

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 12/26/2017 at 9:00 am.

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.

CDFW: Bob Fujimura, Ken Kundargi

DWR: Kevin Reece, Bryant Giorgi, Mike Ford, Farida Islam

NMFS: Jeff Stuart, Kristin McCleery

Reclamation: Towns Burgess

Agenda Items

1. Agenda review and introductions
2. RPA Implementation review (For the DOSS Dashboard, click on the "Triggers & Indices" tab at: www.baydeltalive.com/djfmpr)
3. Current Operations
4. Smelt working group update
5. Fish Monitoring: Salvage
6. Fish Monitoring: RSTs/trawls/seines
7. JPE Letter and Trigger Levels
8. DOSS Estimates of Fish Distribution
9. DOSS advice
10. Next DOSS meeting

Agenda Item 2.

RPA Implementation Review

Delta RPA Actions affecting operations during December:

Action IV.1.1 [Alerts that indicate the Delta Cross Channel (DCC) gate operations may be triggered soon] ¹:

- The First Alert is triggered if either the first component (river flows >95 cfs or the second component (>50% change in mean daily river flow) is met. The first alert was triggered every day this past week based on Mill Creek and Deer Creek flows. See table below for details.

¹ 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. Note that in October 2014, NMFS approved a modification of the first component of the first alert to a 95 cfs mean daily flow threshold in either Mill Creek or Deer Creek in lieu of operating the Mill and Deer Creek rotary screw traps.

Mill Creek (MLM)			Deer Creek (DCV)	
Date	mean daily flow (cfs)	change in mean daily flow	mean daily flow (cfs)	change in mean daily flow
12/19/2017	152	-1%	146	0%
12/20/2017	161	6%	157	8%
12/21/2017	152	-6%	148	-5%
12/22/2017	149	-2%	144	-3%
12/23/2017	149	0%	144	0%
12/24/2017	148	-1%	145	1%
12/25/2017	148	0%	145	0%

- Second Alert is triggered only if both Knights Landing temperatures are less than 56.3°F and Wilkins Slough flows are greater than 7,500 cfs.
 - The second alert was not triggered this week. See table below for details.

Wilkins Slough (WLK)		Knights Landing (KL)
Date	Mean Daily Flow (cfs)	Daily water temperature (°F)
12/19/2017	5128	44
12/20/2017	5131	48
12/21/2017	5180	46
12/22/2017	5220	46
12/23/2017	5181	46
12/24/2017	5005	46
12/25/2017	5104	

Action IV.1.2² (DCC gate operations):

- Gates will remain closed per operations described in RPA Action IV.1.2 starting 12/1/17.

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

- The third alert [November 1-February 28 Knights Landing Catch Index (KLCI) or Sacramento Catch Index (SCI) >10] was not triggered this past week.
- Since the action went into effect on 11/1/17, no salvage of listed salmonids has occurred and thus no salvage-based triggers that would require export reduction have been exceeded.

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

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

Agenda Item 3.

Current Operations (12/26/17)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	2,500	Jones Pumping Plant	3,500
Reservoir Releases (cfs)			
Feather - Oroville	2,000	American - Nimbus	3,500
		Sacramento - Keswick	5,000
		Stanislaus - Goodwin	850*
		Trinity - Lewiston	300
Reservoir Storage (in TAF)			
San Luis (SWP)	735	San Luis (CVP)	881
Oroville	1,200	Shasta	3,200
New Melones	199	Folsom	570
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	13,600
Outflow Index (cfs)	~8,100	San Joaquin River at Vernalis (cfs)	1,650
E:I	38% (14-day avg.)	X2	>81 km**

* Goodwin releases will increase by approximately 1,700 to 2,500 cfs today and will go up and down approximately 1,200 cfs every two days (1,300 to 2,500 cfs) until 1/3, then estimated to hold at 1,000 to 1,500 cfs. Flows are managed to draw down the reservoir to meet the flood control curve.

** Limit of X2 calculation.

Approximate OMR as of 12/23/17:

	USGS gauges (cfs)	Index (cfs)
Daily	-6,000	-6,000
14-day	-6,600	-6,600

Factors controlling Delta exports:

- 12/19-12/25: Fall X2

Weather Forecast

The weather is expected to be cool and dry in the Central Valley this week. No precipitation is in the forecast.

Agenda Item 4.

Smelt Working Group Update

The Smelt Working Group did not meet this week due to the Federal holiday.

Agenda Item 5.

Fish Monitoring: Salvage

B. Fujimura (CDFW) provided a salvage summary. No listed fish species have been observed in salvage since the start of the current water year on 10/1/17.

DOSS Weekly Salvage Update

Reporting Period: December 18-December 24, 2017

Prepared by Bob Fujimura on December 25, 2017 17:41

Preliminary Results -Subject to Revision

Criteria	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0
Wild steelhead	0	0	0	0	0	0	0	→	0
Exports									
SWP daily export	5,925	6,316	5,815	5,471	5,182	4,858	4,949	↘	5,502
CVP daily export	8,380	8,390	8,409	8,386	8,360	8,353	6,977	→	8,179
SWP reduced counts	0%	0%	0%	0%	0%	0%	0%	↘	0%
CVP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%

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)

Reduced counts = percentage of time that routine salvage sample time were less than 30 min per 2 hours of salvage and export operations

Yellow highlighted dates indicate brief fish salvage interruption occurred

Chinook Salmon Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

Race determined by size at date of capture; hatchery = adipose fin missing;

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
Total	0	0		0	0
Hatchery					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	1	NC
Total	0	0		1	0

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

NC = cannot be calculated; hatchery salmon salvage and loss estimates have been corrected using CWT readings when available

Steelhead Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild	0	0	→	0	0
Hatchery	0	0	→	0	0
Total	0	0		0	0

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

Agenda Item 6.

Fish Monitoring: The following table presents fish monitoring data summarized over the past week. Empty cells indicate zero catches at those locations with sample dates shown.

Location	Chippis Is. Midwater Trawl ^A	Sacramento Trawl ^A	Beach Seines ^A	Knights Landing RST ^B	Tisdale RST ^C	GCID RST	Mossdale Kodiak Trawl ^A
Sample Date	12/19, 20,22	12/17-23	12/18-22	12/18-12/24	12/18-12/21	12/19-12/24	12/20-22
Chinook							
FR Chinook	3			2			
SR Chinook	2						
WR Chinook	2					5 juveniles	
LFR Chinook						5 smolts	
Ad-Clipped Chinook						245 LFR	
Steelhead (ad-clip)						17	
Steelhead (wild)							
Green Sturgeon							
Flows (avg. cfs)				5149	5010	792	
W. Temp. (avg. °F)				46	49.7	49.6	
Turbidity (avg. NTU)				11.5	13.6	7.1	

^A DJFMP data were not received before the DOSS call due to the Christmas holiday, however, data was received at 6 pm on 12/26/17 and is included for informational purposes.

^B Knights Landing RST sampling period was from 12/18 at 10:30 am to 12/24 at 10:30 am. The trap cones were raised at 10:30 am on 12/24. Traps were not fishing over the Monday holiday. Fishing will resume on 12/26.

^C Tisdale RST sampling period was from 12/18 at 10:00 am to 12/21 at 10:00 am.

^D On 12/24, the GCID trap cone was raised due to unpredictable debris loads coinciding with Coleman hatchery releases.

Agenda Item 7.

JPE Letter and Trigger Levels

DOSS discussed the implementation of the minimum fish density triggers for RPA Action IV.2.3 as an interim measure until the final JPE letter is issued to Reclamation. Completion of the Final JPE letter is not likely to occur by January 1, 2018, when RPA Action IV.2.3 goes into effect. DWR staff reported out to DOSS that the winter-run project work team is in the final stages of reviewing the results of genetic testing of spring-run sized fish collected at the RBDD rotary screw traps this year. Genetic testing was required to determine the proportion of these spring-

run sized fish that are actually winter-run Chinook salmon based on their genetic assignment. The winter-run project work team would then make their recommendations to NMFS regarding the size of the winter-run population for brood year 2017. Preliminary results indicate that the proportion of spring-run sized fish identified as winter-run by their genetics is not enough to substantially alter the initial estimates of the brood year 2017 winter-run population size seen at the RBBD monitoring location. This information is required to calculate the JPE for brood year 2017 winter-run Chinook salmon. Since DOSS believes that the eventual finalized JPE values will not be sufficiently large (i.e., > 500,000 fish) to make the calculated fish density trigger greater than 2.5 fish /TAF, then the minimum trigger values will be appropriate for the interim period between January 1, 2018 and the issuance of the final JPE letter.

Agenda Item 8.

DOSS Estimates of Fish Distribution

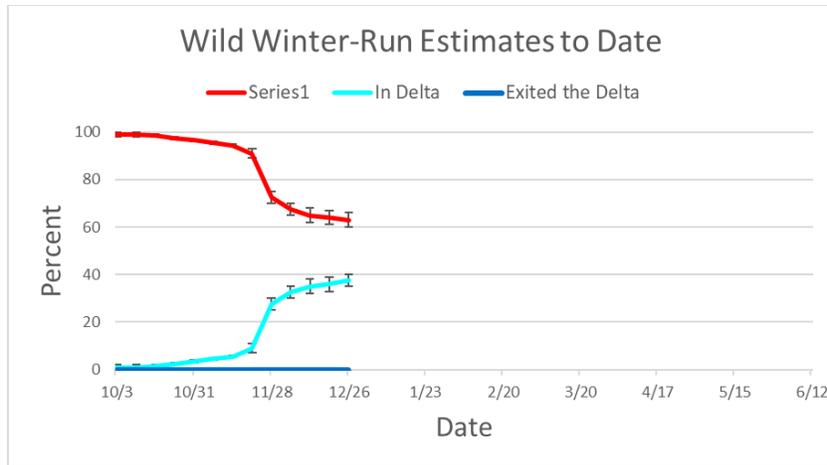
DOSS estimates of the current distribution of listed Chinook and steelhead, as a percentage of the population, are based on recent monitoring data and historical migration timing patterns.

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
<i>Wild young-of-year winter-run Chinook salmon</i>	59-66% (Last week: 61-67%)	34-41% (Last week: 33-39%)	0% (Last week: 0%)
<i>Wild young-of-year spring-run Chinook salmon</i>	83-89% (Last week: 85-90%)	11-17% (Last week: 10-15%)	0% (Last week: 0%)

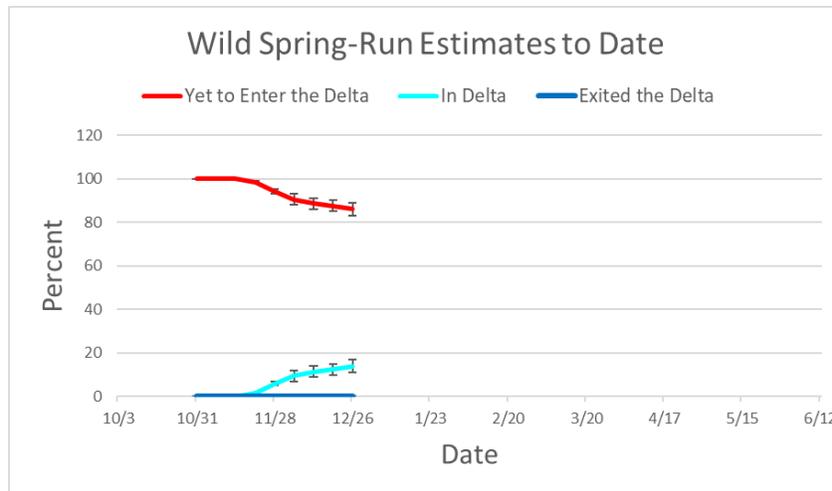
Rationale for changes in distribution

Wild winter-run Chinook: 5 juvenile winter-run-sized fish were observed at GCID this past week, however, DatCall data was not received at the time of the DOSS call. Since few fish were observed at monitoring locations, the flows in regional rivers are low and slightly decreasing, water clarity in regional rivers has increased, and no fish have been observed at the salvage facilities, DOSS estimated that only an additional 1-2% of the winter-run population has moved into the Delta during the past week, and the remaining proportion of the winter-run population are still holding upriver.

Wild spring-run Chinook: During the past week, no spring-run-sized fish were observed at monitoring locations, however, DatCall data was not received at the time of the DOSS call. Since few spring-run were observed in regional monitoring locations, rivers flows are low or have slightly decreased, water clarity has increased, and no fish have been observed at salvage facilities, DOSS estimated that only an additional 1-2% of the spring-run population has moved into the Delta. The majority of spring-run are still considered to be rearing upriver. There is also the potential that some of the fish classified as spring-run by the length-at-date criteria may actually be late emerging and slow growing winter-run Chinook salmon. Cooler river water temperatures this year may have delayed spawning and slowed the emergence and growth of winter-run fry in the upper Sacramento River, and thus these fish would fall into the size criteria for spring-run at this time of year.



WY 2018 wild winter-run distribution estimates to date.



WY 2018 wild spring-run distribution estimates to date.

DOSS estimates of Entrainment Risks:

No entrainment risks were assessed this week. Although an estimated 33-39 percent of the BY17 winter-run population has entered the Delta, very few are anticipated to be vulnerable to exports as no catches have occurred in the Sacramento Trawl to date or have been observed elsewhere in the Delta.

Agenda Item 8.

DOSS Advice to WOMT and NMFS:

1) Delta Water Quality Conditions:

For the week of 12/26/17 to 1/1/2018, NMFS and WOMT should continue to monitor the Delta water quality conditions during DCC gate closures. DCC gates may be opened if water quality conditions become degraded per D-1641 criteria and it is determined that opening gates will improve water quality conditions and such operations comply with the conditions described in RPA Action IV.1.2.

2) Interim JPE-Based Trigger for Implementation of RPA Action IV.2.3

Background

Action IV.2.3⁴ of the Reasonable and Prudent Alternative (RPA) of the 2009 NMFS Biological Opinion on Long-Term Operations of the Central Valley Project and State Water Project (NMFS BiOp) requires Old and Middle River flows more positive than -5,000 cfs when specified action triggers are exceeded. Action IV.2.3 includes four distinct first-stage action triggers, and three distinct second-stage action triggers. Both the first- and second-stage sets of triggers include a trigger based on the Juvenile Production Estimate (JPE) for the current winter-run Chinook salmon brood year population. As described in the 12/18/17 NMFS letter supporting the genetic analysis protocol⁵, the JPE-based action trigger threshold for Action IV.2.3 when applying rapid genetic analysis is calculated as 1% of the winter-run JPE divided by 2,000 (for the first-stage trigger) or by 1,000 (for the second-stage trigger). Minimum trigger values are 2.5 fish per thousand acre-feet (TAF) for the first-stage trigger and 5.0 fish per TAF for the second-stage trigger⁶.

If the official JPE letter to Reclamation for winter-run Chinook salmon is not available by January 1, 2018, the Delta Operations for Salmonids and Sturgeon technical team (DOSS) advises implementation of the JPE-based fish density trigger as described below.

Rationale for Selecting the Minimum Fish Density Triggers

At a JPE of 500,000, the JPE-based triggers in Action IV.2.3 are calculated to be at the minimum trigger values of 2.5 fish/TAF and 5.0 fish/TAF. At any JPE lower than 500,000, the JPE-based triggers in Action IV.2.3 will be less than the minimum trigger values. The most recent bi-weekly U.S. Fish and Wildlife Service Red Bluff Diversion Dam (RBDD) rotary screw trap monitoring report (12/3 to 12/16/17⁷) estimates that 423,587 brood year 2017 winter-run Chinook salmon have moved past the RBDD monitoring location this year. By this time of the year, the historical record shows that the vast majority of the winter-run Chinook salmon population in the Sacramento River above RBDD would have already moved downstream past the RBDD monitoring location, and thus few fish would remain upstream to increase this population passage estimate in the future weeks. The estimate of passage past RBDD, adjusted to

⁴ See pages 74-79 of Enclosure 2 of the 2011 RPA Amendments, available online at:

http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf

⁵ http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/nmfs_response_to_reclamation_s_request_to_implement_rapid_genetic_analysis_in_wy_2018_-_december_18_2017.pdf. Action triggers are described in the table on pages two and three. [Clarification: The "Action Triggers Applying Rapid Genetic Analysis" column in the RPA Action IV.2.3 trigger table on page two of the letter lists the first stage trigger based on wild steelhead as "(4) daily loss of wild steelhead (intact adipose fin) is greater than 12 fish/taf multiplied by volume exported (in taf)". It should read "(4) daily loss of wild steelhead (intact adipose fin) is greater than 8 fish/taf multiplied by volume exported (in taf)".]

⁶ The minimum threshold for the second-stage JPE-based trigger in IV.2.3 is 5.0 fish/TAF, not the 2.5 fish/TAF listed in the 2011 RPA Amendments. The 1/24/12 DOSS notes

http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Delta%20Operations%20for%20Salmonids%20and%20Sturgeon/DOSS%20WY2012/final_notes_012412.pdf) acknowledge this clarification.

⁷ RBDD rotary screw trap reports for 2017:

https://www.fws.gov/redbluff/RBDD%20JSM%20Biweekly/2017/rbdd_jsmp_2017.html

account for further migration mortality between the RBDD location on the Sacramento River and the Delta, will result in an even smaller JPE value, which represents the number of winter-run smolts and juveniles entering the Delta from the Sacramento River. Current estimates of smolt survival for winter-run Chinook salmon from RBDD to the Delta are typically about 50% or less for this portion of their migration. Therefore, the final JPE for brood year 2017 winter-run Chinook salmon is anticipated to be much lower than 500,000 and thus the calculated first- and second-stage JPE-based triggers in Action IV.2.3 will be less than the minimum trigger levels described in the BiOp for Action IV.2.3.

DOSS Advice

In anticipation that the brood year 2017 JPE will be less than 500,000, and thus the first- and second-stage JPE-based triggers in Action IV.2.3 will be less than the minimum trigger levels, **DOSS advises that, if the official JPE for winter-run Chinook salmon is not available by January 1, 2018, Action IV.2.3 be implemented using the minimum trigger values for the JPE-based triggers**, as follows:

- The first stage minimum action trigger is daily SWP/CVP older juvenile Chinook salmon loss density⁸ of 2.5 fish per TAF exported; exceedance would require OMR to be no more negative than -3,500 cfs for at least five days.
- The second stage minimum action trigger is daily SWP/CVP older juvenile Chinook salmon loss density of 5.0 fish per TAF exported; exceedance would require OMR to be no more negative than -2,500 cfs for at least five days.

Agenda Item 9.

Next Meeting: The next DOSS conference call will be on **1/2/18 at 9 am.**

⁸ Loss density to be evaluated according to the implementation procedures described in the letter from NMFS to Reclamation regarding rapid genetic analysis:
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/nmfs_response_to_reclamation_s_request_to_implement_rapid_genetic_analysis_in_wy_2018_-_december_18_2017.pdf