

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 12/11/2018 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html.

CDFW: Ken Kundargi, Duane Linander, Jason Julienne, Kyle Griffiths, Krystal Davis-Fadtke

DWR: Kevin Reece, Bryant Giorgi, Farida Islam, Dan Yamanaka

NMFS: Jeff Stuart, Kristin Begun

Reclamation: Elissa Buttermore

SWRCB: Chris Carr, Craig Williams

USFWS: Craig Anderson

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/djfmj)
3. Current Operations
4. Smelt Working Group
5. Fish Monitoring: RSTs/trawls/seines
6. Fish Monitoring: Salvage
7. Winter-run JPE and fish loss density triggers
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:

- Since October 2014, NMFS has used an environmental surrogate to indicate the tributary flow conditions that stimulate movement of yearling-sized spring-run Chinook salmon out of their natal tributaries. Tributary flow increases are used to signal conditions conducive to emigration. Starting on 10/1, the First Alert is triggered if either the first component (>95 cfs flow threshold) or second component (>50% change in mean daily

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.

flow) has been exceeded at either the Deer Creek gage at Vina (DCV), or the Mill Creek gage at Los Molinos (MLM). Over the past week (12/4/18-12/10/18), the First Alert was triggered every day based on Mill Creek and Deer Creek flows greater than 95 cfs. Summer baseline flows at Mill Creek have been greater than the first component trigger of 95 cfs all summer long, thus making this trigger less relevant this water year.

Date	Mill Creek (MLM)		Deer Creek (DCV)	
	mean daily flow (cfs)	change in mean daily flow	mean daily flow (cfs)	change in mean daily flow
12/4/2018	122	-5%	109	-7%
12/5/2018	123	1%	109	1%
12/6/2018	121	-2%	107	-2%
12/7/2018	118	-2%	103	-3%
12/8/2018	117	-1%	100	-3%
12/9/2018	116	-1%	99	-1%
12/10/2018	116	0%	99	-1%

- Second Alert (triggered only if **both** Knights Landing water temperatures are less than 56.3°F and Wilkins Slough flows are >7,500 cfs). Recent conditions for:
 - The second alert was not triggered this week.

Date	Wilkins Slough (WLK)	Knights Landing (KL)
	Mean Daily Flow (cfs)	Daily water temperature (°F)
12/4/2018	6,591	50
12/5/2018	6,124	50
12/6/2018	5,775	50
12/7/2018	5,526	49
12/8/2018	5,182	49
12/9/2018	4,866	49
12/10/2018	4,810	49

Action IV.1.2² (DCC gate operations):

- DCC gates will remain closed per operations described in RPA IV.1.2 starting 12/1/18.

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):

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

- 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 11/1/18, no salvage-based triggers that would require export reduction have been exceeded.

Agenda Item 3.

Current Operations (12/11/18)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	2,500*	Jones Pumping Plant	4,000**
Reservoir Releases (cfs)			
Feather - Oroville	1,750	American - Nimbus	1,800
		Sacramento - Keswick	4,000
		Stanislaus - Goodwin	200
		Trinity - Lewiston	300
Reservoir Storage (in TAF)			
San Luis (SWP)	804	San Luis (CVP)	497
Oroville	1,006	Shasta	2,183
New Melones	1,774	Folsom	327
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	10,800
Outflow Index (cfs)	~4,300	San Joaquin River at Vernalis (cfs)	1,380
E:I	54% (3-day avg.)	X2	>81 km

* SWP exports will decrease tomorrow (12/12) to 2,000 cfs.

** CVP exports will decrease tomorrow (12/12) to 3,500 cfs.

Factors controlling Delta exports:

- 12/4-12/11: salinity management

Approximate OMR as of 12/8/18:

	USGS gauges (cfs)	Index (cfs)
Daily	-6,600	-7,500
5-day	-7,900	-8,100
14-day	-5,000	-5,400

Approximate OMR as of 12/10/18:

	Index (cfs)
Daily	-6,700
5-day	-7,300
14-day	-6,100

Weather Forecast

There is a chance of showers in the far northern portion of the state tonight. A dry weather pattern will continue over the next few days, with another weather system expected to arrive on Friday. Another system will move into northern California on Sunday evening, bringing a chance of rain.

Agenda Item 4.

Smelt Working Group

The Smelt Working Group (SWG) met on Monday, 12/10/18.

The SWG reviewed current Delta conditions, survey data, expected exports, and forecasted weather. The SWG indicated that the precipitation forecasted for this week would be minor, and a “first flush” event is unlikely to occur this week. The group did express the importance of keeping a careful eye on upstream turbidity that could rapidly move downstream into the Delta even without substantial rainfall. But as the field surveys have not detected any Delta Smelt and OMR indices are expected to become more positive later in the week, the SWG concluded that the risk for Delta Smelt entrainment is low.

The SWG does not believe that a recommendation under Action 1 (adult pre-spawning Delta Smelt) is necessary to protect Delta Smelt at this time. The SWG will continue to monitor Delta Smelt survey and salvage data and Delta conditions. The group will meet again on Monday, 12/17 at 10 am.

Agenda Item 5.

Fish Monitoring: The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. Empty cells indicate zero catches at those locations with sample dates shown.

Location	GCID RST ^A	Tisdale RST ^B	Knights Landing RST ^C	Beach Seines ^D	Sacramento Trawl ^D	Chippis Is. Midwater Trawl ^D	Mossdale Kodiak Trawl ^D
Sample Date	11/28, 12/3-12/10	12/3-12/10	12/3-12/9	12/3, 12/4, 12/6	12/2-12/6	12/2-12/4, 12/6	12/3, 12/6
FR Chinook	1 juvenile	1	1		2		
SR Chinook	3 juveniles		6	7	2		
WR Chinook	149 juveniles	16	119	65	8		
LFR Chinook	41 smolts			5	8	3	
Chinook (ad-clip)	755 LFR smolts	27 LFR	1 FR 6 LFR		7		
Steelhead (wild)							

Steelhead (ad-clip)				1			
Green Sturgeon							
Flows (avg. cfs)	830	5,037	5,707				
W. Temp. (avg. °F)	55.3	46	49.8				
Turbidity (avg. NTU)	7.30	15.0	16.88				

^A The GCID RST was raised on 11/28 due to predicted high flows and the release of approximately 700,000 LFR Chinook salmon from Coleman National Fish Hatchery. The GCID RST was lowered back in the bypass channel at 8:30 am on 12/3.

^B Tisdale RST sampling period was from 12/3 at 10:30 am to 12/10 at 9:30 am. RST cone sampling efforts was reduced to 50% due to previous high catch.

^C Knights Landing RST sampling period was from 12/3 at 11:30 am to 12/9 at 11:00 am.

^D Data reported in the 12/2 to 12/8 DJFMP sampling summary.

Enhanced Delta Smelt Monitoring (EDSM):

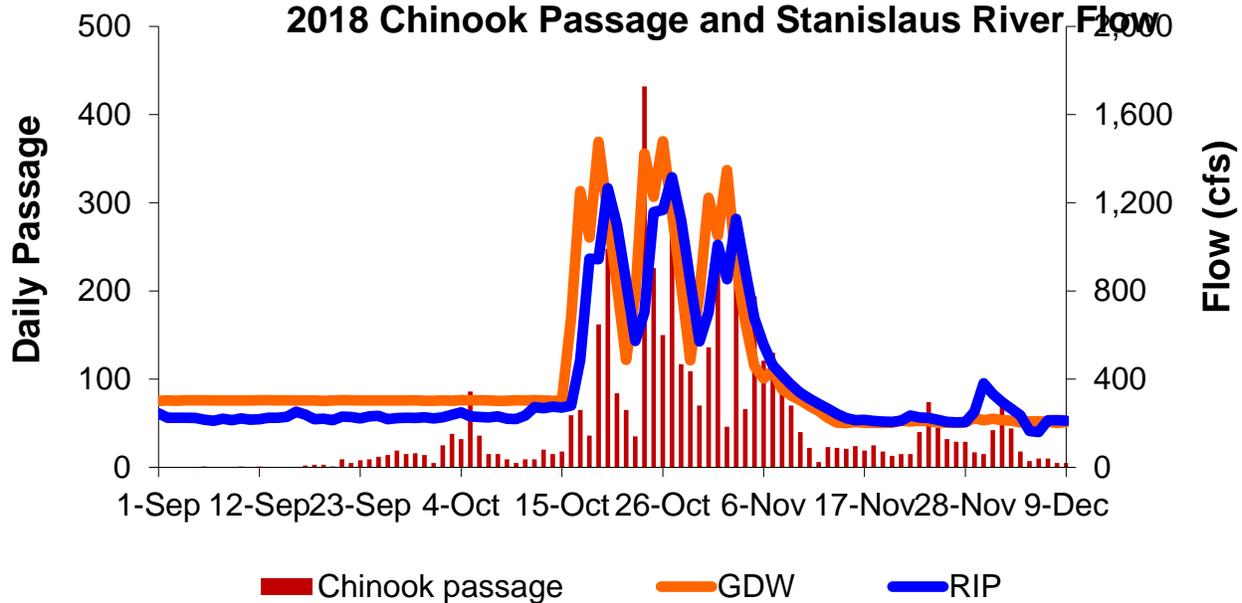
No salmonids were caught in any region of the EDSM sampling.

CDFW carcass surveys

- **San Joaquin River tributaries:** Chinook salmon carcass surveys, with incidental redd counts, began the week of 10/1/18 on the Merced River, Tuolumne River, and Stanislaus River. CDFW has completed the ninth week of surveys. No data were collected this week.
- **American River:** Chinook salmon carcass surveys began on Monday, 10/15/18. The survey area is from Nimbus Dam to Watt Avenue. The Nimbus Basin was closed to all fishing on 3/1, and Chinook salmon spawning is being monitored in this area. From 12/3 to 12/7, 3,252 total fish were observed between Nimbus Dam and the Fair Oaks Bridge (647 at Nimbus Basin and 2,075 at the weir). 222 of 1,040 female carcasses observed were unspawned, 183 were partially spawned, 545 were spawned, and 90 were unknown due to deteriorated condition. Water temperatures in the survey reaches were a mean of 54.1°F at the farthest point upstream at the Hazel Avenue Bridge. New seasonal operations of Nimbus Dam began on 11/1, and water temperatures decreased in the downstream reaches below the Hazel Avenue Bridge. The Nimbus Fish Hatchery started spawning fish on 11/2.

Stanislaus River weir

Monitoring at the weir near Riverbank (for upstream passage of adult salmonids) began on 9/5/18. Last week (12/3/18 – 12/9/18); 99 adult fall-run Chinook salmon and 0 steelhead were observed passing upstream of the weir. The cumulative net upstream passage through 12/9/18 is 4,711 Chinook salmon (25% were ad-clipped, indicating a verifiable hatchery origin; hatcheries ad-clip 25% of their production fall-run Chinook salmon), and 21 steelhead (data provided by FISHBIO in their 12/10/18 Stanislaus Weir Update). Twelve of the steelhead passing the weir were greater than 16 inches. Of these 12 fish, 4 were ad-clipped, indicating a hatchery origin and 8 were unclipped, indicating a natural origin.



Acoustic-tagged green sturgeon

CDFW has acoustic-tagged 29 juvenile sturgeon (28 green sturgeon and 1 white sturgeon) captured between 7/24/18 and 10/31/18 near Sherman Lake on the Sacramento River (western Delta). Fork lengths of these fish range between 42 cm and 94 cm. No updated data were available this week.

Other Surveys

The following fish hatchery spawning data are provided to inform DOSS members of potential hatchery influence on catch numbers at monitoring locations. Data from additional hatchery spawning programs and other carcass surveys may be provided in the future as they become available to DOSS.

- **Feather River Fish Hatchery Spawning**
No updates were provided for this week’s DOSS call.
- **Mokelumne River Fish Hatchery**
No updates were provided for this week’s DOSS call.

Agenda Item 6.

Fish Monitoring: Salvage

Griffiths (CDFW) provided a salvage summary. For the period of 12/3/18 to 12/9/18, 1 unclipped late-fall-run Chinook salmon was observed at the CVP, with an expanded salvage of 4 fish; the first Chinook of the year. One adipose clipped steelhead at the CVP and 1 unclipped steelhead at the SWP were observed, both expanded to a weekly salvage of 4 fish. Both steelhead were above 400 mm, so likely “half pounders” (not juveniles). No smelt were salvaged at either facility. No sturgeon were salvaged. A brief shutdown occurred at the Tracy Fish Collection

Facility to clean weeds out of the secondary channel. Exports continued throughout that shutdown.

DOSS Weekly Salvage Update

Reporting Period: December 3-December 9, 2018

Prepared by Bob Fujimura on December 10, 2018 16:10

Preliminary Results -Subject to Revision

Criteria	3-Dec	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	9-Dec	Trend	
Loss Densities									
Wild older juvenile CS	0	0.14	0	0	0	0	0	↗	0.02
Wild steelhead	0	0	0	0.97	0	0	0	↗	0.14
Exports									
SWP daily export	7,758	11,093	11,131	9,976	8,913	9,122	7,201	↗	9,313
CVP daily export	8,364	7,989	7,910	7,962	7,951	7,938	7,931	↗	8,006
SWP reduced counts	0	0	0	0	0	0	0		
CVP reduced counts	0	0	0	0.08	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 TFCF salvage outage 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	4	3	↗	4	3
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
Total	4	3		4	3
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	→	0	0
Total	0	0		0	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	4	17	↗	4	17
Hatchery	4	3	↗	4	3
Total	8	20		8	20

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

Agenda Item 7.

Winter-run JPE and fish loss density triggers

Stuart (NMFS) led a discussion regarding developing a preliminary JPE estimate and the fish loss density triggers required under RPA Action IV.2.3. Using information from the RBDD RSTs 11/19-12/2/18 biweekly report, the estimated winter-run Chinook population that has passed this location is 1,077,267 with 45.9% survival, with approximately 494,500 fish reaching the Delta. The first trigger would be $4,945/2000 = 2.32$, and the second trigger $4,945/1000 = 4.95$ are less than the minimums, which are 2.5 and 5.0 fish/TAF. DOSS agreed that the estimated fish loss density triggers to be used starting 1/1/19, are 2.5 fish per thousand acre feet (TAF) for the first trigger, and 5.0 fish/TAF for the second trigger. The estimated loss density values were slightly below the minimum trigger values. Reece (DWR) concurred that his estimates were very similar to these. Stuart will draft a document providing this recommendation to be included in the DOSS notes later this month, but before 1/1/19.

Buttermore (Reclamation) provided an update on the rapid genetic protocol implementation for this year. The rapid genetic protocol will be implemented starting 12/17/18. Biweekly reporting will start on or around 12/31/18 with the intent that results will be discussed on the DOSS calls. Fish tissue samples from RBDD sampling collected this year, and previous samples from the salvaged fish from the Projects from previous years will be analyzed in batches to maximize cost efficiency.

Agenda Item 8.

DOSS Estimates of Fish Distribution

DOSS estimates of the current distribution of listed Chinook salmon 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>Young-of-year (YOY) winter-run Chinook salmon</i>	60-70% (last week: 91-96%)	30-40% (last week: 4-9%)	0% (last week: same)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	98%	2%	0%

Rationale for distribution

Wild winter-run Chinook:

149 wild winter-run Chinook salmon were observed at the GCID RST, 16 at Tisdale, 119 at Knights Landing, 65 at the beach seines, and 8 at Sacramento trawl this past week. Since a large number of winter-run were observed at monitoring locations upstream and within the Delta, DOSS estimates that 30-40 percent of wild winter-run Chinook salmon population has migrated into the Delta. Since no winter-run were observed at Chipps Island, no wild winter-run Chinook salmon are estimated to have exited the Delta.

Wild spring-run Chinook:

3 wild spring-run Chinook salmon were observed at the GCID, 6 at Knights Landing, 7 at the beach seines, and 2 at Sacramento trawl. Since some spring-run were observed at monitoring locations upstream and within the Delta, DOSS estimates that 2 percent of the population has entered the delta.

Agenda Item 9.

DOSS Advice to WOMT and NMFS: None

However, DOSS is providing notification to NMFS and WOMT that there have been increased observations of listed fish entering the Delta from upriver at the Tisdale and Knights Landing RSTs, the Sacramento area beach seines, and the Sacramento trawl. DCC gates are closed and exports are expected to decrease over the course of the next week on the descending limb of the hydrograph. However, the E:I ratio is currently still 54% for the 3-day average but should drop to about 45% over the next few days. There is still a risk of entrainment at the CVP and SWP with the negative OMR levels of -6,600 to -7,500 cfs and fish being in the Delta region.

Agenda Item 10.

Next Meeting: The next DOSS conference call will be on **12/18/18 at 9am.**