

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**Conference call: 12/18/2018 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](http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html).

**CDFW:** Ken Kundargi, Duane Linander, Jason Julienne, Kyle Griffiths

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

**NMFS:** Kristin Begun

**Reclamation:** Elissa Buttermore, Town Burgess, Tom Patton

**SWRCB:** 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](http://www.baydeltalive.com/djfmj))
3. Current Operations
4. Smelt Working Group
5. Fish Monitoring: RSTs/trawls/seines
6. Fish Monitoring: Salvage
7. DOSS Estimates of Fish Distribution
8. DOSS advice
9. 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)<sup>1</sup>:**

- 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 flow) has been exceeded at either the Deer Creek gage at Vina (DCV), or the Mill Creek

---

<sup>1</sup> 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](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.

gage at Los Molinos (MLM). Over the past week (12/11/18-12/17/18), the First Alert was triggered every day based on Mill Creek and Deer Creek flows greater than 95 cfs, and change in mean daily flow >50% on 12/15 and 12/17. 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
12/11/2018	116	0%	99	0%
12/12/2018	116	0%	99	0%
12/13/2018	117	1%	100	1%
12/14/2018	117	0%	101	1%
12/15/2018	188	61%	175	73%
12/16/2018	250	33%	250	44%
12/17/2018	876	250%	863	244%

- 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)
12/11/2018	4,740	49.8
12/12/2018	4,553	49.8
12/13/2018	4,465	49.0
12/14/2018	4,439	50.0
12/15/2018	4,469	50.1
12/16/2018	4,581	50.2
12/17/2018	5,372	50.9

\* Knights Landing temperature was not available at the time of the DOSS call, but is assumed to be below 56.3°F.

**Action IV.1.2<sup>2</sup> (DCC gate operations):**

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

**Action IV.3<sup>3</sup> (Reduce likelihood of entrainment or salvage at the export facilities, including alert that indicates that export operations may need to be altered):**

<sup>2</sup> 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](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf)

<sup>3</sup> 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](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 (12/18/18)**

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	2,000*	Jones Pumping Plant	3,500**
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	1,750	American - Nimbus	1,800
		Sacramento - Keswick	4,000
		Stanislaus - Goodwin	200
		Trinity - Lewiston	300
<b>Reservoir Storage (in TAF)</b>			
San Luis (SWP)	809	San Luis (CVP)	540
Oroville	1,700	Shasta	2,210
New Melones	1,776	Folsom	320
<b>Delta Operations</b>			
DCC	Closed	Sacramento River at Freeport (cfs)	12,500***
Outflow Index (cfs)	8,124	San Joaquin River at Vernalis (cfs)	1,285
E:I	39% (14-day avg.)	X2	>81 km

\* Exports at SWP will increase tomorrow (12/19) to 4,000 cfs, and may increase to 5,000 cfs after that.

\*\* Exports at CVP will increase tomorrow (12/19) to 4,200 cfs.

\*\*\* Sacramento River flows at Freeport were 12,500 cfs yesterday (12/17) and will potentially be in the 24,000 cfs range today.

Factors controlling Delta exports:

- 12/11-12/18: salinity management

Approximate OMR as of 12/10/18:

	USGS gauges (cfs)*	Index (cfs)
Daily	-6,820	-6,700
5-day	-7,100	-7,300
14-day	-5,600	-6,100

\* OBI (Old River at Bacon Island) station has been down the past couple of days.

Approximate OMR as of 12/17/18:

	Index (cfs)
Daily	-5,000
5-day	-5,000

14-day	-6,400
--------	--------

Weather Forecast

The weather forecast predicts light precipitation over the northern Central Valley today, and then dry weather for the next couple of days. Another system is expected to pass through late Thursday to Friday with light precipitation amounts expected. A Pacific storm has the potential to bring precipitation into the weekend as well as early next week. Wet conditions are expected on Christmas Eve across the region.

**Agenda Item 4.**  
**Smelt Working Group**

The Smelt Working Group met on Monday, 12/17/18.

The Smelt Working Group (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 SWG expressed concern regarding the highly negative OMR flows expected towards the end of the week, with the concern that any Delta Smelt present in the lower San Joaquin River would be entrained while individuals in the lower Sacramento River could also be drawn south by high export rates. But as the field surveys have not detected any Delta Smelt in the lower San Joaquin River, the SWG concluded that the risk for Delta Smelt entrainment is low.

The SWG cited several factors that could signal the need for further discussion that would also apply to next week if a federal government shutdown precludes the SWG from meeting. The factors are as follows: (1) elevated turbidity levels at PPT, HOL, VCU or other relevant stations; (2) salvage of delta smelt at the project facilities; (3) survey detections of delta smelt in the south and/or central Delta.

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 SWG plans to meet again on Monday, 12/24 at 10am.

**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 <sup>A</sup>	Tisdale RST <sup>B</sup>	Knights Landing RST <sup>C</sup>	Beach Seines <sup>D</sup>	Sacramento Trawl <sup>D</sup>	Chippis Is. Midwater Trawl <sup>D</sup>	Mossdale Kodiak Trawl <sup>D</sup>
Sample Date	12/11-12/16	12/10-12/14	12/9-12/16	12/10-12/14	12/9-12/11, 12/13, 12/14	12/9-12/11, 12/13, 12/14	12/10, 12/12, 12/14
FR Chinook	1 juvenile						

<b>SR Chinook</b>				1			
<b>WR Chinook</b>	22 juveniles		1	171			
<b>LFR Chinook</b>	2 juveniles 10 smolts			2		9	
<b>Chinook (ad-clip)</b>	165 LFR smolts	1 LFR	1 LFR			10	
<b>Steelhead (wild)</b>							
<b>Steelhead (ad-clip)</b>							
<b>Green Sturgeon</b>							
<b>Flows (avg. cfs)</b>	763	4,434	4,588				
<b>W. Temp. (avg. °F)</b>	52.37	46	49.7				
<b>Turbidity (avg. NTU)</b>	4.17	11.2	8.92				

<sup>A</sup> The GCID RST was raised on 12/16 due to predicted high flows on 12/17.

<sup>B</sup> Tisdale RST sampling period was from 12/10 at 9:30 am to 12/14 at 8:30 am. RST cone sampling efforts was reduced to 50% on 12/10-12/12 due to previous high catch.

<sup>C</sup> Knights Landing RST sampling period was from 12/9 at 11:00 am to 12/16 at 11:16 am.

<sup>D</sup> Data reported in the 12/9 to 12/15 DJFMP sampling summary.

### Enhanced Delta Smelt Monitoring (EDSM):

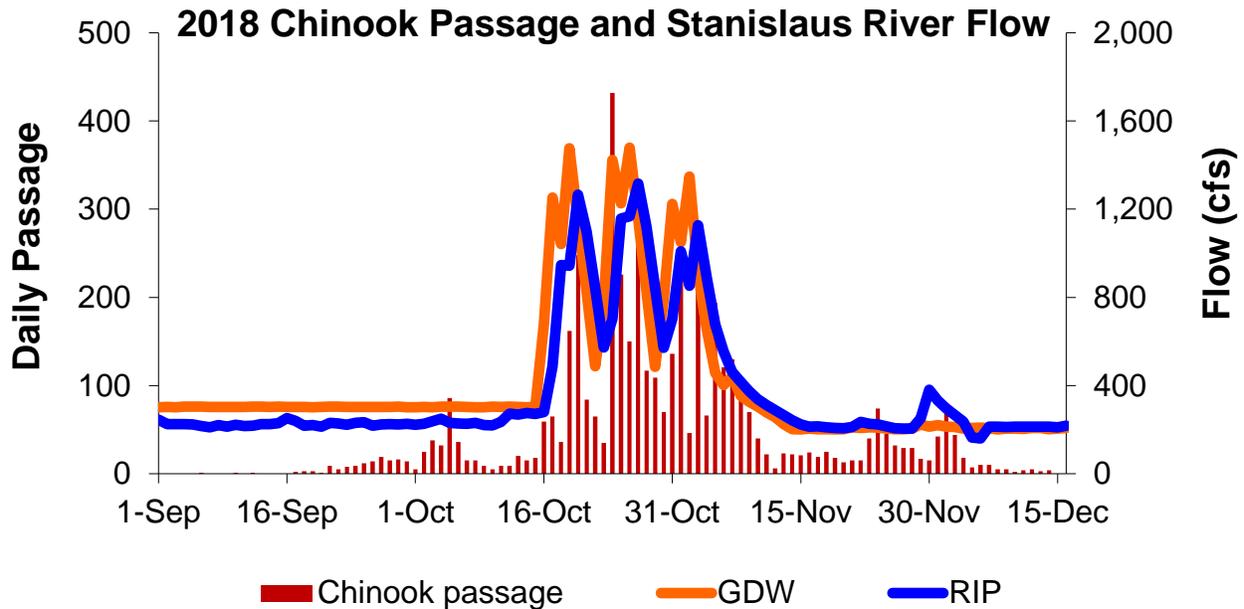
No salmonids were caught in any region of the EDSM sampling.

### 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 12/10 to 12/14, 2,396 total fish were observed between Nimbus Dam and the Fair Oaks Bridge (649 at Nimbus Basin, 667 at the weir, 760 at section 1A, 200 at section 1B, 110 at section 2, and 10 at section 3). 58 of 340 female carcasses observed were unspawned, 40 were partially spawned, 190 were spawned, and 48 were unknown due to deteriorated condition. Water temperatures in the survey reaches were a mean of 52.7°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 (12/10/18 – 12/16/18); 18 adult fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and 1 steelhead (*O. mykiss*) were observed passing upstream of the weir. The cumulative net upstream passage through 12/16/18 is 4,729 Chinook salmon (26% were ad-clipped, indicating a verifiable hatchery origin; hatcheries ad-clip 25% of their production fall-run Chinook salmon), and 22 steelhead (data provided by FISHBIO in their 12/17/18 Stanislaus Weir Update). Thirteen of the steelhead passing the weir were greater than 16 inches. Of these 13 fish, 4 were ad-clipped indicating a hatchery origin, and 9 were unclipped indicating a natural origin.



### Acoustic-tagged green sturgeon

CDFW has acoustic-tagged 35 juvenile sturgeon (30 green sturgeon and 5 white sturgeon) captured between 7/24/18 and 12/13/18 near Sherman Lake on the Sacramento River (western Delta). Fork lengths of these fish range between 39 cm and 94 cm. 26 individuals have been detected (near the Sherman Lake tagging location) between 8/14/18 and 12/13/18. One additional green sturgeon was tagged in the past week on 12/13/18.

### 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**

- On 12/11, the Mokelumne River Fish Hatchery satisfied its egg take goal this season of 6.82 million fall-run Chinook salmon eggs. To gather these eggs, 6,903 fish (4655 adults, 2248 grilse) were allowed to enter the hatchery. The last spawner count provided by EBMUD was 17,290 (11,322 adults, 5,968 grilse) over Woodbridge, which leaves 10,387 spawners in-river.

- Steelhead egg take initiated this week at the Mokelumne River Fish Hatchery with a couple of batches of fertilized eggs. The seasonal egg take goal is 400,000; this number will be achievable using fish entering the hatchery this season along with broodstock already at the hatchery held over from last season.

**Agenda Item 6.**

**Fish Monitoring: Salvage**

Griffiths (CDFW) provided a salvage summary. No listed salmonids or green sturgeon were observed at either the CVP or SWP during the reporting period of 12/10 to 12/16. No outages or reduced counts occurred during this period. This morning the CVP facility did salvage a 155mm ad-clipped Chinook salmon which was coded-wire-tagged.

## DOSS Weekly Salvage Update

Reporting Period: December 10-December 16, 2018

Prepared by Kyle Griffiths on December 17, 2018 16:16

Preliminary Results -Subject to Revision

Criteria	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0	0	0	0	0	↘	0.00
Wild steelhead	0	0	0	0	0	0	0	↘	0.00
<b>Exports</b>									
SWP daily export	7,408	7,407	5,128	3,601	2,882	3,704	4,017	↘	4,878
CVP daily export	7,949	8,118	7,021	7,030	7,043	6,966	7,010	↘	7,305
SWP reduced counts	0	0	0	0	0	0	0		
CVP reduced counts	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 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
<b>Wild</b>					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	↘	4	3
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
<b>Total</b>	<b>0</b>	<b>0</b>		<b>4</b>	<b>3</b>
<b>Hatchery</b>					
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
<b>Total</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>

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	↘	4	17
Hatchery	0	0	↘	4	3
<b>Total</b>	<b>0</b>	<b>0</b>		<b>8</b>	<b>20</b>

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

**Agenda Item 7.**

**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.

<b>Location</b>	<b>Yet to Enter Delta (Upstream of Knights Landing)</b>	<b>In the Delta</b>	<b>Exited the Delta (Past Chippis Island)</b>
<i>Young-of-year (YOY) winter-run Chinook salmon</i>	50-60% (last week: 60-70%)	40-50% (last week: 30-40%)	0% (last week: same)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	96% (last week: 98%)	4% (last week: 2%)	0% (last week: same)

**Rationale for distribution**

**Wild winter-run Chinook:**

22 wild winter-run Chinook salmon were observed at the GCID RST, 1 at Knights Landing, and 171 at the beach seines this past week. Since winter-run were observed at monitoring locations upstream and within the Delta, DOSS estimates that 10 percent of wild winter-run Chinook salmon population has migrated into the Delta. Since no winter-run were observed at Chippis Island, no wild winter-run Chinook salmon are estimated to have exited the Delta.

**Wild spring-run Chinook:**

1 wild spring-run Chinook salmon was observed at the beach seines and at no other monitoring locations. Since 1 spring-run was observed within the Delta, and due to environmental conditions and timing, DOSS estimates that an additional 2 percent of the population has entered the delta.

**Agenda Item 8.**

**DOSS Advice to WOMT and NMFS: None**

However, DOSS is providing notification to NMFS and WOMT that exports are expected to increase and OMR is potentially increasing (i.e., more negative), therefore there is potential for winter-run Chinook salmon, spring-run Chinook salmon surrogates, and adipose fin clipped late-fall-run Chinook salmon to be pulled toward the interior Delta and potential for salvage to increase. We should be observant of potential triggers as we move into this weekend until the next DOSS call on 12/26.

**Agenda Item 9.**

**Next Meeting:** The next DOSS conference call will be on **12/26/18 at 9am.**