

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 4/24/2018 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: Bob Fujimura, Ken Kundargi, Duane Linander

DWR: Farida Islam, Kevin Reece, Bryant Giorgi, Dan Yamanaka, Ming-Yen Tu

NMFS: Jeff Stuart, Kristin McCleery

Reclamation: Elissa Buttermore, Don Portz, Towns Burgess, Tom Patton, Mike Hendrick

SWRCB: Chris Kwan, Chris Carr

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: 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 Estimates of Fish Distribution
10. DOSS Estimates of Fish Entrainment Risk
11. DOSS advice
12. Next DOSS meeting

Agenda Item 2.

RPA Implementation Review

Delta RPA Actions affecting operations during April:

Action IV.1.2¹ (DCC gate operations):

- Gates will remain closed from February 1 to May 20.

Action IV.2.1 San Joaquin River to Export Ratio:

- For the period from 4/1 through 5/31, the level of combined SWP and CVP exports will be determined by the San Joaquin River inflow as measured at Vernalis. For the current

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

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 1/1/18 through 6/15/18, and requires that OMR flow be no more negative than -5,000 cfs.
- Responses to exceedances of RPA action triggers will 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.
- Wild steelhead loss numbers were elevated on 4/21/18 and 4/22/18, but did not exceed the daily loss triggers. On 4/21/18, wild steelhead loss was 20.04 fish and the combined exports for the Projects was 3.332 thousand acre feet (TAF). The calculated threshold for the first trigger for daily steelhead loss was 26.656 fish (8 fish/TAF * 3.332 TAF/day = 26.656 fish/day). On 4/22/18, wild steelhead loss was 17.32 fish and the combined exports for the Projects was 3.346 TAF. The calculated threshold for the first trigger of daily steelhead loss was 26.768 fish (8 fish/TAF * 3.346 TAF/day = 26.768 fish/day).

Action IV.3³ (Reduce likelihood of entrainment or salvage at the export facilities, including an alert that indicates that export operations may need to be altered):

- Implementation of this action in WY 2018 is from 11/1/17 through 4/30/18.
- The third alert [March 1 through April 30: Knights Landing Catch Index (KLCI) or Sacramento Catch Index (SCI) >15] was not triggered during the past week.

Agenda Item 3.

Current Operations (4/24/18)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	700 ^A	Jones Pumping Plant	1,000
Reservoir Releases (cfs)			
Feather - Oroville	1,300 ^B	American - Nimbus	2,500
		Sacramento - Keswick	5,250
		Stanislaus - Goodwin	1,500
		Trinity - Lewiston	500 ^C
Reservoir Storage (in TAF)			

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 For details, see pages 79-80 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

San Luis (SWP)	909 (decreasing)	San Luis (CVP)	898
Oroville	2,361 (increasing)	Shasta	4,193
New Melones	2,058	Folsom	815
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	18,455 (decreasing)
Outflow Index (cfs)	~22,300 (decreasing)	San Joaquin River at Vernalis (cfs)	4,299 ^D
E:I	3% (14-day avg.)	X2	62 km

^A SWP exports will decrease to 600 cfs over the next couple of days (4/25-4/26).

^B Oroville releases will continue to decrease today from 1,300 cfs to 1,100 cfs, and tomorrow to 1,050 cfs.

^C Lewiston releases will increase to 1,800 cfs by 4/28, for the second pulse flow.

^D Vernalis flows will be fluctuating up to 5,000 cfs, then decreasing to ~3,000 cfs.

Approximate OMRs as of 4/21/18:

	USGS gauges (cfs)	Index (cfs)
Daily	+900	+600
5-day	+600	+800
14-day	+300	+300

Approximate OMRs as of 4/23/18:

	Index (cfs)
Daily	+200
5-day	+600
14-day	+800

Factors controlling Delta exports:

4/17-4/24: San Joaquin inflow-to-export ratio of 3:1 per NMFS BiOp RPA Action IV.2.1

Weather Forecast

The Sacramento area will be mainly dry and warm this week, with a chance of a few showers or thunderstorms over the mountains each day.

Head of Old River (HOR) Barrier discussion: San Joaquin River flows at Mossdale need to be below 5,000 cfs for in-water work to occur. Elevated flows on the tributaries from scheduled reservoir releases are likely to keep flows at or above 5,000 cfs at Mossdale over the next few days to weeks, potentially delaying or stopping in-water work again. Construction/ removal of the HOR barrier typically takes 2-3 weeks to complete. If the barrier is constructed this year, it could only remain in for a week or two before it has to be removed again by the end of May. The DOSS working group discussed the merits of constructing the HOR barrier for this year.

Agenda Item 4.

Smelt Working Group Update

The Smelt Working Group did not meet yesterday, 4/23/18. Conditions did not change this week, so there is no update. The Smelt Working Group will meet again on Monday, 4/30/18.

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 ^A	Tisdale RST ^B	Knights Landing RST ^C	Butte Creek Fyke trap ^D	Butte Creek RST ^E	Beach Seines ^F	Sacramento Trawl ^F	Chippis Island Midwater Trawl ^F	Mossdale Kodiak Trawl ^G
Sample Date	4/17-4/21	4/16-4/23	4/16-4/23	-	-	4/16-4/18	4/16, 4/18, 4/20	4/15, 4/17-4/21	4/17, 4/20, 4/21
Chinook									161
FR Chinook	823 juveniles	30	18			4	35	234	
SR Chinook	12 juveniles	13	7			1	28	597	
WR Chinook								16	
LFR Chinook									
Chinook (ad-clip)	73 FR juveniles	5 FR, 2 SR	8 FR, 6 SR			1	16	195	5
Steelhead (wild)								1	2
Steelhead (ad-clip)								9	
Green Sturgeon									
Flows (avg. cfs)	1,025	8,099	8,371						
W. Temp. (avg. °F)	57.9	57.1	60.1						
Turbidity (avg. NTU)	10.8	24.9	21.1						

^A GCID trap cone was removed from the bypass channel on 4/5 due to upcoming high flows and was re-set on 4/16 at 11:00 am. On 4/21, the cone was raised in anticipation of the fall-run hatchery release.

^B Tisdale RST sampling period was from 4/16 at 9:45 am to 4/23 at 9:30 am.

^C Knights Landing RST sampling period was from 4/16 at 10:15 am to 4/23 at 10:45 am.

^D Butte Creek Fyke trap data not updated this week.

^E Butte Creek RST data not updated this week.

^F Data reported in the 4/15 to 4/21 DJFMP sampling summary. Not included in the table above is 1 CHNP (pelvic clipped Chinook) at Chippis Island.

^G Mossdale Trawl sampling is being conducted by CDFW (Region 4) from 4/1 to 6/30. 4/16 and 4/19 trawls cancelled due to boat electrical issue. 2 RBT (steelhead) collected on 4/20 were 251 and 205 mm smolts.

Red Bluff Diversion Dam (RBDD)

USFWS biweekly report (4/9/18-4/22/18) 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)	67*	601,172 (415,715-786,628)
Spring-run Chinook (BY2017)	182,686**	230,669 (104,878-356,459)

*Biweekly catch decreased by 434 fish from previous biweekly total of 501.

**Biweekly catch increased by 179,503 fish from previous biweekly total of 3,183. This large increase was likely impacted by hatchery fall-run releases (25% marked), causing misclassification of fall-run as spring-run.

Agenda Item 6.

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

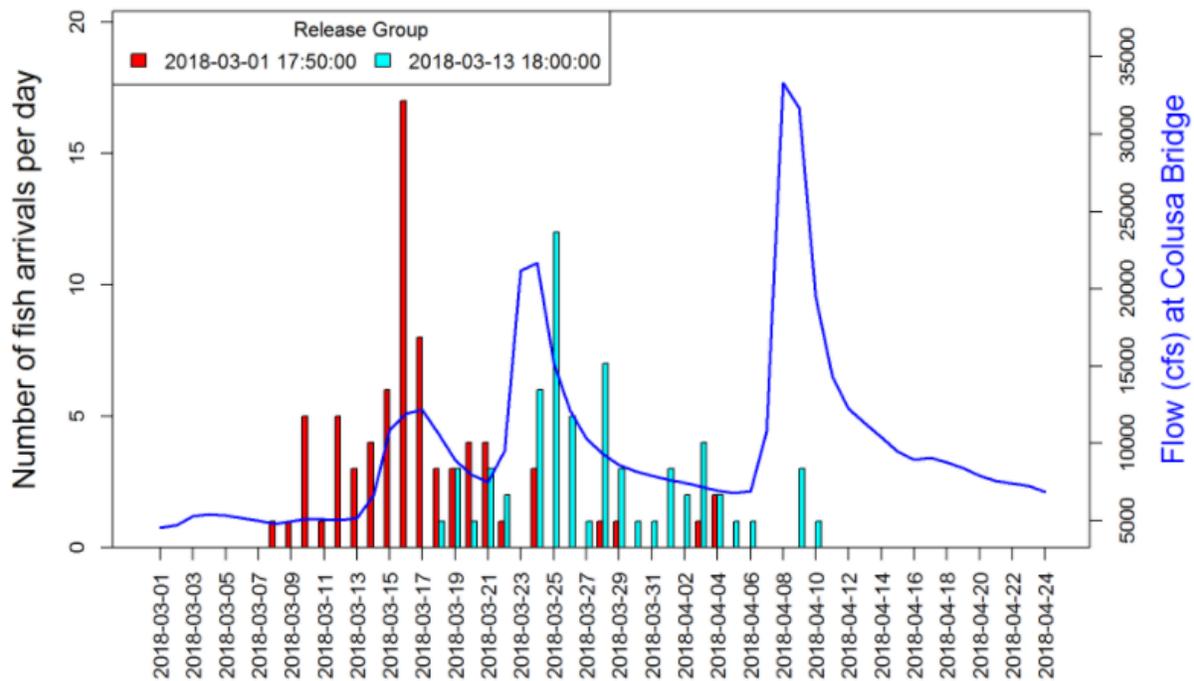
The Livingston Stone National Fish Hatchery released acoustic-tagged (JSATS) winter-run Chinook salmon from brood year 2017. The following table provides the detection frequency at Tower Bridge and Sacramento I-80/50 Bridge from 3/8 to 4/24.

	First Release Group	Second Release Group
Date of release	3/1/2018	3/13/2018
# acoustically tagged (JSATS)	361	239
Detections at Tower Bridge	72 (20%)	57 (24%)
Detections at the Sacramento I-80/50 Bridge	68 (19%)	48 (20%)
Detections at Old River	0	1 (0.4%)
Minimum Survival to Tower Bridge	20.6%	0.0%*
95% Confidence Interval	16.7% to 25.1%	0.0% to 0.0%*

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

* These values were likely a computational error, since survival of the 3/13 release was 26.4% last week.

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 April 16-April 22, 2018.

The number of juvenile Chinook salmon salvaged last week decreased compared to the previous week. The reported salvage of salmon from the CVP and SWP for this reporting week was: 835 spring-run size and 427 fall-run size unclipped juvenile Chinook salmon; and 1 spring-run size clipped (hatchery) juvenile Chinook salmon.

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: 21 wild steelhead and 15 hatchery steelhead.

Wild steelhead were salvaged every day last week and resulted in daily loss densities ranging between 0.39 to 6.01 fish/TAF.

No sturgeon were salvaged last week.

Preliminary results for yesterday (4/23) indicate more unclipped juvenile Chinook salmon were salvaged at the CVP and SWP fish facilities -- mostly spring-run and fall-run sized Chinook salmon. A few wild steelhead were also salvaged at the SWP.

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: April 16-April 22, 2018

Prepared by Bob Fujimura on April 23, 2018 17:41

Preliminary Results -Subject to Revision

Criteria	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	↘	0
Wild steelhead	0	0.47	3.87	0.39	0	6.01	5.18	↘	2.27
Exports									
SWP daily export	886	563	1,379	1,559	1,549	1,371	1,384	↘	1,242
CVP daily export	5,200	5,183	1,974	1,966	1,962	1,961	1,962	↘	2,887
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	↘	112	292
Spring Run	835	1,723	↘	7,888	14,591
Late Fall Run	0	0	↘	5	7
Fall Run	427	685	↘	2,815	3,780
Unclassified	0	0	↘	4	NC
Total	1,262	2,408		10,824	18,670
Hatchery					
Winter Run	0	0	↘	48	183
Spring Run	1	4	↘	1,005	1,720
Late Fall Run	0	0	↘	71	236
Fall Run	0	0	↘	0	0
Unclassified	0	0	↘	1	NC
Total	1	4		1,125	2,139

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	21	54	↘	863	2,298
Hatchery	15	28	↘	721	2,415
Total	36	83		1,584	4,713

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

Generated by Bob Fujimura on April 23, 2018

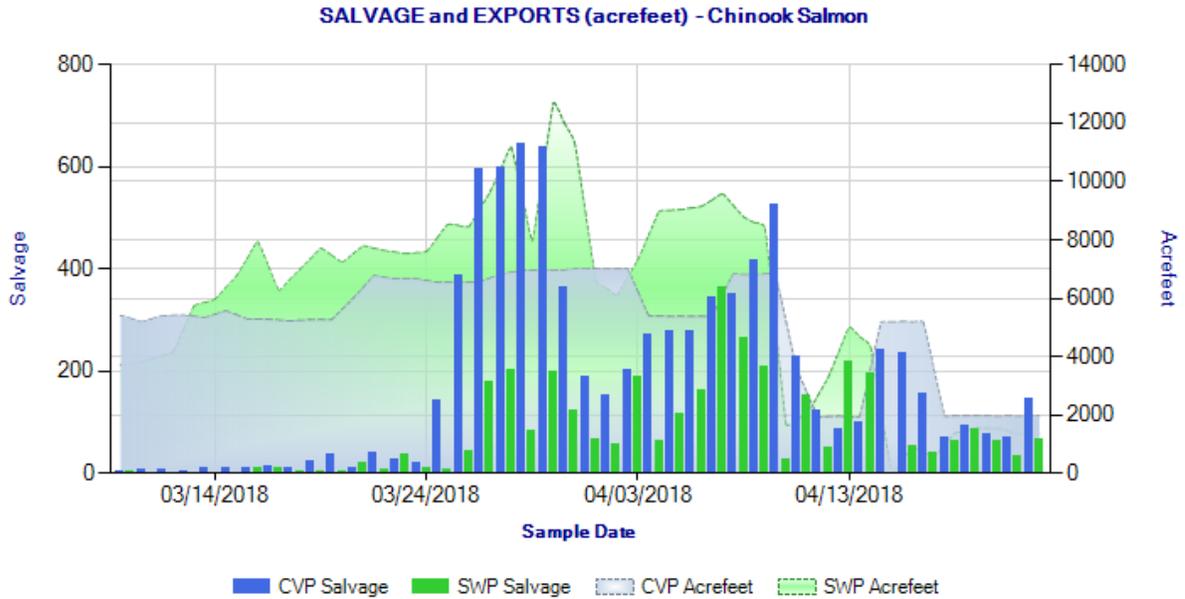


Figure 1. Daily salvage of Chinook Salmon (all races) and water exports from the state and federal fish salvage facilities during March 10 through April 22, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

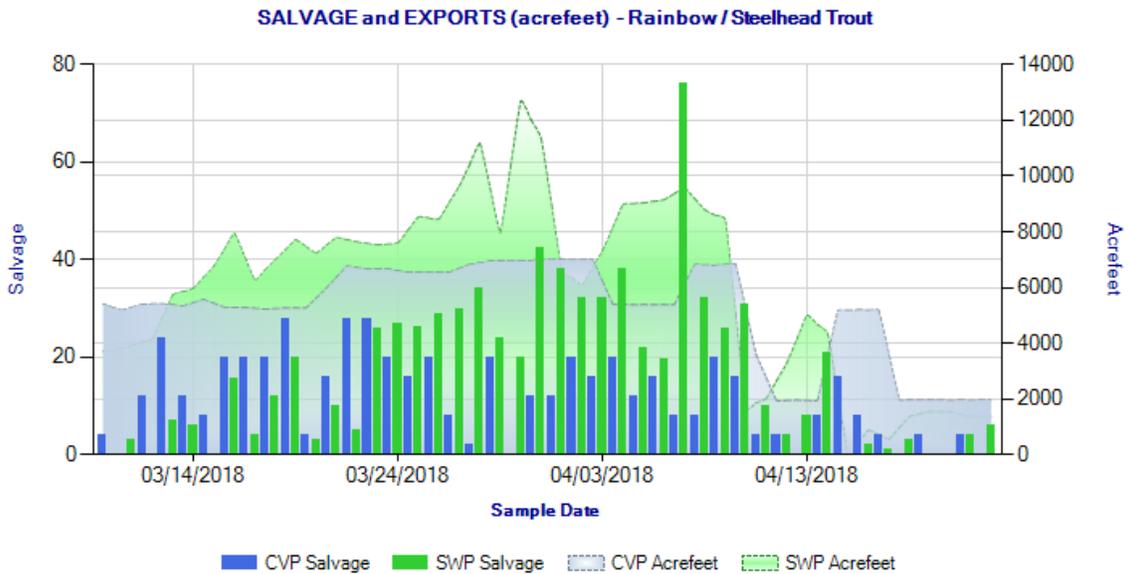


Figure 2. Daily salvage of Rainbow/Steelhead and water exports from the state and federal fish salvage facilities during March 10 through April 22, 2018. Graph obtained from the DFG salvage monitoring web page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES as of 4/19/18

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

On 4/24/18, CDFW will release approximately 1,000,000 brood year 2017 fall-run Chinook salmon from the Feather River Hatchery into San Pablo Bay from the Mare Island net pens. The release will include 25% marked (adipose fin clip and CWT) fish.

On 4/26/18 and 4/27/18, CDFW will release a total of approximately 900,000 brood year 2017 fall-run Chinook salmon from the Mokelumne River Hatchery into the San Joaquin River at the Sherman Island net pen site. This release will include 25% marked (adipose fin clip and CWT) fish.

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>	<1% (Last week: same)	<5% (Last week: 5-10%)	>95% (Last week: 90-95%)
<i>Wild young-of-year spring-run Chinook salmon</i>	<1% (Last week: 2%)	25% (Last week: 48-53%)	75% (Last week: 45-50%)
<i>Hatchery winter-run Chinook salmon</i>	<1% (Last week: 5%)	<10% (Last week: 50%)	>90% (Last week: 45%)

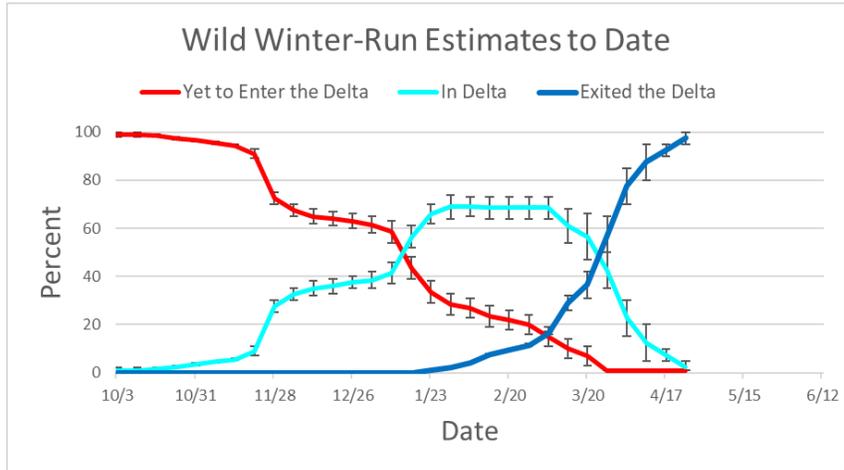
Rationale for changes in distribution

Wild winter-run Chinook: 16 winter-run sized fish were observed at Chipps Island this past week and at no other monitoring locations. DOSS estimated that at least 95% of the winter-run population has exited past Chipps Island and that less than 1% remain upstream of the Delta.

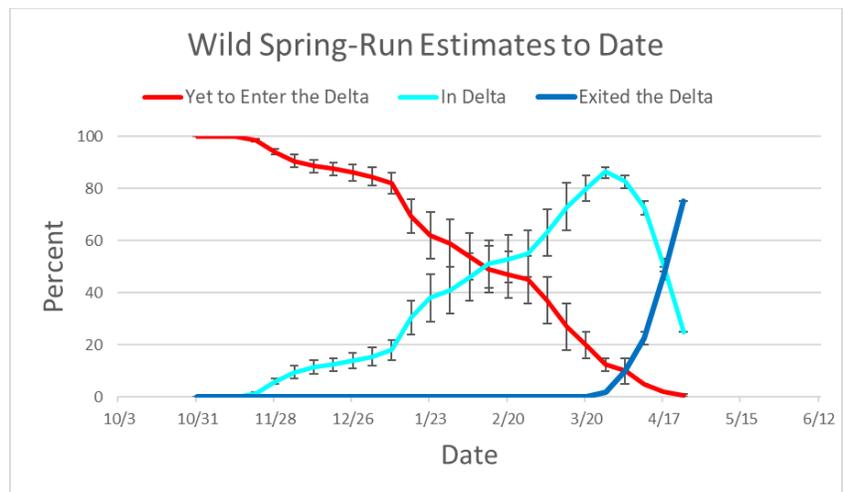
Wild spring-run Chinook: 12 spring-run sized fish were observed at GCID, 13 at Tisdale, 7 at Knights Landing, 1 in the beach seines, 28 in the Sacramento Trawl, and 597 in the Chipps Island Trawl this past week. Since fish were observed at locations within the Delta and many more at Chipps Island trawl, DOSS estimated that less than 1% of the spring-run population are upstream of the Delta and 75% of the population has exited the Delta past Chipps Island. The large number of spring-run observed at Chipps Island trawl was likely influenced by the large releases of fall-run hatchery Chinook salmon, which have some overlap with the sizes of spring-run Chinook salmon based on the length at date criteria.

Hatchery winter-run Chinook: Based on real-time monitoring of the acoustically-tagged hatchery winter-run at Tower Bridge and the I-80/50 Bridge, DOSS estimated that the majority of the release groups have exited the Delta: less than 1% of the hatchery produced winter-run are expected to remain upstream of the Delta and 90% exited past Chipps Island. This estimate

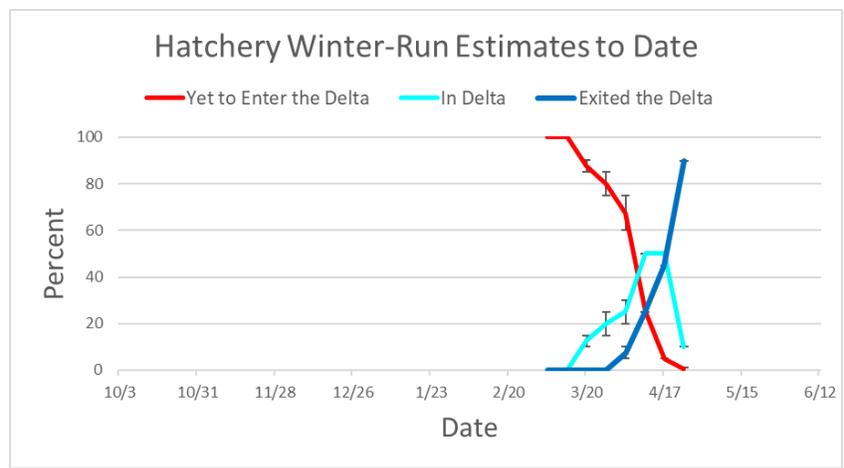
assumes a high in-river survival rate but does not account for predation or other sources of mortality.



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: MEDIUM**
 - Approximately 99% of the winter-run Chinook salmon population has moved downstream into the Delta or have already exited past Chipps Island.
 - Hatchery production winter-run releases have occurred and the pulse of acoustically-tagged fish has been detected moving through the Sacramento area receiver arrays.
 - Hatchery winter-run Chinook salmon have been salvaged at the Project's fish salvage facilities.
 - Wild winter-run Chinook salmon have been observed at the salvage facilities (DNA verified).
 - Spring Kodiak Trawl data also indicate winter-run are in the central and western Delta.
 - Increased flows and turbidities from recent storms are expected to have stimulated fish movement.
 - Winter-run continue to be present in the Delta and are likely to continue rearing there for the next several weeks, until leaving the Delta, elevating their exposure risk.
 - Fewer winter-run have been seen recently in the lower Sacramento River section between Sacramento and the DCC and more winter-run have been observed in the

- catch at Chipps Island over the past few weeks, indicating that most of the population has moved out of the Delta past Chipps Island.
- Approximately 25% of spring run population is in Delta and 75% of the population is expected to have exited the Delta.
 - Surrogate spring-run Chinook salmon hatchery releases of late-fall run Chinook salmon that are captured during DJFMP monitoring or in salvage are in the Delta. The last release occurred on 1/25/18. CWTs from ad-clipped Chinook salmon are being read from fish collected during monitoring.
 - Wild and hatchery Chinook salmon and steelhead have been observed in the Chipps Island trawls.
 - Wild and hatchery Chinook salmon have been observed in beach seines from the North Delta and Liberty Island regions.
 - Wild and hatchery Chinook salmon as well as hatchery steelhead have been observed in the EDSM efforts.
 - Wild and hatchery salmonids and steelhead have been observed in salvage.
- **Routing Risk: MEDIUM**
 - Sacramento River inflows are currently ~18,500 cfs and are high enough to mute tidal effects at Georgiana Slough and Three Mile Slough.
 - Delta Cross Channel is closed.
 - **Overall Entrainment Risk: MEDIUM**
 - Fish are present in the Delta but high river inflows and predicted positive OMR and Qwest 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**
 - Clipped steelhead and wild steelhead have been observed in salvage.
 - Clipped and wild Chinook salmon have been seen in salvage.
 - Continuing to see Chinook salmon and steelhead in lower Sacramento River and western Delta monitoring efforts (Chipps Island and in the river confluence region)
 - SKT trawl has captured clipped and unclipped Chinook salmon in the San Joaquin River and southern Delta.
 - Greater proportions of the winter-run and spring-run Chinook salmon populations are estimated to have moved into the Delta or out of the Delta than remain upstream
- **OMR/Export Risk:**
 - OMR -2,500 cfs: LOW OMR -3,500 cfs: MEDIUM
 - OMR -5,000 cfs: MEDIUM-HIGH
 - OMR -6,250 cfs⁵: HIGH
 - OMR -7,500 cfs⁵: HIGH (incrementally higher risk if Vernalis flows decrease)

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

- 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-MEDIUM
 - OMR -3,500 cfs: MEDIUM (but lower than -5,000 cfs OMR risk)
 - 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.

Agenda Item 11.

DOSS Advice to WOMT and NMFS:

No advice for operations, but recommend discussing HOR Barrier installation in May.

Agenda Item 12.

Next Meeting: The next DOSS conference call will be on **5/1/2018 at 9 am.**