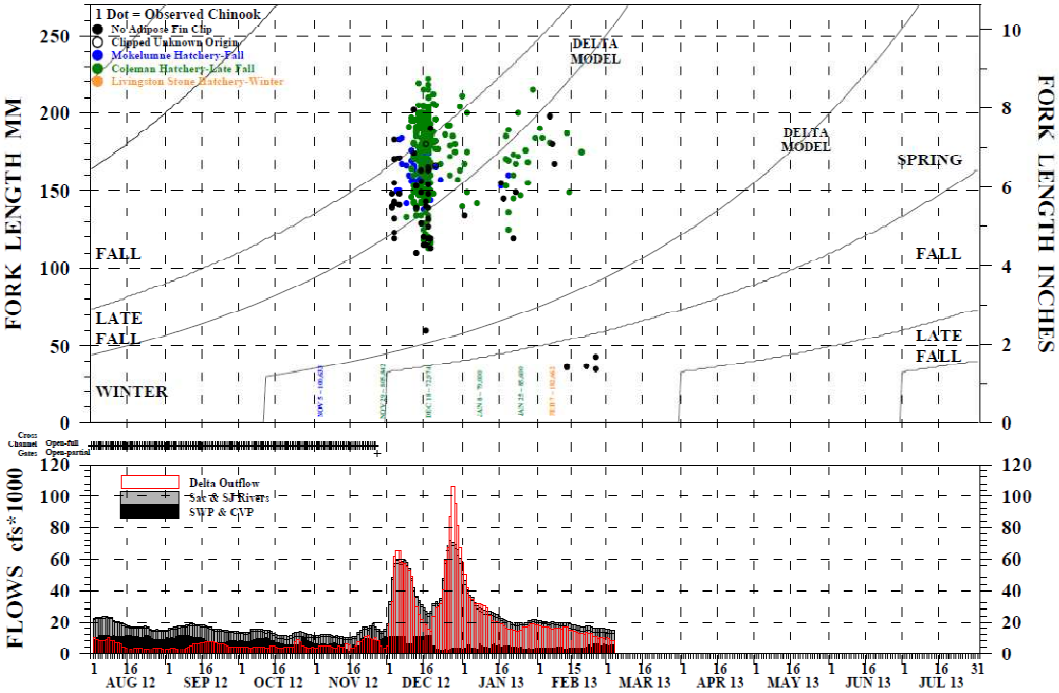
Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	3	2	↘	90	222
Hatchery	55	66	↘	174	315
Total	58	68		264	537

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

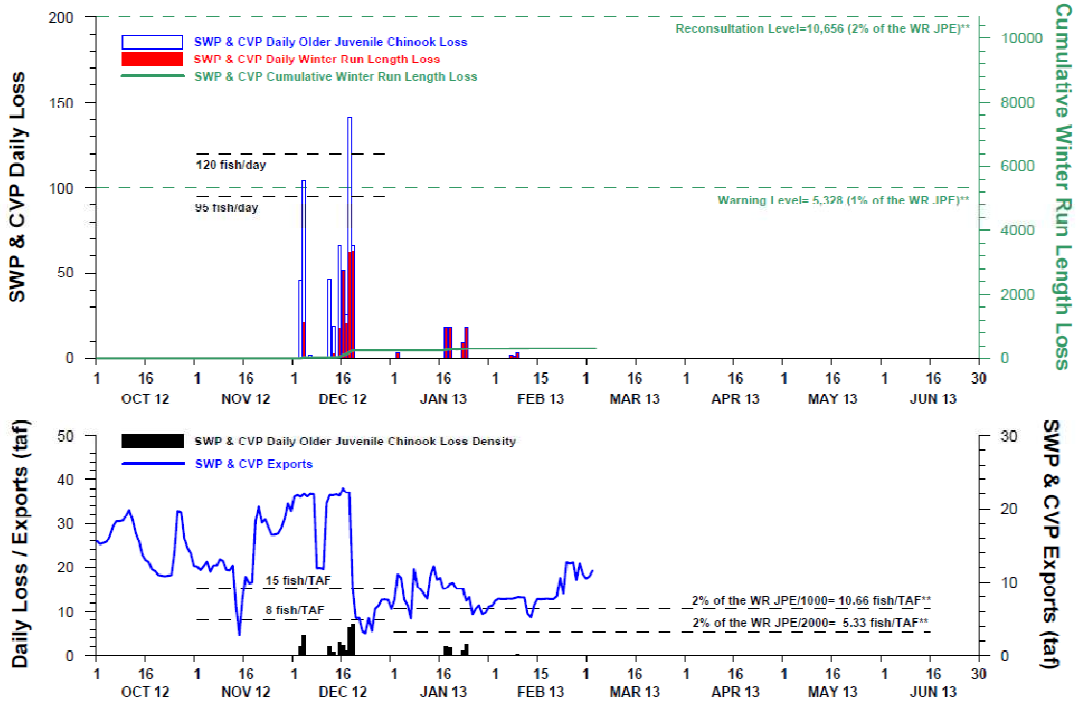
Below are graphs provided by DWR for Chinook salmon salvaged at the Delta fish facilities and for older juvenile Chinook salmon and steelhead observed in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

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



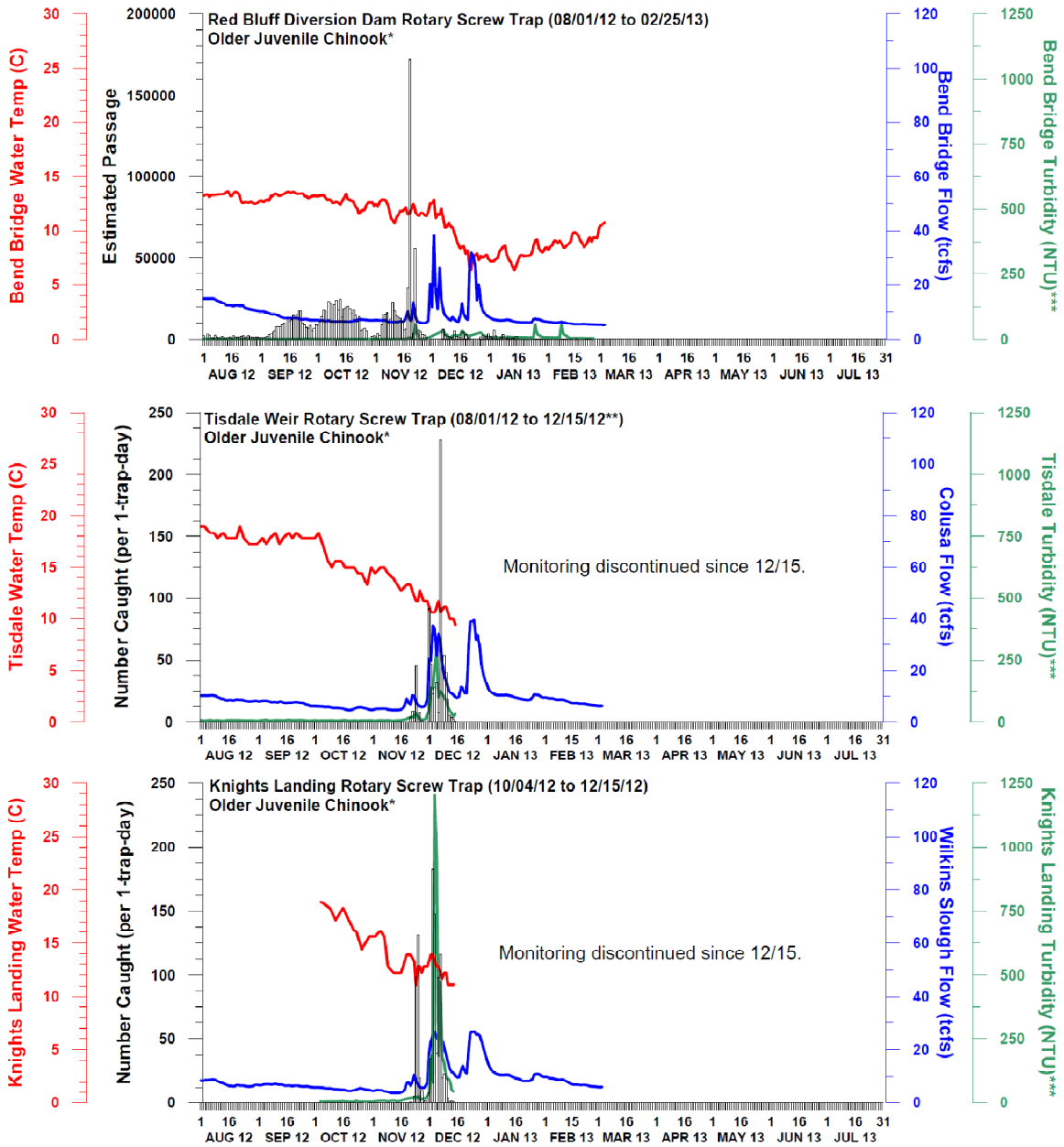
DWR-DES 04 MAR 2013
Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.
*Chinook outside of the length-at-date criteria (Delta model) are not reported.

NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 03 MAR 2013



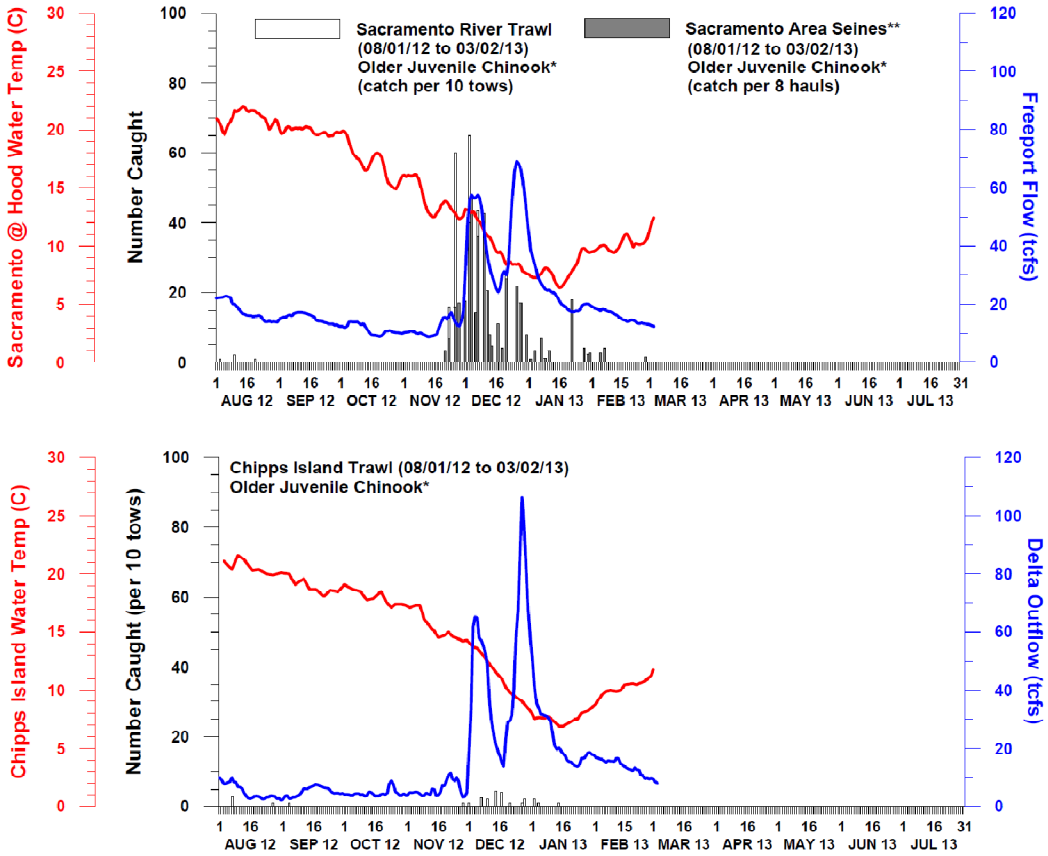
DWR DES 04 MAR 2013
Preliminary data from DFW; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Delta model).
**Based on the final juvenile production estimate (JPE), which comes out to be about 532,809 non-clipped winter run (WR) Chinook entering the Delta during water year 2013.

NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



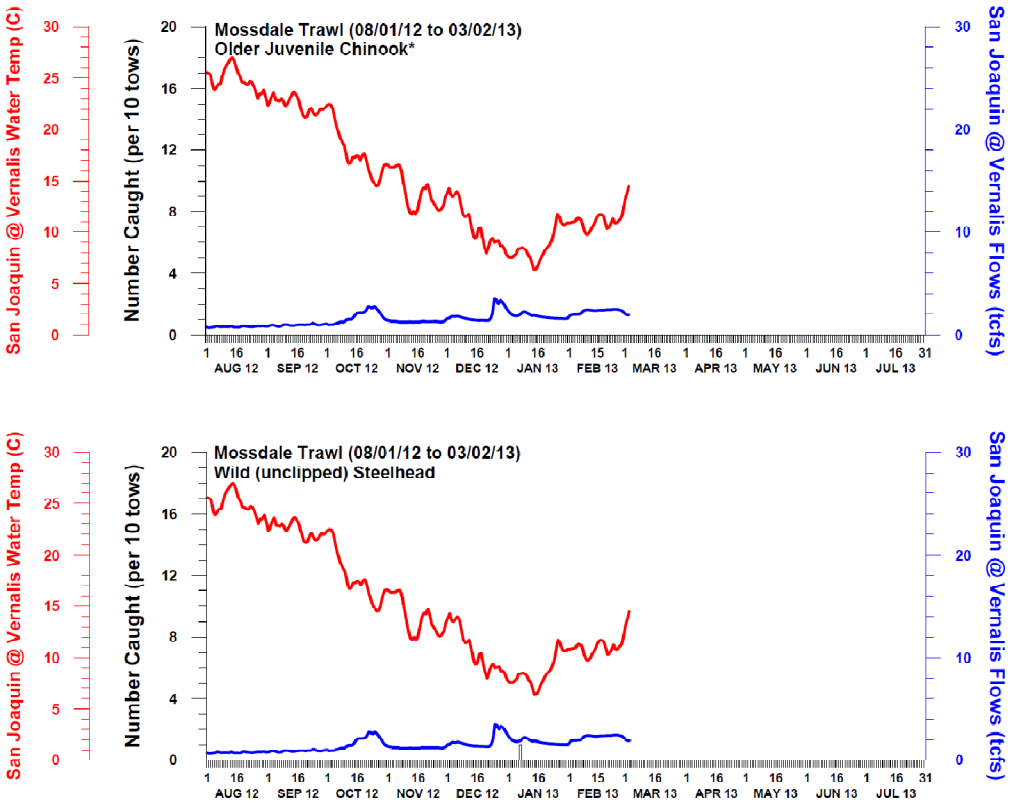
DWR-DES 04 MAR 2013
Preliminary data from DFW, FWS, and CDEC; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).
** Tisdale Weir: One older juvenile 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 04 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 04 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).

Hatchery CWT Results (see table below): No ad-clipped Chinook were salvaged last week. There was no change in the cumulative loss for any of the spring-run surrogate groups. No CWTs from the winter-run hatchery release have been reported. The last CWT read was on 2/19/13.

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
11/29/2012	LF	Coleman NFH	Battle Creek	Production	4080.76	805,842	n/a	0.506	n/a	n/a	12/9/2012	1/20/2013
12/18/2012	LF	Coleman NFH	Battle Creek	Spring Surrogate	58.20	72,974	n/a	0.080	0.5%	1.0%	12/31/2012	1/28/2013
1/8/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	128.58	79,000	n/a	0.163	0.5%	1.0%	1/20/2013	2/19/2013
1/25/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	12.14	85,800	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]
SWP	9.03	0.00	0.00
CVP	5.20	0.00	0.00
TOTAL	14.23	0.00	0.00

SWP and CVP adipose fin clipped Chinook lost from 10/1/2012 through 3/3/2013.
[1]Number released with the adipose fin clipped and a CWT.
[2]LF & F % Loss = (Confirmed Loss/Number Released)*100; W % Loss = (Confirmed Loss/Total Entering Delta)*100.
[3]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).
[4]Adipose fin clipped Chinook was collected during fish count and has not been processed yet.
[5]CWT has been read, but hatchery release information not yet available.
** Information not yet available.

DWR-DES Revised 3/4/2013
Preliminary data from UFW, DWR, FWS, and Reclamation; subject to revision.

Operations (3/5/13)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	2,500	Jones Pumping Plant	2,900 (will be reduced to 2,500 on Thursday with decreases at Goodwin and Nimbus)
Reservoir Releases (cfs)			
Feather - Oroville	1,750	American - Nimbus	2,250 (will be reduced to 1,750 tomorrow)
		Sacramento - Keswick	3,800 (will remain until next week)
		Stanislaus - Goodwin	800 (from 1,000 this morning)
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	477 (not reported but given total federal storage of 1,232)	San Luis (CVP)	755 (78)
Oroville	2,869	Shasta	3,629
New Melones	800	Folsom	550
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	12,691
Outflow Index (cfs)	8,500	San Joaquin River (cfs) at Vernalis	1,944 (will decrease to 1,700 in 2–3 days)
Total Delta Inflow (cfs)		OMR (daily) (cfs)	N/A
Water Temperature (°F)	54.5 (3-station avg)	OMR 5-day avg (cfs)	N/A
X2 (km)	74	OMR 14-day avg (cfs)	N/A

E/I (%)	33.6 (14-d avg)		

OMR Flow: There were some data gaps from the USGS gage after 2/25/13; FWS reported -6,310 cfs from the USGS gage on 2/28 and 3/1. DWR's initial estimate using the OMR index is -4,000 to -5000 cfs over those 2 days. Project exports are being scheduled within these parameters but fine-tuned when the actual data are received. Because the E/I ratio and OMR flow values are so close to each other, it is not clear which is controlling exports. As a reference, currently, 1% of E/I is equal to approximately 500 cfs.

Water Quality: There was a discussion on the number of days needed to meet the X2 requirement in March. DWR must coordinate with Reclamation on this because reservoir releases are being reduced. Both Delta conditions and the projects need to be assessed to come to an agreement about whether the Delta is in balanced conditions.

Weather: A storm coming later today that will move into early Thursday. There might be a 1.5- to 2-day spike in river flows (~2,000 cfs increase on the Sacramento River) for a short period before flows quickly recede. This storm will be colder but over the long-term (60 to 90 days), conditions are forecast to be dry and below normal.

Steelhead Surveys: There are no specific plans for additional steelhead stranding surveys in the American River given the 500-cfs reduction in releases; however, Reclamation supplies NMFS with current weekly redd survey results. Anderson (FWS) will look into whether there are rotary screw trap data for the American River as well.

Smelt Working Group (SWG): SWG recommended that OMR be increased to no more negative than -5,000 cfs on a 14-day running average, with a corresponding 5-day average of no more negative than -6,250 cfs. If 3 consecutive days of salvage or a weekly total ≥26 delta smelt, SWG will meet again and reassess and potentially provide a new recommendation. FWS has not yet made a determination. The spring Kodiak trawls at station 809 in the lower San Joaquin River picked up 10 delta smelt, of which 2 were spent females, which prompted SWG to look at Action 3 for guidance in protecting juveniles. SWG does not believe that there are any juveniles in the system, but will continue to monitor, especially salvage.

DOSS Advice to WOMT and NMFS: No advice; however, NMFS and WOMT are reminded that the RPA Action IV.2.3 OMR flow management of no more negative than -5,000 cfs from January 1 to June 15, 2013, remains in place.

Next Meeting: The next DOSS meeting will be Tuesday, 3/12/13, at 9:00 a.m. The agenda will include the current status of the clarification of RPA Action IV.3 language.

From: Acierto, Krystal@Wildlife
To: Roberts, Jason@Wildlife
Subject: FW: Deer and Mill Cr Monitoring recommedations
Date: Thursday, March 07, 2013 8:54:00 AM
Attachments: DeerMill RST_Recommendations_KR_EY comments.docx

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Krystal R. Acierto, Environmental Scientist
Water Branch
California Department of Fish and Wildlife
830 S. Street
Sacramento, CA 95811
(916) 445-1911
Krystal.Acierto@wildlife.ca.gov
www.wildlife.ca.gov

From: Edmund@DWR Yu [mailto:Edmund.Yu@water.ca.gov]
Sent: Monday, February 25, 2013 4:19 PM
To: Acierto, Krystal@Wildlife
Cc: Kevin@DWR Reece
Subject: RE: Deer and Mill Cr Monitoring recommedations

Hi Krystal,

Please see the attachment for some additional thoughts/comments.

Thanks,

Edmund Yu
CA Department of Water Resources
3500 Industrial Blvd
West Sacramento, CA 95691
Phone: 916-376-9817
Email: edmund.yu@water.ca.gov

From: Reece, Kevin@DWR
Sent: Friday, February 15, 2013 12:08 PM
To: Krystal Acierto (Krystal.Acierto@wildlife.ca.gov)
Cc: Gleim, James@DWR; Yu, Edmund@DWR
Subject: Deer and Mill Cr Monitoring recommedations

Good afternoon Krystal,

I had one change to the recommendation and a supporting comment. I'm happy to review the data with you or the DOSS team if anyone wishes to do so.

Thank you. Kevin

Kevin Reece, Staff Environmental Scientist

Regulatory Compliance Genetics Program
California Department of Water Resources
3500 Industrial Blvd, 2nd Floor
West Sacramento, CA 95691-6521
Tele: (916) 376-9709

Recommendations

Deer and Mill Creek rotary screw trap studies conducted from 1994 to 2010 achieved the primary goal of understanding and describing juvenile life history characteristics of spring-run Chinook and steelhead populations in Deer and Mill Creeks. This is significant as awareness has increased of the status of these systems as population strongholds for wild spring-run Chinook and steelhead within the Central Valley ESUs. Researchers and managers now have a readily available baseline juvenile life history dataset for wild Central Valley spring-run Chinook and steelhead.

In addition, data from the program were used from 1997 to 2010 in decisions on Delta water project operations. The Spring-run Protection Plan, implemented in the fall of 1997, included the use of data from the Deer and Mill Creek rotary screw trap studies in the decision process for Delta Cross Channel Gate closures. Real-time catch summaries from the rotary screw traps were used as a first alert of the presence of Deer and Mill Creek spring-run juveniles entering the Sacramento River and moving toward the Delta.

Spring-run protection measures were continued in the subsequent NOAA Fisheries Biological Opinions. The current *Biological Opinion on the Long-Term Operations of the Central Valley Project and State Water Project*, issued in 2009 and amended in 2011, requires funding for monitoring programs needed to provide real-time data for water project operations. Real-time data obtained from Deer and Mill Creek rotary screw trap operations were required for use as a "First Alert" for Delta Cross Channel Gate Operations. First Alert is defined as yearling spring-run Chinook detected at mouths of tributaries and/or average daily tributary flow increases by 50% or more (NOAA 2009).

The Deer and Mill Creek rotary screw trap program was discontinued in the spring of 2010 due to concerns over incidental mortality of juvenile spring-run in the sampling process. As stated earlier, the primary goal of understanding and describing juvenile life history characteristics of spring-run Chinook and steelhead populations in Deer and Mill Creek had been achieved by 2010. From 2011 on, there has been no real-time catch data available from Deer and Mill Creeks for use as a "First Alert" for the Delta Cross Channel Gate operations. To meet this need, data from the sampling period were analyzed for flow/yearling catch patterns to identify flows that could be used in lieu of real-time catch data.

December 1 is the currently the default closure date for the Delta Cross Channel Gates. Therefore, the months of October and November are the critical time periods when entrainment of Deer and Mill Creek yearling spring-run into the Delta Cross Channel may occur. Based on detailed analysis of the catch vs. flow data from 1994-2010, presented in Figures 19 and 20 and Appendix D and E, we recommend the following criteria for use as a "First Alert" for Delta Cross Channel Gate Operations:

- **Flows are greater than ~~110~~ 125 cfs. in Deer or Mill Creeks, or**
- **Mean daily flow increases by more than 50% in Deer or Mill Creeks.**

(Flows measured at the USGS stream gauges.)

Data indicate that yearlings are moving in small numbers when flows reach 110 cfs on either stream (Figures 1 and 2). Larger pulses of yearlings were typically observed following the first fall rain events. A 50% increase in flow on Deer or Mill Creek

Comment [EY1]: Is this date range correct? I was under the impression that no CDEC data was available until 1997.

Comment [EY2]: Is this a reference to mean daily flow or the maximum flow on a given day? I believe CDEC data are computed in 15 minute and hourly increments.

Comment [c3]: . CDEC data was reviewed for Mill Creek and Deer Creeks for the period of September –November for the years 2002-2012. My recommendation would be a flow greater than 125cfs as base flows often exceed 110cfs. One such example is 2011, where flows in Mill creek exceeded 110cfs for all of Sept., October and November. Fall time base flows in preceding years ranged from ~75-150cfs and pulses most always exceeded 125-150cfs. In Deer Creek, the range of base flows was ~65-130. Pulse flows were more pronounced on Deer Creek and were generally greater than 125-200cfs.

Comment [EY4]: I agree with comment c3 and that DFW should look further into this criterion based on Kevin Reece's preliminary analysis. My questions regarding the 110 criterion are as follows:

1) Are yearling spring-run Chinook just present above 110 cfs or does this normally occur after the 50% increase in flow? It would be interesting to see in a table on how often Chinook were present/absent when sampling was done and flows were above 110 cfs.
2) Did DFW look into other environmental parameters like water temperature that could be used as an environmental surrogate and help refine this criterion? Based on the report, it does not appear that DFW started sampling until water temperatures went below 16 C for a week.

following a fall freshet typically resulted in the catch of large numbers of out-migrating yearlings. We therefore believe the above criteria will provide equivalent protection for out-migrating spring-run yearlings to the current requirements in the Biological Opinion (NOAA 2009).