

## **Delta Operations for Salmonids and Sturgeon (DOSS) Group**

**Conference call: 11/12/2019 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 here: [CCV Water Operations DOSS page](#).

**CDFW:** Jason Julienne, Ken Kundargi, Duane Linander, Sheena Holley, Kyle Griffiths, Jonathan Williams

**DWR:** Bryant Giorgi, Farida Islam, Mike Ford

**NMFS:** Jeff Stuart, Kristin Begun

**Reclamation:** Elissa Buttermore, Tom Patton

**SWRCB:** Craig Williams, Michael Macon

**USFWS:** Felipe Carrillo, Craig Anderson

### **Agenda Items**

1. Agenda review and introductions
2. RPA Implementation review (For the DOSS Dashboard, click on the "Triggers & Indices" tab at: [Bay Delta Live](#))
3. Current Operations
4. Fish Monitoring: RSTs/trawls/seines
5. Fish Monitoring: Salvage
6. DOSS Estimates of Fish Distribution
7. Risk of Entrainment
8. Other Topics
9. DOSS Advice
10. Next DOSS Meeting

### **Agenda Item 2.**

#### **RPA Implementation Review**

#### **Delta RPA Actions affecting operations during November:**

**Action IV.1.1 Alerts that indicate the Delta Cross Channel (DCC) gate operations may be triggered soon<sup>1</sup>:**

- The First Alert has two components. Capture of yearling-sized spring-run Chinook salmon at the mouths of natal tributaries between October and April indicates that emigration from the tributaries has started or is occurring. As an environmental surrogate to the capture of the yearling-sized spring-run Chinook salmon, which are difficult to capture in the rotary screw traps, tributary flow increases are used to signal conditions

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<sup>1</sup> For details, see pages 60-61 in Enclosure 2 of the [2011 Amendments to the 2009 RPA document](#). 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.

conducive to emigration. The First Alert is triggered if either the first component (greater than 95 cfs flow threshold) or second component (greater than 50% change in mean daily flow) are exceeded. The First Alert was triggered (yellow highlights) this past week due to flows greater than 95 cfs.

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
11/5/2019	122	-1%	114	-1%
11/6/2019	122	0%	114	0%
11/7/2019	122	0%	113	0%
11/8/2019	121	-1%	113	-1%
11/9/2019	121	0%	113	0%
11/10/2019	121	0%	113	0%
11/11/2019	121	0%	113	0%

- The Second Alert is triggered only if **both** Wilkins Slough flows are greater than 7,500 cfs and Knights Landing temperature is less than 56.3°F. The second alert is in effect beginning 10/1, and has not been triggered.

Date	Wilkins Slough (WLK)	Knights Landing (KL)
	Mean Daily Flow (cfs)	Daily water temperature (°F)
11/5/2019	4,045	53.4
11/6/2019	4,092	54.4
11/7/2019	4,081	55.1
11/8/2019	4,043	55.4
11/9/2019	4,102	55.8
11/10/2019	4,039	56.2
11/11/2019	4,033	56.5

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

- None of the criteria requiring DCC gate closure were met this past week.

**Agenda Item 3.**

**Current Operations (11/12/2019)**

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	2,200*	Jones Pumping Plant	800** (1 unit)
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	2,450	American - Nimbus	2,700
		Sacramento - Keswick	5,000

<sup>2</sup> For details, see pages 62-66 in Enclosure 2 of the [2011 Amendments to the 2009 RPA document](#).

		Stanislaus - Goodwin	500***
		Trinity - Lewiston	300
<b>Reservoir Storage (in TAF)</b>			
San Luis (SWP)	590	San Luis (CVP)	290
Oroville	1,979	Shasta	3,227
New Melones	1,995	Folsom	559
<b>Delta Operations</b>			
DCC	Open	Sacramento River at Freeport (cfs)	9,600
Outflow Index (cfs)	7,000	San Joaquin River at Vernalis (cfs)	1,520
E:I	23% (3-day avg.)	X2	>81 km

\*SWP exports will increase to ~5,000 cfs on 11/14. On 11/18 to 11/21 SWP export will reduce to ~0 cfs for maintenance.

\*\*CVP exports will remain no higher than 1 unit on 11/19 to 11/20 for bathymetric surveys in the inlet channel and louvre replacement.

\*\*\*Releases from Goodwin Dam are slightly above base flows (300 cfs) to reduce water volume in New Melones Reservoir prior to this winter.

Factors controlling Delta exports:

- 11/4/2019 – 11/12/2019 Delta outflow as a function of Delta inflow (outflow equal to 50% of inflow) under the USFWS’ Delta Smelt biological opinion RPA November Fall X2 action obligations.

Approximate OMRs as of 11/9/2019:

	USGS gauges (cfs)*	Index (cfs)
Daily	-2,500	-2,500
5-day	-2,700	-2,400
14-day	N/A	-1,700

\* Issues with USGS OBI gage.

Approximate OMRs as of 11/11/2019:

	Index (cfs)
Daily	-2,600
5-day	-2,300
14-day	-2,000

Weather Forecast

The Sacramento area weather forecast predicts dry weather with average daily temperatures in the 70s and warming this weekend. No precipitation is anticipated over the next week. High temperatures will be around 5-15°F above average for mid-November.

**Agenda Item 4.**

**Fish Monitoring:** The following table presents fish monitoring data summarized over the past week.

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>
<b>Sample Date</b>	11/5-11/11	11/4-11/11	11/4-11/11	11/4-11/8	11/4, 11/6, 11/8	11/4, 11/6, 11/8	11/4, 11/6, 11/8
<b>FR Chinook</b>	2 smolts						
<b>SR Chinook</b>	4 juveniles		2	1			
<b>WR Chinook</b>	46 juveniles	2					
<b>LFR Chinook</b>	4 juveniles 4 smolts						
<b>Chinook (ad-clip)</b>							
<b>Steelhead (wild)</b>							
<b>Steelhead (ad-clip)</b>							
<b>Green Sturgeon</b>							
<b>Flows (avg. cfs)</b>	414.5	4,337	4,052				
<b>W. Temp. (avg. °F)</b>	55.0	55	55.3				
<b>Turbidity (avg. NTU)</b>	7.6	4.4	4.32				

<sup>A</sup> GCID was sampling at half cone on 11/5 to 11/11.

<sup>B</sup> Tisdale RST sampling period was from 11/4 at 10:30 am to 11/11 at 10:30 am.

<sup>C</sup> Knights Landing RST sampling period was from 11/4 at 10:45 am to 11/11 at 11:15 am.

<sup>D</sup> Datcall data were received after the DOSS call. Data reported in the 11/3 to 11/9 DJFMP sampling summary.

### **Juvenile Green Sturgeon Monitoring Summary for DOSS; 11/12/2019 Sampling Season Summary**

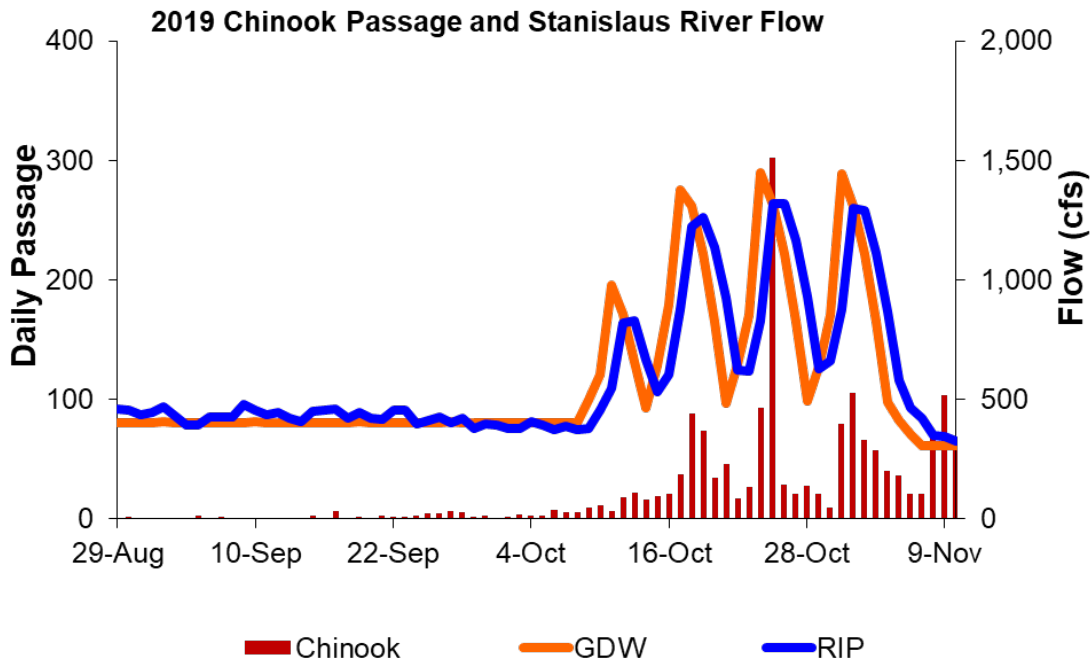
- One juvenile sturgeon tagged on 11/5/2019 at sampling site northwest of Sherman Lake (2018 brood year; 53 cm FL).
- One juvenile green sturgeon tagged on 10/3/2019 was detected on 11/5/2019 at sampling site northwest of Sherman Lake.
- One juvenile white sturgeon tagged on 8/6/2019 was detected on 11/5/2019 at sampling site northwest of Sherman Lake.
- No detections of juvenile green sturgeon or juvenile white sturgeon tagged during the 2018 sampling season at sampling site of northwest of Sherman Lake.\*
- Five adult white sturgeon detected at sampling site northwest of Sherman Lake on 11/3/2019; 1 tagged by CDFW during 5/4/2017 Fremont Weir fish rescue; 2 tagged by

USFWS Lodi: 1 on 3/11/2014 and 1 on 3/31/2016; 2 tagged by UCD Biotelemetry Lab in 2014 (dates unknown).

\* Please refer to the 10/8/2019 DOSS notes for a summary of the 2018 sampling season summary.

### Stanislaus River Weir

Monitoring at the weir near Riverbank (for upstream passage of adult salmonids) began on 8/29/2019. Over the last week (11/4-11/10), 356 adult fall-run Chinook salmon and 8 *O. mykiss* were observed passing upstream of the weir. Three *O. mykiss* were adipose fin clipped and 2 were greater than 16 inches. The 3 adipose fin clipped hatchery fish are likely anadromous, i.e. a steelhead, rather than a resident adult rainbow trout since no stocking of hatchery fish occurs in the Stanislaus River). The cumulative net upstream passage through 11/10/2019 is 1,673 Chinook salmon (21% were adipose fin clipped, indicating a hatchery origin), and 26 steelhead (data provided by FISHBIO in their 11/11/2019 Stanislaus Weir Update). 13 of 26 total *O. mykiss* this season were unclipped and 13 were clipped, indicating hatchery origin. 13 of the 26 fish >16 inches in length were adipose fin clipped.



### CDFW Lower American River Carcass Survey

Chinook salmon carcass surveys began the week of 10/15/2019. The survey area includes Nimbus Dam to Watt Avenue. A total of 125 carcasses were observed between the survey period of 11/4/2019 to 11/8/2019: 63 females (33 unclipped and 30 ad-clipped), 48 males (14 unclipped and 34 ad-clipped), and 14 were unidentifiable due to deteriorated conditions. The 63 female carcasses were evaluated for spawn conditions: 38 pre-spawn mortalities (60%), 8 partially spawned (13%), 16 spawned (25%), and 1 unable to be determined. Water temperatures at Hazel Avenue during the survey period ranged from 57.2°F to 58.2°F with a mean of 57.6°F.

**Agenda Item 5.**

**Fish Monitoring: Salvage**

Griffiths (CDFW) provided the following salvage summary for the period of 11/4/2019 to 11/10/2019.

No listed fish species were observed this week.

**Operations:**

SWP is experiencing heavy vegetation; all counts were reduced over the past week.

No outages occurred at CVP.

## DOSS Weekly Salvage Update

Reporting Period: November 4-November 10, 2019  
 Prepared by Kyle Griffiths on November 13, 2019 8:36  
 Preliminary Results -Subject to Revision

Criteria	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	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	3,627	2,135	3,440	5,025	3,795	2,928	3,565	↗	3,502
CVP daily export	5,480	5,508	1,748	1,738	1,737	1,738	1,737	↗	2,812
SWP reduced counts	100%	100%	100%	100%	100%	100%	100%		
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	→	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>
<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	→	0	0
Hatchery	0	0	→	4	3
<b>Total</b>	<b>0</b>	<b>0</b>		<b>4</b>	<b>3</b>

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

**Agenda Item 6.**

**DOSS Estimates of Fish Distribution**

DOSS estimates of the current distribution of listed Chinook salmon and steelhead, 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>	94% (Last week: 95%)	6% (Last week: 5%)	0% (Last week: 0%)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	99% (Last week: 100%)	1% (Last week: 0%)	0% (Last week: 0%)

**Rationale for changes in distribution**

Wild winter-run Chinook salmon:

Over 3.6 million Brood Year 2019 (BY19) winter-run Chinook salmon have passed RBDD this year. Approximately 5,100 BY19 winter-run Chinook salmon have been captured by the GCID RSTs since August 1, 2019, and 62 BY 19 winter-run Chinook salmon have been captured at the Knights Landing RSTs since 9/5/2019. In the last week, 46 winter-run Chinook salmon were captured at GCID and 2 at Tisdale RSTs. No winter-run Chinook salmon were observed at the other monitoring locations in the Delta over this past week. Continued observations of small numbers of winter-run Chinook salmon at weekly monitoring locations in the lower Sacramento and upper Delta over the past several weeks indicates they are starting to migrate into the Delta.

Wild spring-run Chinook salmon:

Four length-at-date spring-run Chinook salmon were observed at the GCID RSTs this past week and 2 at the Knights Landing RSTs. An additional spring-run Chinook salmon sized fish was captured at Discovery Park in a beach seine. These fish are assumed to be recently emerged young-of-year spring-run Chinook salmon based on the reported size ranges (i.e., 34 to 36 mm fork lengths). DOSS notes that no precipitation events have occurred this water year that would trigger young-of-year spring-run Chinook salmon outmigration at this time. Tissue samples were taken from fish captured at Knights Landing earlier in the season for genetic verification of run identity, but the results are not yet available. DOSS assumes that the results would indicate that these fish are genetic spring-run Chinook salmon, and therefore, DOSS estimates that 1% of the spring-run Chinook salmon population has entered the Delta.

**Agenda Item 7.**

**Risk of Entrainment**

Risk of entrainment of listed salmonids into Central and South Delta:

The risk of entrainment to fish that are present in the lower Sacramento River and upper Delta waterways is low. DCC gates are open and Sacramento River inflows to the Delta are similar to last week. Exports at SWP will increase on 11/14/2019 and will decrease down to approximately 0 cfs on 11/18/2019 to 11/21/2019. The changing hydrodynamics (i.e., lower Sacramento River



inflow) is expected to result in increasing tidal effects near the Georgiana Sough and the DCC junctions mid-week. Temporarily increasing tidal effects redirects flows into these junctions from both the upstream and downstream directions of the Sacramento River on the flood tide. Individual fish in these locations have a higher risk of entrainment into the Delta interior. If Sacramento River inflow continues to decrease, entrainment risk will increase. Currently, Delta outflow is approximately 8,300 cfs. Sacramento inflow is about 7,000 cfs.

However, the overall risk of juvenile winter-run Chinook salmon entrainment into the interior Delta is considered to be low as a percentage of the population. Some DOSS members, however, expressed concern that with the high population estimate of juvenile winter-run Chinook salmon this year, the open DCC gate may allow more absolute numbers of fish into the interior Delta, as juveniles have already been detected in the upper Delta (Knights Landing and Sacramento Beach seines). These early fish may represent the progeny of earlier spawning adults. Earlier RST monitoring are likely seeing the fish that were typically present in the system early in the season but not accounted for due to the lack of early monitoring in previous years, and higher population size allows for better detection probability.

#### Export Risk:

The overall export risk is slightly higher than last week but still considered low, based on current fish distribution estimates. However, there will be an increasing risk of entrainment into the CVP and SWP facilities mid-week. OMR flows will be more negative with increased exports starting on 11/14/2019, and the percentage of Delta inflow exported will be increasing (currently 23% averaged over 3-days). San Joaquin River flows at Vernalis are approximately 1,500 cfs, but are expected to decrease as tributary flows are reduced for winter flows. Combined exports are currently approximately 3,000 cfs with a concurrent OMR flow of about -2,600 cfs. The current QWEST flows are about 2,800 cfs, indicating a positive outflow from the San Joaquin River past Jersey Point, but this is approximately half of last week's QWEST flow values. Fish in the vicinity of the exports' area of influence have an increased risk of entrainment due to increased exports this week.

#### Agenda Item 8.

##### Other Topics:

Buttermore (Reclamation) would like to postpone discussion of using the SacPAS entrainment risk models in evaluating our fish distribution estimates and risk assessments for a future DOSS meeting. She would like to organize a presentation of the STARS and Compass models to be available to the DOSS team.

Stuart (NMFS) discussed the plan for a preliminary winter-run Chinook salmon JPE and associated JPE-based fish density trigger. CDFW to provide estimate and assist with providing a preliminary JPE and fish density by the end of December. Kundargi (CDFW) can talk to Erica Meyers to determine when this year's JPE sub-team will convene. The minimum loss density triggers of 2.5 and 5 fish/TAF exported will not apply as part of OMR flow management because of the higher JPE.

Until Reclamation signs the NEPA Record of Decision for the reinitiation of consultation on long-term operations, the NMFS 2009 BiOp and RPA will continue to be in effect.

**Agenda Item 9.**

**DOSS Advice to WOMT and NMFS:**

None.

**Agenda Item 10.**

**Next Meeting:** The next DOSS conference call will be on **11/19/2019 at 9am.**