

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 6/12/2018 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, Bob Fujimura
DWR: Farida Islam, Bryant Giorgi, Dan Yamanaka
NMFS: Jeff Stuart, Kristin McCleery
Reclamation: 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 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 will be opened on Friday, 6/15, and will remain open through the summer.

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

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. San Joaquin River water temperatures at Mossdale remain below this threshold.

Agenda Item 3.

Current Operations (6/12/18)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	800 ^A	Jones Pumping Plant	3,300
Reservoir Releases (cfs)			
Feather - Oroville	1,650 ^B	American - Nimbus	3,500
		Sacramento - Keswick	9,500 ^C
		Stanislaus - Goodwin	1,100 ^D
		Trinity - Lewiston	900 ^E
Reservoir Storage (in TAF)			
San Luis (SWP)	793	San Luis (CVP)	627
Oroville	2,383	Shasta	3,869
New Melones	1,939	Folsom	924
Delta Operations			
DCC	Closed ^F	Sacramento River at Freeport (cfs)	11,300
Outflow Index (cfs)	~7,600	San Joaquin River at Vernalis (cfs)	2,080
E:I	26% (3-day avg.)	X2	78 km

^A SWP exports will decrease tomorrow (6/13) to ~300 cfs.

^B Oroville releases will hold through 7/4.

^C Keswick releases will increase to 9,750 cfs today (6/12), and to 10,250 cfs tomorrow (6/13).

^D Goodwin releases will decrease to 650 cfs by 6/19, and will continue through the remainder of June per the SOG-advised flow schedule under NMFS' RPA Action III.1.3.

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

^F DCC gates were closed yesterday and will be opened on Friday morning (6/15), and will remain open through the summer.

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>

Approximate OMRs as of 6/9/18:

	USGS gauges (cfs)	Index (cfs)
Daily	-4,600	-4,000
5-day	-4,200	-4,000
14-day	N/A*	-2,600

*Value not calculable due to missing USGS gauge data from late-May.

Approximate OMRs as of 6/11/18:

	Index (cfs)
Daily	-3,900
5-day	-4,000
14-day	-3,000

Factors controlling Delta exports:

6/5 to 6/12: Delta outflow - X2 location

Weather Forecast

Dry and hot weather (100°F) expected to continue for the next day or two, with a slight cooling trend (80s) later this week in the Sacramento Valley.

Agenda Item 4.

Smelt Working Group Update

The Smelt Working Group met on Monday (6/11) 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 -1,841 cfs, are expected to be held at around -4,000 cfs 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 offramp for Action 3 is met on either 6/30 or when water temperatures at the Clifton Court Forebay reach daily averages of 25°C for three consecutive days. The Clifton Court Forebay water temperature is currently at 22.4°C and is not expected to meet the offramp conditions this week. The

Smelt Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions. The Group will meet again next Monday, 6/18, 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	6/5-6/12	6/4-6/10	6/4-6/11	6/3-6/11*	6/3-6/11*	6/4-6/5, 6/7-6/8	6/4, 6/6, 6/8	6/4, 6/6, 6/8	6/4-6/5, 6/7-6/9*
Chinook									87
FR Chinook	97 juveniles 6 smolts					5	1	57	
SR Chinook				13	5				
WR Chinook									
LFR Chinook									
Chinook (ad-clip)						1		18	
Steelhead (wild)									
Steelhead (ad-clip)									
Green Sturgeon									
Flows (avg. cfs)	1,035	6,637	5,235	172	172				
W. Temp. (avg. °F)	62.2	64	70.1	56.8	56.8				
Turbidity (avg. NTU)	8.4	13.1	9.0	7.9	7.4				

^A Tisdale RST sampling period was from 6/4 at 9:30 am to 6/10 at 9:30 am.

^B Knights Landing RST sampling period was from 6/4 at 10:00 am to 6/11 at 10:30 am.

^C Butte Creek Fyke trap sampling period was from 6/3 at 7:00 am 6/11 at 8:45 am.

^D Butte Creek RST sampling period was from 6/3 at 6:00 am to 6/11 at 8:30 am.

^E Data reported in the 6/3 to 6/9 DJFMP sampling summary.

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

*These datasheets were received after the DOSS call.

Agenda Item 6.

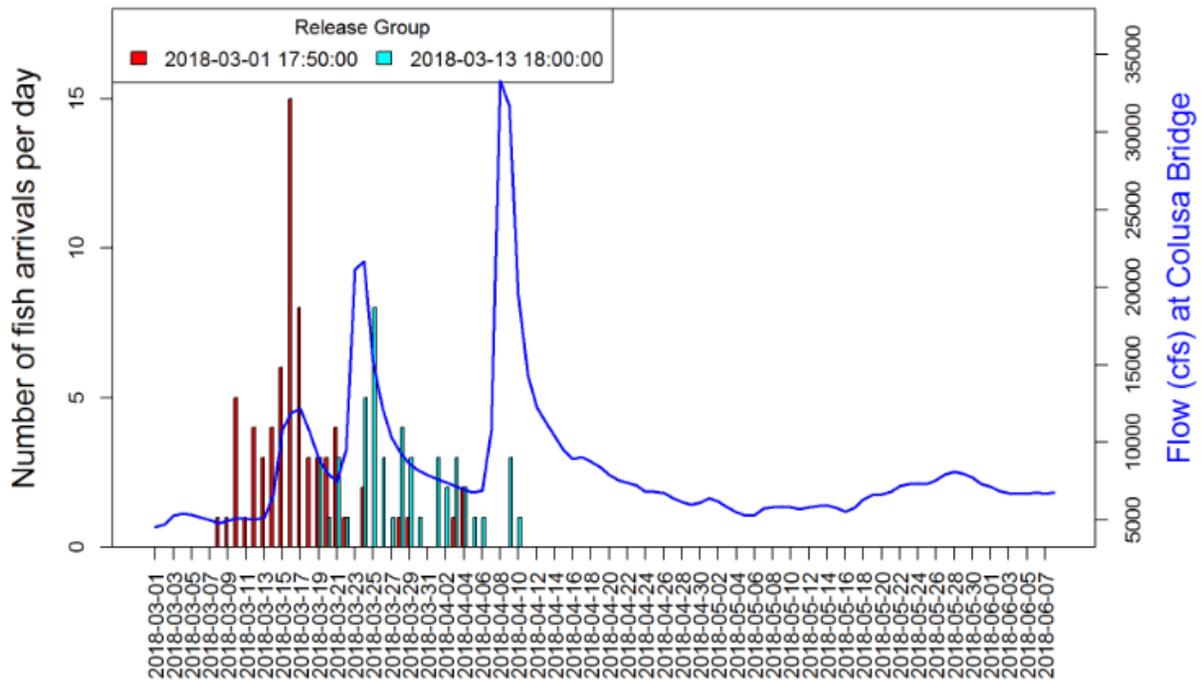
Fish Monitoring: Tracking of acoustic-tagged hatchery winter-run Chinook salmon

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 6/4/18-6/10/18.

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.

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 211 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 4 wild steelhead and no hatchery steelhead.

Wild steelhead were salvaged one day last week (on 6/10) and resulted in a daily loss density of 0.34 fish/TAF.

No sturgeon were salvaged.

DOSS Weekly Salvage Update

Reporting Period: June 4-June 10, 2018

Prepared by Bob Fujimura on June 11, 2018 15:3

Preliminary Results -Subject to Revision

Criteria	4-Jun	5-Jun	6-Jun	7-Jun	8-Jun	9-Jun	10-Jun	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0
Wild steelhead	0	0	0	0	0	0	0.34	↘	0.05
Exports									
SWP daily export	2,228	2,257	1,893	2,217	2,138	1,309	1,491	↗	1,933
CVP daily export	5,386	5,294	5,249	5,254	6,566	6,531	6,484	↗	5,823
SWP reduced counts	0%	0%	10%	8%	25%	0%	0%	↗	6%
CVP reduced counts	0%	8%	0%	0%	0%	0%	0%	↗	1%

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

= brief fish salvage facility interruption occurred

= major fish salvage facility interruption occurred; 6/5 CVP maintenance outage = 120 min; 6/7 SWP power outage = 60 min

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	211	268	↘	9,496	14,984
Unclassified	0	0	→	4	NC
Total	211	268		19,106	33,606
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	4	3	↘	1,115	2,849
Hatchery	0	0	→	732	2,463
Total	4	3		1,847	5,312

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

Generated by Bob Fujimura on June 11, 2018

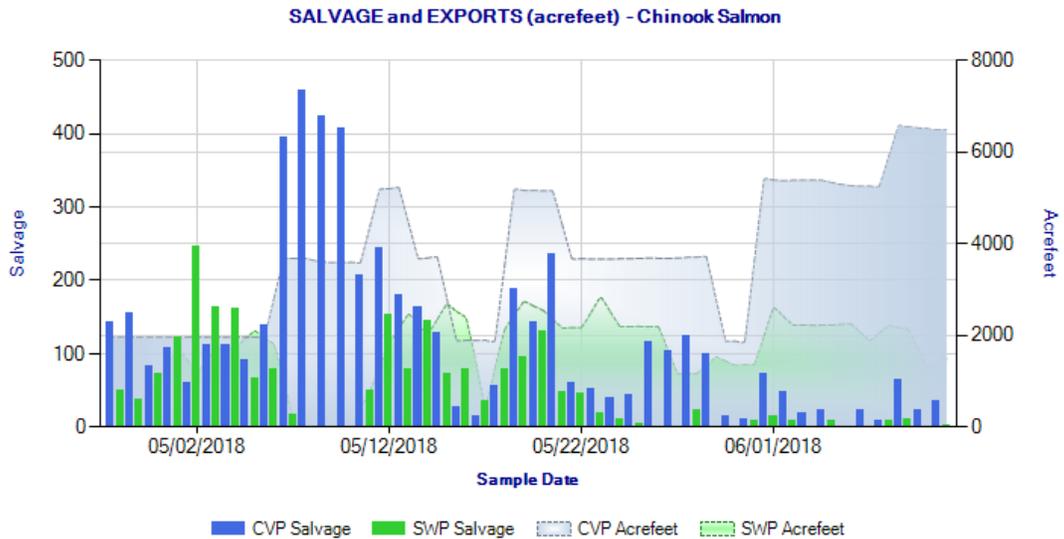


Figure 1. Daily salvage of Chinook Salmon (all races) and water exports from the state and federal fish salvage facilities during April 28 through June 10, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

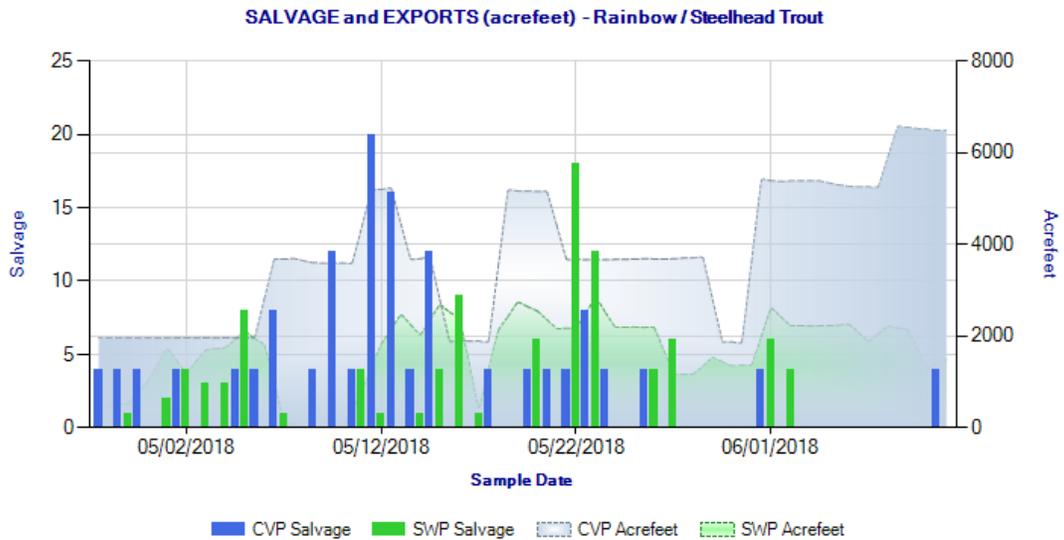


Figure 2. Daily salvage of Rainbow/Steelhead and water exports from the state and federal fish salvage facilities during April 28 through June 10, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

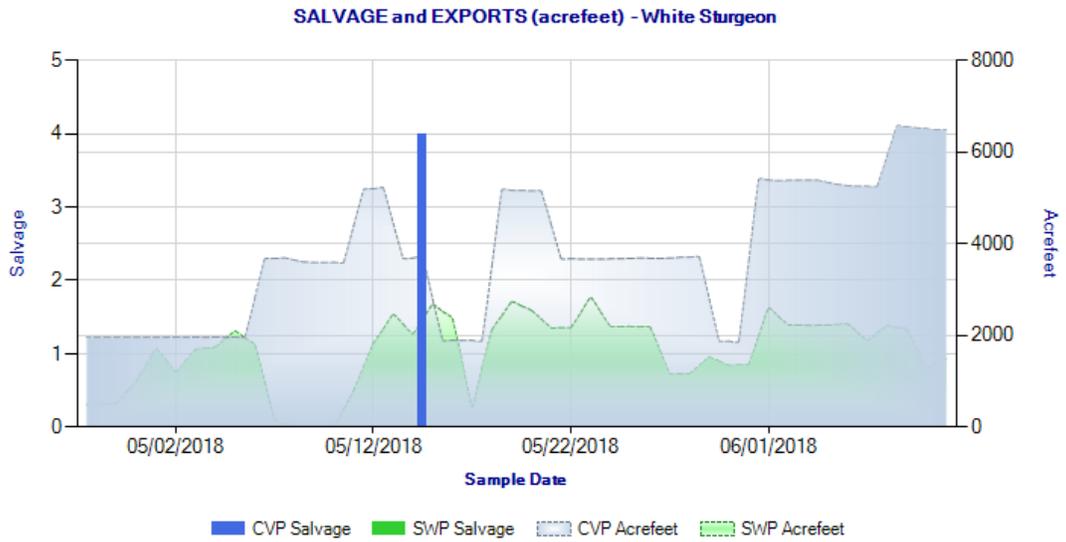


Figure 3. Daily salvage of White Sturgeon and water exports from the state and federal fish salvage facilities during April 28 through June 10, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES as of 6/12/18

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

Linander (CDFW) reported that on 6/5 and 6/8 the Nimbus Fish Hatchery released approximately 660,000 brood year 2017 fall-run Chinook salmon each day (1,320,000 total) into net pens at Conoco (San Pablo Bay). Fish were 25% marked (adipose fin-clipped and CWT). Also, a release is scheduled to occur this Saturday (6/16) from the Feather River Fish Hatchery at Fort Baker. Release notifications for these releases have not yet been distributed.

Agenda Item 9.

Discussion of Assignments for the Water Year 2018 DOSS Annual Report

Stuart (NMFS) discussed the assigned sections that were distributed to DOSS last week. These sections will be thoroughly discussed during next week’s DOSS call.

Agenda Item 10.

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>	0-1% (Last week: <1%)	0-1% (Last week: 1%)	99% (Last week: 98-99%)
<i>Hatchery winter-run Chinook salmon</i>	0-1% (Last week: same)	0-1% (Last week: same)	99% (Last week: same)

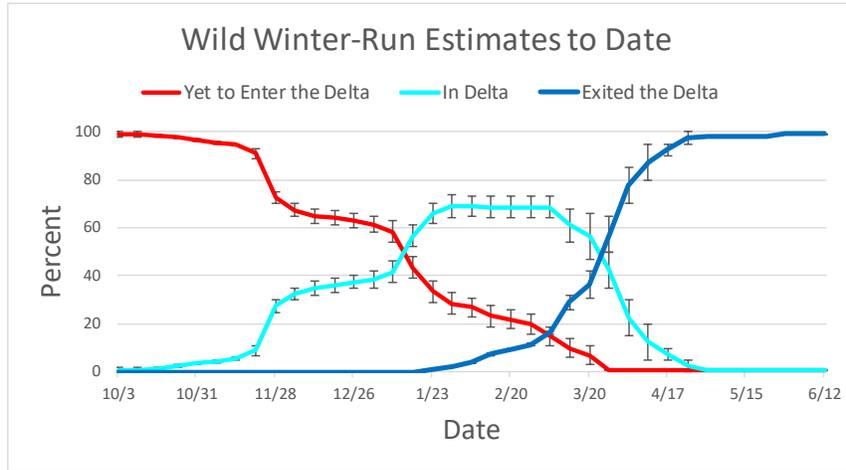
Rationale for changes in distribution

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. Few fish are expected to remain in the system due to warming water and air temperatures, and seasonal timing.

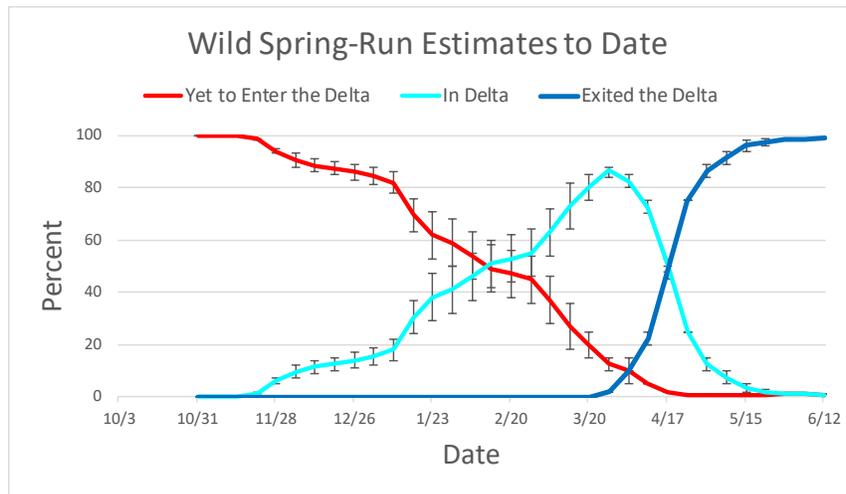
Wild spring-run Chinook: 18 spring-run sized fish were observed at Butte Creek (combined fyke trap and RST) and at no other monitoring locations this past week. Since few fish were observed upstream of the Delta and none elsewhere, and the number of salvaged fish has substantially decreased, this indicates a reduced presence of fish. DOSS estimated that 0-1% of the spring-run population remain upstream of the Delta and 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 was last

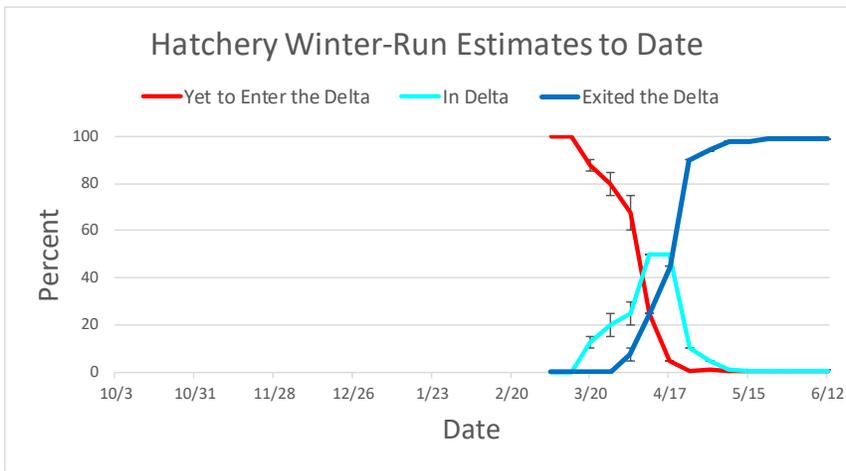
estimated at approximately 23%. DOSS estimated that most hatchery winter-run Chinook salmon have moved out of the upper river and through the Delta, with 99% moving past Chipps Island.



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 11.

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 (>99%).
 - Most of the BY17 wild spring-run Chinook salmon population has moved through the Delta at this time (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. Starting on 6/15, DCC gates will be open for the rest of the summer.

- **Overall Entrainment Risk: LOW-MEDIUM**
 - Reduced numbers of emigrating listed fish are present in the Sacramento River and Delta. River inflows are approximately 16,000 cfs with a Delta outflow of approximately 7,600 cfs and predicted OMR flows are moderately negative (~ -4,000 cfs for the 5-day and daily index calculations). Low fish presence and reduced exports reduce the risk of entrainment into the central and southern Delta. The DCC gate opening for the summer, however, does add additional risk of entrainment into the Delta interior for any fish that is still emigrating downstream in the Sacramento River.

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

- **Exposure Risk: LOW**
 - 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 (Chipps 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
 - OMR -5,000 cfs: LOW-MEDIUM
 - OMR -6,250 cfs⁵: MEDIUM-HIGH
 - OMR -7,500 cfs⁵: MEDIUM-HIGH
 - OMR -9,000 cfs⁵: MEDIUM-HIGH

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

Some DOSS members mentioned the possibility that a few remaining salmonids in the San Joaquin River basin may continue to come out of the system over the next week. Water temperatures in the lower San Joaquin River are still hospitable for salmonids ($\sim < 20^{\circ} \text{C}$). Low levels of salvage are expected to continue at the Projects, particularly at the CVP over the next week or so.

Agenda Item 12.

DOSS Advice to WOMT and NMFS: None.

Agenda Item 13.

Next Meeting: The next DOSS conference call will be on **6/19/2018 at 9 am.**