

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 6/5/2018 at 9:00 am.

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: Duane Linander, Jason Julienne

DWR: Norman Lee, Farida Islam

NMFS: Jeff Stuart, Kristin McCleery

Reclamation: Tom Patton, Towns Burgess, Elissa Buttermore

SWRCB: Chris Kwan, Chris Carr

USFWS: Craig Anderson, Felipe Carrillo

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 update
5. Fish Monitoring: RSTs/trawls/seines
6. Fish Monitoring: Tracking of acoustic-tagged Chinook salmon
7. Fish Monitoring Salvage
8. Hatchery Releases
9. DOSS Report WY 2018 Preliminary Discussion
10. DOSS Estimates of Fish Distribution
11. DOSS Estimates of Fish Entrainment Risk
12. DOSS advice
13. Next DOSS meeting

Agenda Item 2.

RPA Implementation Review

Delta RPA Actions affecting operations during May/June:

Action IV.1.2¹ (DCC gate operations):

- From 5/21 – 6/15, DCC gates closed for 14 days during this period, per 2006 WQCP, if NMFS determines it is necessary.
- Gates typically will be opened on weekends (starting at 10 am Friday) and closed on weekdays (starting at 10 am on Monday) through mid-June.

¹ 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

- Patton (Reclamation) informed DOSS during the current operations discussion that there is a potential that gates will remain closed through approximately 6/20 if water quality conditions at Emmaton degrade and Reclamation finds that closing the gates are necessary to improve downstream water quality conditions. Reclamation will make this decision shortly.

Action IV.2.1 San Joaquin River to Export Ratio:

- For the period of 4/1 through 5/31, the level of combined SWP and CVP exports is determined by the San Joaquin River inflow as measured at Vernalis. For the current water year type (determined on 4/9 to be below normal in the San Joaquin River basin), the ratio of San Joaquin River inflow to combined CVP and SWP exports is 3:1, based on a 14-day running average.
- An exception procedure provides for minimum health and safety needs, identified as 1,500 cfs combined exports in the 2009 RPA with 2011 amendments.

Action IV.2.3² (OMR Management):

- Implementation of this action in WY 2018 is from 1/1 through 6/15, and requires that OMR flow be no more negative than -5,000 cfs.
- Responses to exceedances of RPA action triggers require that OMR flows become more positive to meet the mandatory OMR flow limits required by the action.
- OMR flows are reported weekly with the OMR index and the tidally filtered USGS gauges at the 5-day and 14-day running averages.
- No wild steelhead loss or older juvenile Chinook salmon fish density triggers were exceeded during the past week.
- **Water temperature offramp:** Seven consecutive days in June, of Mossdale³ daily average temperature >72°F.

Agenda Item 3.

Current Operations (6/5/18)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	1,400	Jones Pumping Plant	2,700
Reservoir Releases (cfs)			
Feather - Oroville	1,650	American - Nimbus	3,500
		Sacramento - Keswick	9,000 ^A
		Stanislaus - Goodwin	700 ^B
		Trinity - Lewiston	1,250 ^C
Reservoir Storage (in TAF)			
San Luis (SWP)	843	San Luis (CVP)	656
Oroville	2,407	Shasta	3,931

² For details, see pages 74-79 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 See "MSD" CDEC station: <http://cdec.water.ca.gov/cgi-progs/queryDaily?s=msd&d=today>

New Melones	1,955	Folsom	950
Delta Operations			
DCC	Closed ^D	Sacramento River at Freeport (cfs)	11,309
Outflow Index (cfs)	~7,600	San Joaquin River at Vernalis (cfs)	2,270
E:I	24.7% (3-day avg.) 22.1% (14-day avg.)	X2	73 km

^A Keswick releases will increase to 9,500 cfs tomorrow (6/6).

^B Goodwin releases will increase to 1,600 cfs by 6/7, and will continue through the remainder of June per the SOG-advised flow schedule under NMFS' RPA Action III.1.3.

^C Lewiston releases will continue ROD pulse flow schedule through June.

^D DCC gates will be open each weekend (opened Friday mornings and closed Monday mornings) through mid-June. The gates may be closed until 6/20 for salinity control at Emmaton if Reclamation determines it is necessary.

Approximate OMRs as of 6/2/18:

	USGS gauges (cfs)	Index (cfs)
Daily	-3,360	-3,144
5-day	-2,241	-1,773
14-day	N/A ^A	-1,363

^A Missing data from USGS gages.

Approximate OMRs as of 6/4/18:

	Index (cfs)
Daily	-3,624
5-day	-2,791
14-day	-1,609

Factors controlling Delta exports:

5/29-5/31: Delta outflow - X2 location and RPA Action IV.2.1 were co-controlling.

6/1 to 6/5: Delta outflow - X2 was controlling.

Weather Forecast

The forecast predicts dry weather in the Sacramento Valley this week with temperatures cooling to around average.

Agenda Item 4.

Smelt Working Group Update

The Smelt Working Group met on Monday (6/4) at 10 am. Chen (USFWS) provided the following Smelt Working Group summary via email.

The Smelt Working Group reviewed current Delta conditions, survey data, current water project operations, and forecasted weather. Current weather is sunny and warm and will remain warm for the rest of the week. The 3-station average water temperature (Antioch,

Rio Vista Bridge, and Mossdale) has remained above 12°C since 3/8, which is the temperature indicative of suitable spawning identified in the Biological Opinion and a trigger for the start of Action 3. OMR flows, which are currently at approximately -3,827 cfs, are expected to become more negative and held at around -3,000 to -3,500 cfs range for the remainder of the week. Based on Delta conditions, water export levels, and the survey data, the Group concluded that the current risk for Delta Smelt entrainment is low and would be low for OMR flows of more positive than -1,250 cfs, low to medium for OMR flows between -1,250 cfs and -3,500 cfs, and medium for OMR flows between -3,500 cfs and -5,000 cfs.

The Service notified Reclamation that conditions had been met to begin implementation of Action 3 (protections for larval and juvenile Delta Smelt) on 3/26 and requires an OMR flow of no more negative than -5,000 cfs. The Smelt Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions. The Group will meet again next Monday, 6/11, at 10 am.

Agenda Item 5.

Fish Monitoring: The following table presents fish monitoring data summarized over the past week. Empty cells indicate zero catches at those locations with sample dates shown.

Location	GCID RST	Tisdale RST ^A	Knights Landing RST ^B	Butte Creek Fyke trap ^C	Butte Creek RST ^D	Beach Seines ^E	Sacramento Trawl ^E	Chippis Island Midwater Trawl ^E	Mossdale Kodiak Trawl ^F
Sample Date	5/30-6/4	5/24-6/4	5/28-6/4	5/21-6/3	5/21-6/3	5/29-5/31	5/29-5/30, 6/1	5/27-6/1	5/29, 5/31-6/2
Chinook									21
FR Chinook	117 juveniles 11 smolts		3			3	4	25	
SR Chinook	6 smolts			222	80			1	
WR Chinook									
LFR Chinook									
Chinook (ad-clip)								42	
Steelhead (wild)	1								
Steelhead (ad-clip)									
Green Sturgeon									
Flows (avg. cfs)	1,036	7,349	5,924	230	230				
W. Temp. (avg. °F)	62.9	64.5	68.4	56.5	56.5				

Turbidity (avg. NTU)	8.2	12.7	10.2	7.4	7.3				
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^A Tisdale RST sampling period was from 5/24 at 9:00 am to 6/4 at 9:30 am.

^B Knights Landing RST sampling period was from 5/28 at 12:15 pm to 6/4 at 10:00 am.

^C Butte Creek Fyke trap sampling period was from 5/21 at 9:30 am to 6/3 at 7:00 am.

^D Butte Creek RST sampling period was from 5/21 at 9:00 am to 6/3 at 6:00 am.

^E Data reported in the 5/27 to 6/2 DJFMP sampling summary.

^F Mossdale Trawl sampling is being conducted by CDFW (Region 4) from 4/1 to 6/30.

Red Bluff Diversion Dam (RBDD) (data received after the DOSS call concluded – included for continuity)

USFWS biweekly report (5/21/18-6/3/18) 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 (BY2017)	0*	601,722 (415,861-787,582)
Spring-run Chinook (BY2017)	3,264**	313,762 (164,458-463,065)

*Biweekly catch remained at zero, no difference from previous biweekly catch.

**Biweekly catch decreased by 26,702 fish from previous biweekly total of 29,966. The spring-run bi-weekly total was likely impacted by hatchery fall-run releases (mostly 25% marked), causing misclassification of fall-run as spring-run.

Stuart (NMFS) reported that on the previous week’s DAT call (5/31/18), USFWS staff reported that green sturgeon were beginning to be observed in the RST catches at RBDD.

Agenda Item 6.

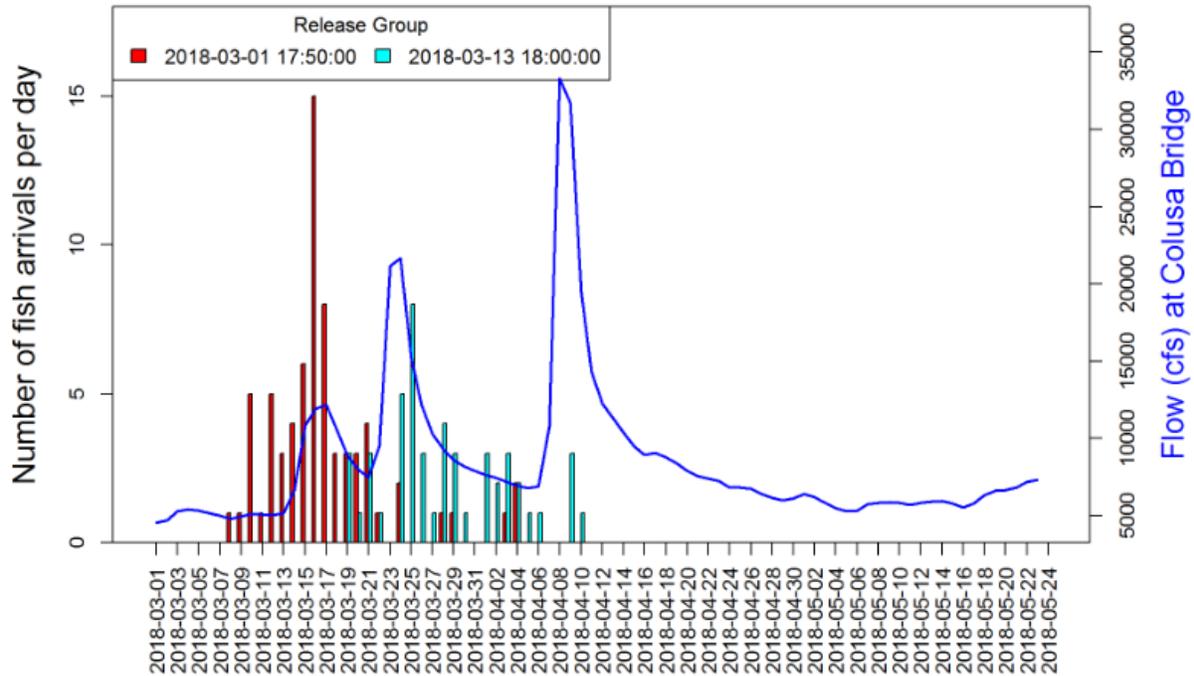
Fish Monitoring: Tracking of acoustic-tagged hatchery winter-run Chinook salmon

The Livingston Stone National Fish Hatchery released acoustic-tagged (JSATS) winter-run Chinook salmon from brood year 2017. The following table provides the detection frequency at Tower Bridge and Sacramento I-80/50 Bridge from 3/8 to 5/23.

	First Release Group	Second Release Group
Date of release	3/1/2018	3/13/2018
# acoustically tagged (JSATS)	361	239
Detections at Tower Bridge	70 (19.4%)	49 (20.5%)
Detections at the Sacramento I-80/50 Bridge	63 (17.5%)	41 (17.2%)
Detections at Georgiana Slough	1 (0.3%)	0
Minimum Survival to Tower Bridge	20.7%	26.9%
95% Confidence Interval	16.8% to 25.3%	21.4% to 33.2%

<https://calfishtrack.github.io/real-time/pageLSWR.html>

Detections at Tower Bridge (downtown Sacramento) versus Sacramento River flows at Colusa Bridge



Agenda Item 7.

Fish Monitoring: Salvage⁴

Fujimura (CDFW) provided a salvage summary for the period of 5/28/18-6/3/18.

The number of unclipped juvenile Chinook salmon salvaged last week continued to decrease compared to the previous week. The reported salvage of salmon from the CVP and SWP for this reporting week was 452 fall-run size Chinook salmon.

No clipped Chinook salmon were salvaged last week.

The number of steelhead salvaged last week also decreased compared to the previous week. The reported salvage of steelhead from the CVP and SWP for this reporting week was 14 wild steelhead and no hatchery steelhead.

Wild steelhead were salvaged two days last week and resulted in daily loss densities of 2.28 and 3.59 fish/TAF.

No sturgeon were salvaged.

⁴ Salvage data reported in this section represent the total estimated and expanded salvage based on the number of fish observed at the fish collection facility. For example, if one steelhead is observed in the typical ½-hour sampling period within a 2-hour operation period, the single steelhead is expanded to a salvage of four.

DOSS Weekly Salvage Update

Reporting Period: May 28-June 3, 2018

Prepared by Bob Fujimura on June 4, 2018 15:22

Preliminary Results -Subject to Revision

Criteria	28-May	29-May	30-May	31-May	1-Jun	2-Jun	3-Jun	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0
Wild steelhead	0	0	0	0	3.59	2.28	0	↘	0.84
Exports									
SWP daily export	1,167	1,526	1,349	1,371	2,601	2,235	2,224	↘	1,782
CVP daily export	3,705	3,710	1,885	1,876	5,399	5,378	5,385	→	3,905
SWP reduced counts	0%	0%	0%	0%	0%	0%	0%	↘	0%
CVP reduced counts	0%	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
Wild					
Winter Run	0	0	→	114	301
Spring Run	0	0	↘	9,487	18,314
Late Fall Run	0	0	→	5	7
Fall Run	452	574	↘	9,285	14,716
Unclassified	0	0	→	4	NC
Total	452	574		18,895	33,338
Hatchery					
Winter Run	0	0	→	48	183
Spring Run	0	0	↘	1,010	1,745
Late Fall Run	0	0	→	71	236
Fall Run	0	0	→	0	0
Unclassified	0	0	→	1	NC
Total	0	0		1,130	2,165

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	14	46	↘	1,111	2,846
Hatchery	0	0	↘	732	2,463
Total	14	46		1,843	5,309

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

Generated by Bob Fujimura on June 4, 2018

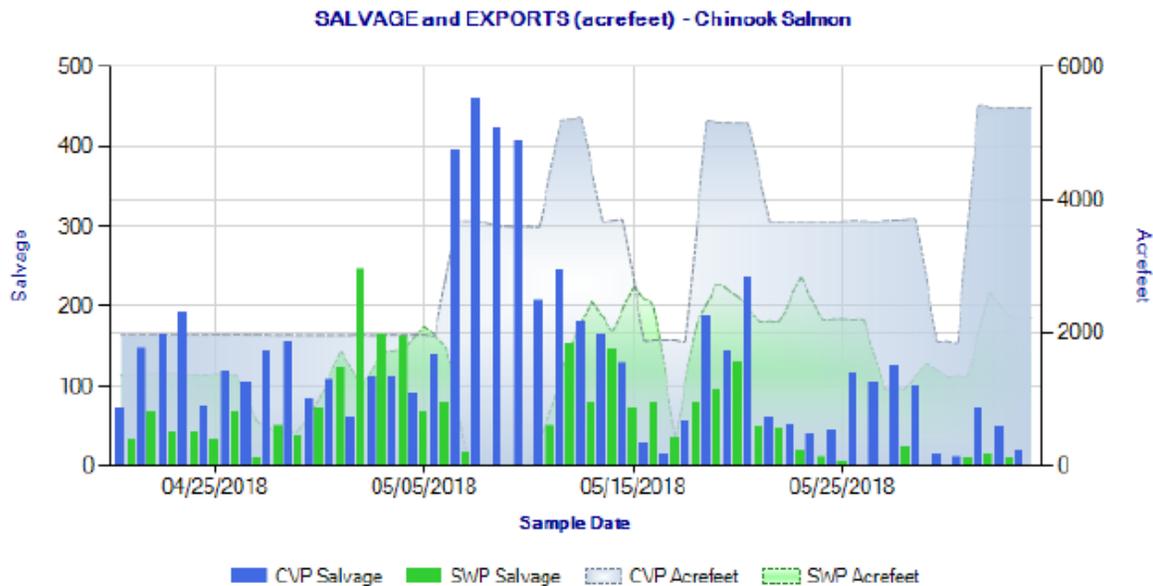


Figure 1. Daily salvage of Chinook Salmon (all races) and water exports from the state and federal fish salvage facilities during April 21 through June 3, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

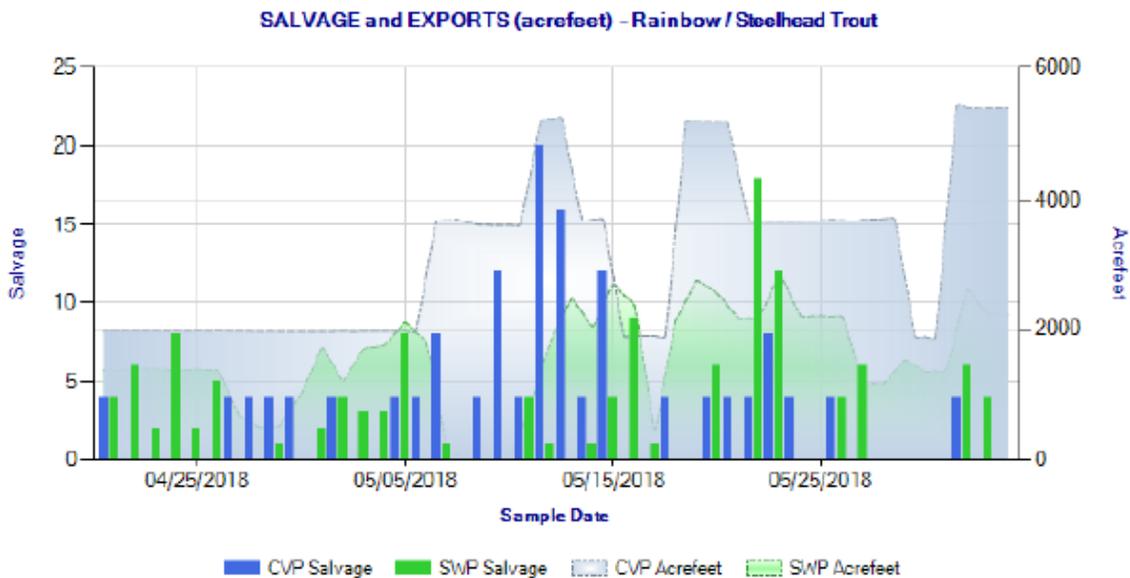


Figure 2. Daily salvage of Rainbow/Steelhead and water exports from the state and federal fish salvage facilities during April 21 through June 3, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

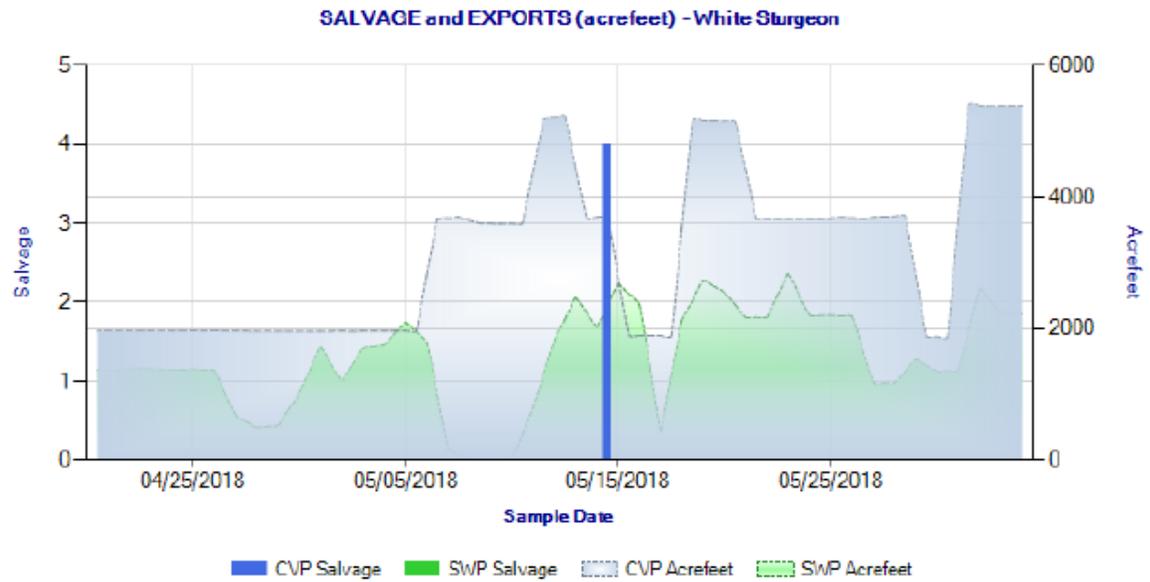


Figure 3. Daily salvage of White Sturgeon and water exports from the state and federal fish salvage facilities during April 21 through June 3, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES as of 6/5/18

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released ¹	Total Entering Delta	% Loss of Number Released ²	% Loss of Total Entering Delta ³	First Stage Trigger	Date of First Loss ⁴	Date of Last Loss ⁴
12/21/2017	LF	Coleman NFH	Battle Creek	Production	35.68	297,370	n/a	0.012	n/a	n/a	1/23/2018	4/14/2018
1/5/2018	LF	Coleman NFH	Battle Creek	Production	130.62	519,791	n/a	0.025	n/a	n/a	1/31/2018	3/28/2018
1/8/2018	LF	Coleman NFH	Battle Creek	Spring Surrogate	12.99	78,786	n/a	0.016	n/a	0.5%	1/31/2018	3/26/2018
1/19/2018	LF	Coleman NFH	Battle Creek	Spring Surrogate	0	71,645	n/a	0.000	n/a	0.5%	*	*
1/25/2018	LF	Coleman NFH	Battle Creek	Spring Surrogate	25.68	84,922	n/a	0.030	n/a	0.5%	*	3/8/2018
3/1/2018, 3/13/2018	W	Livingstone NFH	Sacramento River	Production	55.4	216,746	n/a	0.026	n/a	0.5%	3/22/2018	4/9/2018
12/21/2017	S	SJRRP	San Joaquin River	Experimental	13.16	1450	n/a	0.908	n/a	n/a	1/11/2018	3/13/2018
1/19/2018	S	SJRRP	San Joaquin River	Experimental	167.35	31184	n/a	0.537	n/a	n/a	3/14/2018	4/13/2018
1/26/2018	S	SJRRP	San Joaquin River	Experimental	253.16	49549	n/a	0.511	n/a	n/a	3/11/2018	4/13/2018
3/2/2018	S	SJRRP	San Joaquin River	Experimental	762	87115	n/a	0.875	n/a	n/a	3/30/2018	4/11/2018

UNCONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2017/2018

Facility	Unknown CWT Loss ⁵	Unread CWT Loss ⁶	Unknown Hatchery Loss ⁷	Acoustic Tag Loss ⁸	Number of Unassigned CWTs ⁹
SWP	296.14				
CVP	16.02				
TOTAL	312.16				

SWP and CVP adipose-fin clipped Chinook lost from 10/1/2017 through 4/19/2018.

¹ Number released with the adipose-fin clipped and a coded-wire tag (CWT).

² % Loss of Number Released = (Confirmed Loss/Number Released)*100.

³ % Loss of Total Entering Delta= (Confirmed Loss/Total Entering Delta)*100.

⁴ Date of first and last loss accounts for all CWT loss even those from special studies where salvage and loss=0.

⁵ Adipose-fin clipped Chinook was observed during fish count, but tag code could not be determined (e.g., damaged tag, lost tag, no tag, or Chinook released).

⁶ Adipose-fin clipped Chinook was collected during fish count and has not been processed yet.

⁷ CWT has been read, but hatchery release information not yet available.

⁸ Adipose-fin clipped Chinook released due to presence of sutures.

⁹ CWT cannot currently be assigned to a salvage record with certainty since the CWT was lost and then found. CWT may be assigned to a salvage record if new information is available.

* Information not yet available.

DWR-DES Revised 4/20/2018

Preliminary data from DFW, DWR, FWS, and Reclamation; subject to revision.

Agenda Item 8.

Hatchery Releases

No notifications have been sent out during the previous week. CDFW will check if any additional hatchery releases are still planned.

Agenda Item 9.

Preliminary Notice of Assignments for the Water Year 2018 DOSS Annual Report

Stuart (NMFS) announced that he will be sending out a draft Table of Contents (TOC) for the water year 2018 DOSS Annual Report this week with section assignments. He requested that the DOSS team members look over the draft TOC and section assignments and make any changes or updates to assignments as needed. Stuart will also send out a draft timeline for the report for review. He requested that DOSS members be prepared to have a short discussion next meeting (6/12/18) regarding the annual report assignments and timeline.

Agenda Item 9.

DOSS Estimates of Fish Distribution

DOSS estimates of the current distribution of listed Chinook and steelhead, 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>Wild young-of-year winter-run Chinook salmon</i>	0-1% (Last week: same)	0-1% (Last week: same)	>99% (Last week: same)
<i>Wild young-of-year spring-run Chinook salmon</i>	<1% (Last week: same)	1% (Last week: same)	98-99% (Last week: same)
<i>Hatchery winter-run Chinook salmon</i>	0-1% (Last week: same)	0-1% (Last week: same)	99% (Last week: same)

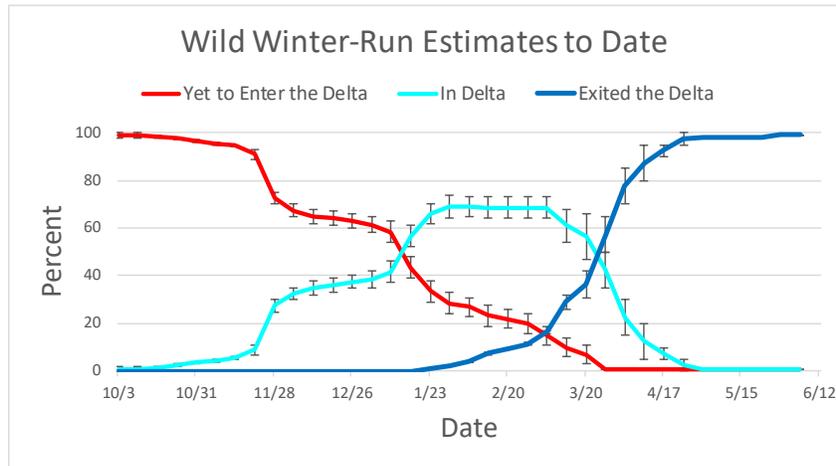
Rationale for changes in distribution

Wild winter-run Chinook: No winter-run sized fish were observed at monitoring locations this past week. DOSS estimated that at least 99% of the winter-run population have exited past Chipps Island and that 0-1% remain upstream or in the Delta.

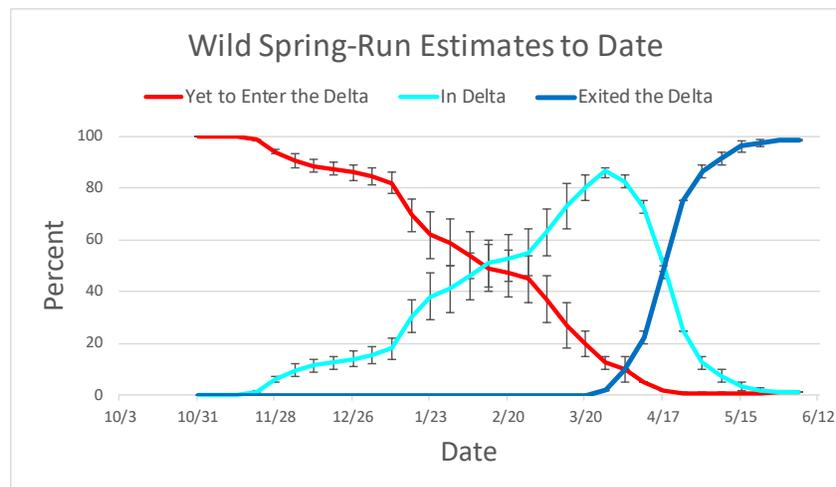
Wild spring-run Chinook: 6 spring-run sized fish were observed at GCID, approximately 300 at Butte Creek, and 1 in the Chipps Island Trawl this past week. Since some fish were still being observed at locations upstream of the Delta and at Chipps Island trawl, thus indicating a continuing although substantially reduced presence of fish, DOSS estimated that less than 1% of the spring-run population remain upstream of the Delta and 98-99% of the population have exited the Delta past Chipps Island.

Hatchery winter-run Chinook: Approximately 20% of the hatchery-released fish from the two releases on the Sacramento River in Redding have been detected by the acoustic receiver arrays located on the Tower and I-80/ US-50 bridges in Sacramento. Minimum survival is estimated at

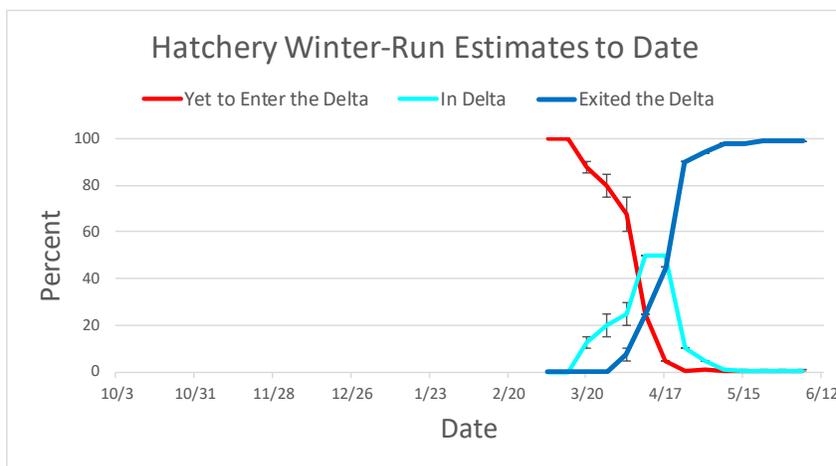
approximately 23%. DOSS estimated that most hatchery winter-run Chinook salmon have moved out of the upper river and through the Delta, with 99% moving past Chipps Island.



WY 2018 wild winter-run distribution estimates to date.



WY 2018 wild spring-run distribution estimates to date.



WY 2018 hatchery winter-run distribution estimates to date.

Agenda Item 10.

DOSS Feedback on Entrainment Risk

DOSS provides weekly entrainment risk outlooks by considering (a) two different categories of entrainment risk based on listed fish distribution and (b) factors that influence their potential for entrainment. The two entrainment risk categories considered include:

- **Interior Delta Entrainment Risk**- fish in the Sacramento River that have the potential to be entrained into the Interior Delta through the Delta Cross Channel (when open) and/or Georgiana Slough; and
- **CVP/SWP Facilities Entrainment Risk**- fish in the Interior Delta that have the potential to be entrained into the CVP/SWP facilities.

Influencing factors considered include:

- **Exposure Risk** (both categories)- estimated scale (low, medium, high) of fish anticipated to be in vicinity of an entrainment risk,
- **Routing Risk** (Interior Delta Entrainment Risk)- estimated scale (low, medium, high) that flow split conditions could result in fish migrating into the interior delta instead of remaining in main channel, and
- **OMR/Export Risk** (CVP/SWP Facilities Entrainment Risk)- for fish in the Interior Delta, estimated scale (low, medium, high) that OMR and/or Export levels could result in entrainment into the CVP/SWP facilities.

To provide an overall assessment of entrainment risk, the estimated current status of these influencing factors are described below for each of the entrainment risk categories.

Interior Delta Entrainment Risk for listed salmonids in the Sacramento River over the next week:

- **Exposure Risk: LOW**
 - Most of the wild winter-run Chinook salmon population for BY17 has moved through the Delta at this time.
 - Most of the BY17 wild spring-run Chinook salmon population has moved through the Delta at this time (98-99%).
 - Most of the hatchery winter-run Chinook salmon population has moved through the Delta at this time (>99%).
 - Reduced numbers of wild steelhead are still being observed in the Delta and at Chipps Island.
 - Low numbers of wild and hatchery steelhead observed in salvage.
 - No steelhead have been observed in the Mossdale trawl since 5/8/18.
- **Routing Risk: MEDIUM**
 - Sacramento River inflows are currently ~11,300 cfs and are within the range of being affected by tidal flows at Georgiana Slough and Three Mile Slough.
 - Delta Cross Channel gates will be opened on weekends (Friday morning to Monday morning) through mid-June.

- **Overall Entrainment Risk: LOW-MEDIUM** (lower than last week)
 - Fish are present in the Delta but river inflows of approximately 16,000 cfs with a Delta outflow of approximately 7,600 cfs and predicted slightly negative OMR flows (~ -2,000 to -3,500 cfs for the 5-day and daily index calculations) reduce the risk of entrainment into the central and southern Delta.

CVP/SWP Facilities Entrainment Risk for listed salmonids in the Interior Delta over the next week:

- **Exposure Risk: MEDIUM**
 - Reduced numbers of clipped steelhead and wild steelhead have been observed in salvage compared to last week.
 - Reduced numbers of clipped and wild Chinook salmon have been observed in salvage compared to last week.
 - Reduced numbers of Chinook salmon and steelhead in lower Sacramento River and western Delta monitoring efforts (Chippis Island and in the river confluence region)
 - Almost all of the winter-run and spring-run Chinook salmon populations are estimated to have moved out of the Delta at this time.
 - Exports have increased due to the end of RPA Action IV.2.1 on 5/31/18.
 - Flows on the Stanislaus River will remain at slightly elevated levels through the end of June to complete the Appendix 2E scheduled pulse flow.
- **OMR/Export Risk:**
 - OMR -2,500 cfs: LOW
 - OMR -3,500 cfs: LOW-MEDIUM
 - OMR -5,000 cfs: MEDIUM
 - OMR -6,250 cfs⁵: HIGH
 - OMR -7,500 cfs⁵: HIGH (incrementally higher risk if Vernalis flows decrease)
 - OMR -9,000 cfs⁵: HIGH (full export capacity, footprint of export effects extend into the western Delta and lower San Joaquin River).
- **Overall Entrainment Risk:**
 - OMR -2,500 cfs: LOW
 - OMR -3,500 cfs: LOW-MEDIUM
 - OMR -5,000 cfs: MEDIUM
 - OMR -6,250 cfs⁵: MEDIUM-HIGH
 - OMR -7,500 cfs⁵: MEDIUM-HIGH
 - OMR -9,000 cfs⁵: MEDIUM-HIGH

These assessments are based on current hydrology and fish distributions.

⁵By request of management, DOSS also assessed risks at an OMR flow more negative than -5,000 cfs.

Agenda Item 11.

DOSS Advice to WOMT and NMFS: None.

Agenda Item 12.

Next Meeting: The next DOSS conference call will be on **6/12/2018 at 9 am.**