

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**Conference call: 11/26/2019 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 (CVP) and the State Water Project (SWP) 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, Kyle Griffiths, Jonathan Williams, Page Uttley

**DWR:** Bryant Giorgi, Mike Ford, Kevin Reece, Brittany Davis, Ian Uecker

**NMFS:** Jeff Stuart, Kristin Begun

**Reclamation:** Tom Patton, Suzanne Manugian, Towns Burgess, Elissa Buttermore

**SWRCB:** Michael Macon, Chris Carr

**USFWS:**

**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 conducive to emigration. The First Alert is triggered if either the first component (greater

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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.

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.

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
11/19/2019	121	1%	112	0%
11/20/2019	121	0%	112	0%
11/21/2019	120	-1%	112	-1%
11/22/2019	121	1%	111	0%
11/23/2019	121	0%	112	0%
11/24/2019	121	0%	112	0%
11/25/2019	120	-1%	111	-1%

- 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.

Wilkins Slough (WLK)		Knights Landing (KL)
Date	Mean Daily Flow (cfs)	Daily water temperature (°F)
11/19/2019	4,417	56.5
11/20/2019	4,437	56.0
11/21/2019	4,355	54.9
11/22/2019	4,438	54.1
11/23/2019	4,414	53.5
11/24/2019	4,423	53.0
11/25/2019	4,391	52.2

**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 (11/26/2019)**

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

SWP		CVP	
<b>Exports (cfs)</b>			
Banks Pumping Plant	4,500 <sup>A</sup>	Jones Pumping Plant	1,800 <sup>B</sup>
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	2,450	American - Nimbus	2,700 <sup>C</sup>
		Sacramento - Keswick	5,000
		Stanislaus - Goodwin	500 <sup>D</sup>
		Trinity - Lewiston	300
<b>Reservoir Storage (TAF)</b>			
San Luis (SWP)	596	San Luis (CVP)	257
Oroville	1,932	Shasta	3,203
New Melones	1,994	Folsom	508
<b>Delta Operations</b>			
DCC	Open <sup>E</sup>	Sacramento River at Freeport (cfs)	10,900
Outflow Index (cfs)	~4,600	San Joaquin River at Vernalis (cfs)	1,540
E:I	46% (3-day avg.)	X2	>81 km

<sup>A</sup> SWP exports are scheduled to increase by the weekend (11/30) in response to anticipated rainfall Tuesday through Thursday, up to 6,680 cfs.

<sup>B</sup> CVP exports are scheduled to increase up to 3,400 cfs next Monday (12/2).

<sup>C</sup> Nimbus releases are scheduled to decrease to 2,500 cfs on Sunday (12/1).

<sup>D</sup> Goodwin releases are scheduled to increase to 2,000 cfs on Sunday (12/1).

<sup>E</sup> DCC gates will be closed on Sunday (12/1) at 9:00 am.

Factors controlling Delta exports:

- 11/19/2019 – 11/26/2019 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 11/23/2019:

	USGS gauges (cfs)	Index (cfs)
Daily	-5,300	-5,200
5-day	-2,800	-3,100
14-day	-3,200	-3,600

Approximate OMRs as of 11/25/2019:

	Index (cfs)
Daily	-5,200
5-day	-4,900
14-day	-4,000

*Weather Forecast*

A winter storm system arrives today bringing heavy snow to the mountains this week and rain in the valley (~1/2-inch), with strong winds. Much cooler temperatures are expected this week. Another strong, cold winter storm is forecast to impact Northern California this weekend through early next week (precipitation >1 inch). Stockton may receive 1.5 inches.

**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>	11/19-11/24	11/15-11/25	11/18-11/25	11/18-11/22	11/18, 11/20, 11/22	11/18, 11/20, 11/22	11/18, 11/20, 11/22
<b>FR Chinook</b>							
<b>SR Chinook</b>	8 juveniles		1				
<b>WR Chinook</b>	820 juveniles						
<b>LFR Chinook</b>	28 juveniles 6 smolts					1	
<b>Chinook (ad-clip)</b>							
<b>Steelhead (wild)</b>							
<b>Steelhead (ad-clip)</b>							
<b>Green Sturgeon</b>							
<b>Flows (avg. cfs)</b>	662	4,610	4,413				
<b>W. Temp. (avg. °F)</b>	53.9	54.2	54.3				
<b>Turbidity (avg. NTU)</b>	6.6	3.8	5.63				

<sup>A</sup> GCID was sampling at half cone this past week.

<sup>B</sup> Tisdale RST sampling period was from 11/15 at 10:00 am to 11/25 at 9:30 am.

<sup>C</sup> Knights Landing RST sampling period was from 11/18 at 10:00 am to 11/25 at 10:15 am.

<sup>D</sup> Data reported in the 11/17 to 11/23 DJFMP sampling summary.

**Juvenile Green Sturgeon Monitoring Summary for DOSS; 11/26/2019  
Sampling Season Summary**

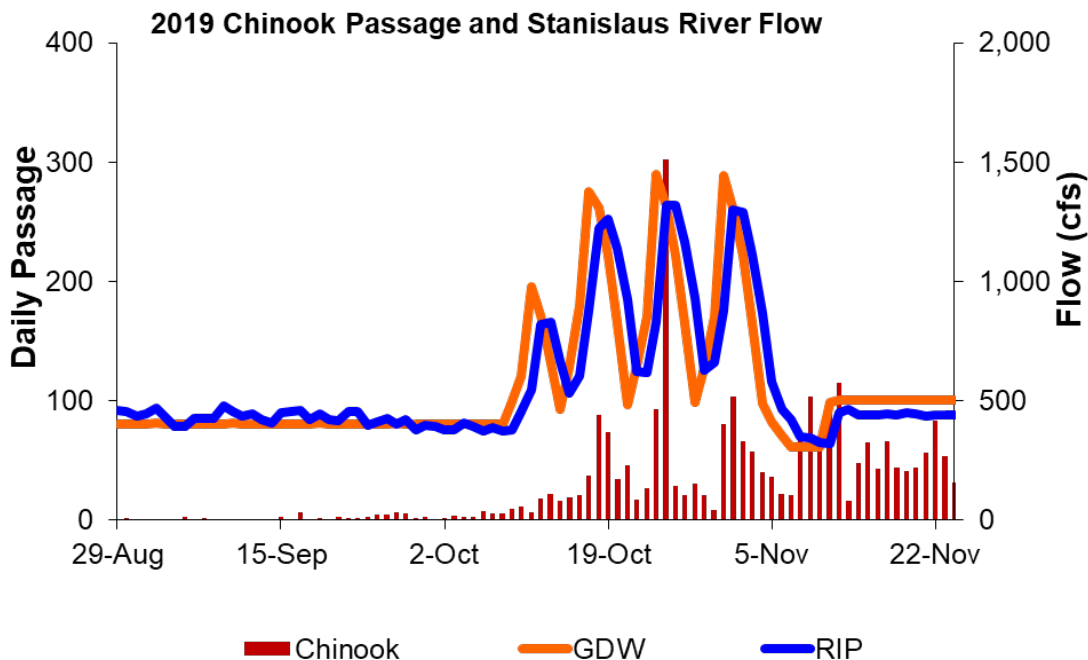
- No juvenile sturgeon were tagged on 11/19 at sampling site northwest of Sherman Lake.

- One juvenile green sturgeon tagged on 12/27/2018 was detected on 11/19/2019 at sampling site northwest of Sherman Lake (A69-1602-12231).
- One juvenile white sturgeon tagged on 8/6/2019 was detected on 11/19/2019 at sampling site northwest of Sherman Lake (A69-1602-12229).
- One adult white sturgeon tagged by UCD Biotelemetry Lab at an unknown location in March 2014 was detected at sampling site northwest of Sherman Lake on 11/19/2019 (A69-9001-25618).
- One adult white sturgeon tagged by UCD Biotelemetry Lab at an unknown location in September 2011 was detected at sampling site northwest of Sherman Lake on 11/19/2019 (A69-1303-56436).

\* 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 (11/18/2019-11/24/2019), 352 adult fall-run Chinook salmon and 1 *O. mykiss* were observed passing upstream of the weir. No *O. mykiss* were adipose fin clipped or greater than 16 inches (indicating that they are steelhead). The cumulative net upstream passage through 11/24/2019 is 2,475 Chinook salmon (20% were adipose fin clipped, indicating a hatchery origin), and 31 steelhead (data provided by FISHBIO in their 11/25/2019 Stanislaus Weir Update). 18 of 31 total *O. mykiss* this season were unclipped and 13 were clipped, indicating hatchery origin. 10 of the 15 fish >16 inches in length were adipose fin clipped.



### CDFW Lower American River Carcass Survey

Reporting for survey period 11/18/2019-11/22/2019:

- 572 observed carcasses
  - 207 females
    - 92 unclipped
    - 115 clipped
  - 229 males
    - 88 unclipped
    - 141 clipped
  - 141 carcasses too deteriorated to determine sex
  - 207 female carcasses evaluated for spawn condition
    - 65/207 (31%) prespawn mortalities
    - 24/207 (11%) partially spawned
    - 113/207 (55%) spawned
    - 5/207 (2%) too deteriorated to determine
- Temperatures at Hazel during the survey period\*:
  - Minimum: 56.5°F
  - Mean: 57.1°F
  - Maximum: 57.5°F.

\* Please note that the AHZ gauge reporting on CDEC has been reporting approximately a degree higher than the USGS gauge since the beginning of October so temperatures referred to here are actually approximately a degree higher in-river.

**Agenda Item 5.**

**Fish Monitoring: Salvage**

Griffiths (CDFW) provided the following salvage summary for the period of 11/18/2019-11/24/2019.

No listed fish species were observed this week.

*Operations:*

Operations at the SWP were shut down for the first 3 days of the week for maintenance. The SWP has been reducing every count to 10 minutes due to heavy vegetation this past week.

## DOSS Weekly Salvage Update

Reporting Period: November 18-November 24, 2019

Prepared by Kyle Griffiths on November 25, 16:42

Preliminary Results -Subject to Revision

Criteria	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-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	0	0	0	2,334	8,507	9,977	9,644		4,352
CVP daily export	5,276	2,539	1,674	6,881	6,894	1,860	1,835		3,851
SWP reduced counts	NS	NS	NS	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>	93% (Last week: 94%)	7% (Last week: 6%)	0% (Last week: same)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	98% (Last week: 99%)	2% (Last week: 1%)	0% (Last week: same)

**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. Over 6,000 BY19 winter-run Chinook salmon have been captured by the GCID RSTs since 8/1/2019, and 62 at the Knights Landing RSTs since 9/5/2019. In the last week, 820 length-at-date winter-run Chinook salmon were captured at GCID and at no other monitoring locations in the Delta. Since more winter-run Chinook salmon were observed at GCID in the upper Delta over the past week, DOSS estimates that an additional 1% has entered the Delta. Since the first rain of the season is forecasted today through Thursday and again over the weekend, increased river flows could trigger part of the winter-run population to migrate into the Delta over the next week.

*Wild spring-run Chinook salmon:*

Eight length-at-date spring-run Chinook salmon were observed at the GCID RSTs this past week, 1 at Knights Landing, and at no other monitoring locations. Since a few more spring-run Chinook salmon were observed this past week, DOSS estimates that an additional 1% of the spring-run Chinook salmon population has moved into the Delta. Since the first rain of the season is forecasted today through Thursday and again over the weekend, increased river flows could trigger part of the spring-run population to migrate into the Delta over the next week.

**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 higher than last week, but still considered low. Sacramento River inflows to the Delta are increased compared to last week (~11,000 cfs), and are expected to increase further with the upcoming rain events. Higher Sacramento River flows reduce the tidal influence at the junctions of Georgiana Slough and the DCC with the Sacramento River, however, export will be increasing this week. These hydrodynamic conditions increase the risk of reverse flows into these junctions. Entrainment risk to fish present in these locations is elevated. DCC gates are currently open and are scheduled to be closed on Sunday, which will help prevent juveniles from



straying into the south Delta. Overall risk of juvenile winter-run Chinook salmon entrainment into the interior Delta is considered low as a percentile of population but absolute numbers may increase due to a larger population of young-of-year winter-run Chinook salmon this year.

*Export Risk:*

The overall export risk is slightly higher than last week but still considered low, based on export levels increasing this week from 4,500 cfs to 6,680 cfs at SWP by the weekend, and from 1,800 cfs to 3,400 cfs at CVP by early next week. Combined exports will be approximately 10,000 cfs. OMR flows will be more negative while exports are increased, and the percentage of Delta inflow exported will be increasing (currently 46% averaged over 3 days). San Joaquin River flows at Vernalis are approximately 1,500 cfs, and are expected to increase with upcoming storm events. Combined exports are currently approximately 6,300 cfs with a concurrent OMR flow of about -5,200 cfs. The current QWEST flows are about -119 cfs, indicating a negative outflow from the San Joaquin River. Fish in the vicinity of the exports' area of influence have an increased risk of entrainment due to increased exports increasing this week.

**Agenda Item 8.**

**Other Topics**

Stuart (NMFS) thanked the group for participation in last week's annual update meeting.

Buttermore (Reclamation) discussed how to query juvenile monitoring data on [SacPAS](#). From the homepage, click Data Queries & Alerts / Juvenile Monitoring & Sampling / Cohort Juvenile Monitoring / select the year and Chinook run / click Submit Query. The results provide a graph and table showing a year of raw catch data at Delta monitoring locations.

**Agenda Item 9.**

**DOSS Advice to WOMT and NMFS:**

No operational advice to NMFS or WOMT, however a "heads up" for potential earlier closures of the DCC gates than scheduled (Sunday, 12/1/2019) due to fish movement in response to the first rains of the water year, and the potential for exceeding KLCI or SCI triggers.

**Agenda Item 10.**

**Next Meeting:** The next DOSS conference call will be on **12/3/2019 at 9am.**