

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**Conference call: 10/29/2019 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, Geir Aasen, Duane Linander, Ken Kundargi, Morgan Kilgour

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

**NMFS:** Jeff Stuart, Kristin Begun

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

**SWRCB:** Craig Williams, Chris Carr, Michael Macon

**USFWS:** Felipe Carrillo

**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 October:**

**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

---

<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 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
10/22/2019	127	-2%	116	-3%
10/23/2019	126	-1%	114	-1%
10/24/2019	124	-2%	112	-3%
10/25/2019	123	-1%	111	-1%
10/26/2019	124	1%	113	2%
10/27/2019	123	-1%	112	-1%
10/28/2019	122	-1%	112	0%

- The Second Alert is triggered only if both Knights Landing temperature is less than 56.3°F and Wilkins Slough flows are greater than 7,500 cfs. 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)
10/22/2019	6,590	57.8
10/23/2019	5,848	58.4
10/24/2019	6,218	58.3
10/25/2019	6,387	58.7
10/26/2019	5,949	58.6
10/27/2019	5,396	56.9
10/28/2019	6,222	55.1

**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 (10/29/19)**

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	300 <sup>A</sup>	Jones Pumping Plant	800 <sup>B</sup>
Reservoir Releases (cfs)			
Feather - Oroville	2,450	American - Nimbus	2,700
		Sacramento - Keswick	6,500 <sup>C</sup>
		Stanislaus - Goodwin	650 <sup>D</sup>

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

		Trinity - Lewiston	300 <sup>E</sup>
<b>Reservoir Storage (in TAF)</b>			
San Luis (SWP)	632	San Luis (CVP)	344
Oroville	2,064	Shasta	3,285
New Melones	2,003	Folsom	607
<b>Delta Operations</b>			
DCC	Open	Sacramento River at Freeport (cfs)	10,980
Outflow Index (cfs)	14,100	San Joaquin River at Vernalis (cfs)	3,360
E:I	6% (3-day avg.)	X2	75 km

<sup>A</sup> SWP exports will be increasing in early November up to 4,000 cfs, then a scheduled outage will occur for maintenance at the pumping facility the week of 11/4 for 5 days.

<sup>B</sup> CVP exports will increase during SWP maintenance to approximately 3,500 to 4,000 cfs.

<sup>C</sup> Keswick releases will have one more pulse up to 8,000 cfs, then gradually ramp down to 5,000 cfs next week.

<sup>D</sup> Goodwin releases will have one more pulse, then decrease to minimum flows in November.

<sup>E</sup> Lewiston releases will remain at 300 cfs winter base flow.

Factors controlling Delta exports:

- 10/22-10/29: Fall X2

Approximate OMRs as of 10/23/19:

	USGS gauges (cfs)*	Index (cfs)
Daily	-1,100	-400
5-day	-580	-400
14-day	N/A	-900

\* Issues with USGS OBI gage.

Approximate OMRs as of 10/28/19:

	Index (cfs)
Daily	+25
5-day	-200
14-day	-500

Weather Forecast

Dry weather expected in the valley through next week with breezy conditions today and Wednesday, raising a red flag warning through the majority of interior northern California, as fire risk continues.

**Agenda Item 4.**

**Fish Monitoring:** The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length.

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	10/21-10/28	10/21-10/24	10/21-10/28	10/21-10/23, 10/25	10/21, 10/23, 10/25	10/21, 10/23, 10/25	10/21, 10/23, 10/25
FR Chinook	6 smolts						
SR Chinook	31 juvenile		1				
WR Chinook	411 juveniles	1	10				
LFR Chinook	33 juveniles 13 smolts						
Chinook (ad-clip)							
Steelhead (wild)							
Steelhead (ad-clip)							
Green Sturgeon							
Flows (avg. cfs)	1,088	6,503	6,065				
W. Temp. (avg. °F)	56.0	58.3	57.7				
Turbidity (avg. NTU)	7.95	4.8	6.20				

<sup>A</sup> GCID was sampling at half cone on 10/26 to 10/28.

<sup>B</sup> Tisdale RST sampling period was from 10/21 at 10:45 am to 10/24 at 10:45 am.

<sup>C</sup> Knights Landing RST sampling period was from 10/21 at 11:30 am to 10/28 at 11:45 am.

<sup>D</sup> Data reported in the 10/20 to 10/26 DJFMP sampling summary.

### Red Bluff Diversion Dam (RBDD)

USFWS biweekly report (10/8/19-10/21/19) for preliminary estimates of passage by brood-year and run for unmarked juvenile Chinook salmon captured by rotary screw traps at RBDD included:

Run and Species	Biweekly Total	Brood Year Total (90% CI)
Winter-run Chinook (BY2019)	791,514	3,217,093 (2,111,213-4,322,972)
Spring-run Chinook (BY2019)	32,660	32,660 (19,988-45,332)

### Juvenile Green Sturgeon Monitoring Summary for DOSS; October 29, 2019 2019 Sampling Season Summary

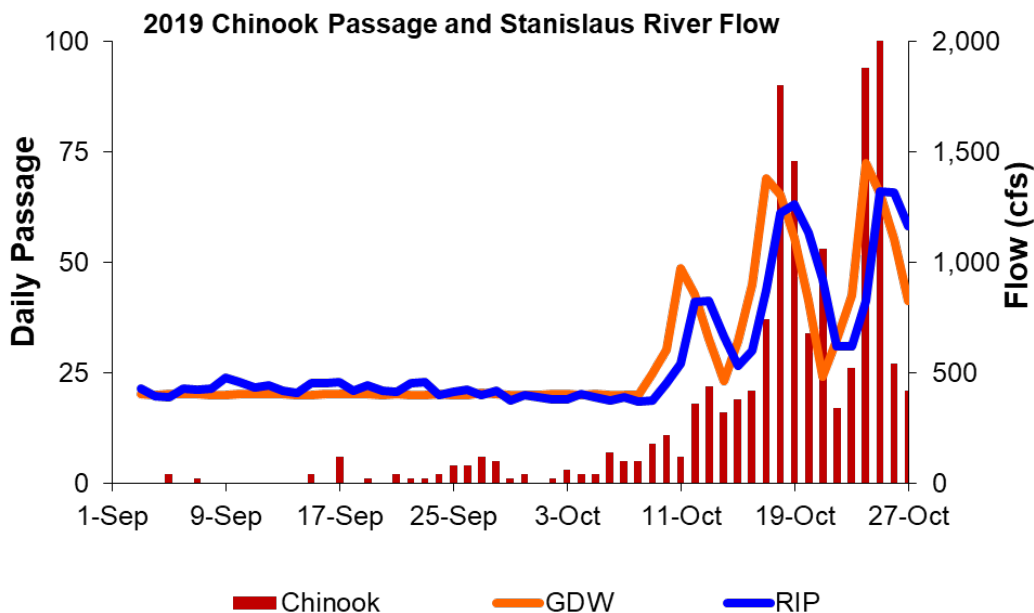
- No juvenile sturgeon have been tagged since 10/3/2019 (zero in the last four sampling events)

- One juvenile green sturgeon tagged on 10/1/2019 was detected on 10/22 and 10/24 at sampling site north/northwest of Sherman Lake.
- One juvenile white sturgeon tagged 8/6/2019 was detected 10/22 and 10/24 at sampling site.
- No detections of juvenile green sturgeon or juvenile white sturgeon tagged in the 2018 sampling season at sampling site.\*
- Two adult white sturgeon detected at sampling site; one tagged 5/4/2017 (Fremont Weir fish rescue); one tagged by USFWS Lodi on 3/11/2014.
- Gill nets are being fouled by heavy amounts of drifting aquatic vegetation consisting primarily of *Egeria densa*, which is likely reducing capture efficacy.

\* Please refer to the 10/8/19 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 8/29/19. Over the last week (10/21 – 10/27), 714 adult fall-run Chinook salmon and 1 hatchery (adipose fin clipped) steelhead (greater than 16 inches, indicating that the individual was likely anadromous, i.e. a steelhead, rather than a resident adult rainbow trout) were observed passing upstream of the weir. The cumulative net upstream passage through 10/27/19 is 965 Chinook salmon (21% were ad-clipped, indicating a hatchery origin), and 11 steelhead (data provided by FISHBIO in their 10/27/19 Stanislaus Weir Update). Five of 11 total steelhead this season were unclipped and 6 were clipped, indicating hatchery origin.



### CDFW Lower American River Carcass Survey

Chinook salmon carcass surveys began the week of 10/15/19. The survey area includes Nimbus Dam to Watt Avenue. A total of 40 carcasses have been observed: 19 females (9 unclipped and

10 ad-clipped), 17 males (6 unclipped and 11 ad-clipped), and 4 were unidentifiable due to deteriorated conditions. 27 of the 40 fish were observed yesterday, 10/28. 16 female carcasses were evaluated for spawn conditions: 7 pre-spawn mortalities, 8 spawned, and 1 partially spawned.

**Agenda Item 5.**

**Fish Monitoring: Salvage**

Griffiths (CDFW) provided the following salvage summary for the period of 10/21-10/27.

## DOSS Weekly Salvage Update

Reporting Period: October 21-October 27, 2019  
 Prepared by Kyle Griffiths on October 28, 2019 13:26  
 Preliminary Results -Subject to Revision

Criteria	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	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	606	371	428	438	837	381	568	↗	518
CVP daily export	1,839	1,597	1,598	1,599	1,601	1,607	1,618	↘	1,637
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	→	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 Chipps Island)</b>
<i>Young-of-year (YOY) winter-run Chinook salmon</i>	96% (Last week: 97%)	4% (Last week: 3%)	0% (Last week: 0%)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	100% (Last week: 100%)	0% (Last week: 0%)	0% (Last week: 0%)

**Rationale for changes in distribution**

Wild winter-run Chinook salmon:

Over 3.2 million Brood Year 2019 (BY19) winter-run Chinook salmon have passed RBDD this year. Approximately 4,400 BY19 winter-run Chinook salmon have been captured by the GCID RSTs since August 1, 2019. In the last week, 411 winter-run Chinook salmon were captured at GCID, 1 at Tisdale RSTs, 10 at Knights Landing RSTs, and at no other monitoring locations in the Delta this past week. Observation of winter-run Chinook salmon at weekly monitoring locations in the lower Sacramento and upper Delta indicates they are starting to migrate into the Delta.

Wild spring-run Chinook salmon:

Thirty-one length-at-date spring-run Chinook salmon were observed at GCID this past week and 1 at Knights Landing. However, these fish may actually be small winter-run Chinook salmon. No precipitation events have occurred that would trigger young-of-year spring-run Chinook salmon outmigration at this time. Tissue samples were taken from the Knights Landing fish for genetic verification of run identity, but the results are not available yet. DOSS assumes that the results would indicate that the fish are genetic winter-run Chinook salmon, and therefore, DOSS assumes that 100% of the spring-run Chinook salmon population is upstream of Knights Landing.

**Agenda Item 7.**

**Risk of Entrainment**

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

Overall low risk of entrainment, but higher than last week since DCC gates re-opened on Saturday following the 3-day closure, and flows are lower than last week, increasing risk of entrainment to fish that are present in the lower Sacramento River and upper Delta waterways. Risk of juvenile winter-run Chinook salmon entrainment into the interior Delta is considered low as a percentage of the population. However, some DOSS members expressed concern that with the high population number of juvenile winter-run Chinook salmon this year, the open DCC gate may allow 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. Delta outflow resulting from implementation of the USFWS' fall X2 RPA action is fairly high for this time of year without any precipitation. Sacramento inflow is about 11,000 cfs. Higher Sacramento River flows help to reduce the influence of tides at the DCC and Georgiana Slough junctions which may reduce the probability of diversion into the interior Delta.

Export Risk:

Low, based on current OMR becoming more positive with reduced exports as a result of USFWS' fall X2 implementation, and the percentage of flow diverted is low (6%). San Joaquin River flows at Vernalis are approximately 3,400 cfs, but will be decreasing after the end of October. Combined exports are currently approximately 1,000 cfs with a concurrent OMR flow of approximately +25 cfs. The current QWEST flows are about 6,500 cfs, indicating a positive outflow from the San Joaquin River past Jersey Point. However, starting 11/1/19, combined exports will increase. Risk will increase after the weekend with increased exports and the concurrent more negative OMR flows as a result of those increased exports, but the risk of entrainment due to exports will still be considered low due to the current fish distribution.

**Agenda Item 8.**

Other Topics:

Buttermore (Reclamation) would like to discuss using SacPAS entrainment risk models in evaluating our fish distribution estimates and risk assessments in an upcoming DOSS meeting. She indicated that both the Perry STARS model, and the ICF entrainment model are available.

**Agenda Item 9.**

**DOSS Advice to WOMT and NMFS:**

None.

**Agenda Item 10.**

**Next Meeting:** The next DOSS conference call will be on **11/5/19 at 9am.**