

Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 4/23/2019 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 at the [NMFS Water Ops page: www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html](http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html).

CDFW: Ken Kundargi, Duane Linander, Kyle Griffith

DWR: Bryant Giorgi, Chris Cook, Kevin Reece,

NMFS:

Reclamation: Tom Patton, Elissa Buttermore, Towns Burgess

SWRCB:

USFWS: Craig Anderson,

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 DJFMP](#))
3. Current Operations
4. Smelt Working Group
5. Fish Monitoring: RSTs/trawls/seines
6. Fish Monitoring: Salvage
7. Hatchery Releases
8. DOSS Estimates of Fish Distribution
9. DOSS Feedback on Entrainment Risk
10. DOSS advice
11. Next DOSS meeting

Agenda Item 2.

RPA Implementation Review

Delta RPA Actions affecting operations during April:

Action IV.1.1 (Alerts that indicate the Delta Cross Channel (DCC) gate operations may be triggered soon)¹:

- Starting on 10/1, the First Alert is triggered if either the first component (>95 cfs flow threshold) or second component (>50% change in mean daily flow) has been exceeded at either the Deer Creek gage at Vina (DCV), or the Mill Creek gage at Los Molinos

¹ For details, see pages 60-61 in Enclosure 2 of the [2011 Amendments to the 2009 RPA](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations.%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf) http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations.%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf. 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.

(MLM). The First Alert was triggered every day this past week. See table below for details.

Date	Mill Creek (MLM)		Deer Creek (DCV)	
	mean daily flow (cfs)	change in mean daily flow	mean daily flow (cfs)	change in mean daily flow
4/16/2019	612	1%	935	1%
4/17/2019	583	-5%	891	-5%
4/18/2019	593	2%	867	-3%
4/19/2019	702	18%	940	8%
4/20/2019	775	10%	992	6%
4/21/2019	781	1%	1,005	1%
4/22/2019	699	-10%	930	-7%

- Second Alert (triggered only if both Knights Landing water temperatures are <56.3°F and Wilkins Slough flows are >7,500 cfs). The Second Alert was triggered every day this past week. See table below for details.

Date	Wilkins Slough (WLK)	Knights Landing (KL)
	Mean Daily Flow (cfs)	Daily water temperature (°F)
4/16/2019	26,509	53.0
4/17/2019	26,105	54.2
4/18/2019	25,600	56.3
4/19/2019	24,904	58.0
4/20/2019	24,117	60.4
4/21/2019	23,488	
4/22/2019	22,782	

Action IV.1.2² (DCC gate operations):

- DCC gates will remain closed through 5/20/19, per operations described in RPA IV.1.2 starting 12/1/18.

Action IV.2.1 San Joaquin River Inflow to Export (I:E) 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 (Above Normal in the San Joaquin River basin) the ratio of San Joaquin River inflow to combined CVP and SWP exports is 4:1, 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.2.3³ (OMR Management):

- Implementation of this action in WY 2019 began on 1/1/19, and requires that Old and

² For details, see pages 62-66 in Enclosure 2 of the [2011 Amendments to the 2009 RPA](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf)
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf

Middle River (OMR) flow be no more negative than -5,000 cfs. OMR flows are reported weekly with the OMR index and the tidally filtered USGS gauges at the 5-day and 14-day running averages.

- Salvage reported for unmarked spring-run Chinook salmon on 4/19 and 4/20 exceeded 2.5 fish/taf with calculated older juvenile Chinook salmon loss densities at 3.15 and 3.29 respectively. Due to OMR more positive than -3,500 cfs, no change in operations is necessary to meet the action response of operating to OMR no more negative than -3,500 cfs.

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):

- The Third Alert [November 1-February 28 Knights Landing Catch Index (KLCI) or Sacramento Catch Index (SCI) >10] was not triggered this past week.

Agenda Item 3.

Current Operations (4/23/19)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	700*	Jones Pumping Plant	1,750
Reservoir Releases (cfs)			
Feather - Oroville	9,000**	American - Nimbus	7,300
		Sacramento - Keswick	8,000***
		Stanislaus – Goodwin	4,000
		Trinity - Lewiston	2,500****
Reservoir Storage (in TAF)			
San Luis (SWP)	931	San Luis (CVP)	928
Oroville	3,136	Shasta	4,092
New Melones	1,930	Folsom	834
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	60,400
Outflow Index (cfs)	~72,800	San Joaquin River at Vernalis (cfs)	9,670
E:I	2% (14-day avg.)	X2	<56 km

* Clifton Court exports are scheduled to decrease to 600 cfs and reduce as inflow at Vernalis decreases.

** Oroville releases will increase to 10,500 cfs later today

*** Keswick is currently reducing flows to target 5,500 cfs by 4/28 to install flashboards at ACID.

**** Trinity releases are currently following ROD pulse flow schedule.

Factors controlling Delta exports:

- 4/16/19-4/23/19: 4:1 San Joaquin I:E ratio per NMFS BiOp RPA Action IV.2.1

³ For details, see pages 79-80 in Enclosure 2 of the [2011 Amendments to the 2009 RPA](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf)
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf

Approximate OMR as of 4/20/19:

	USGS gauges (cfs)	Index (cfs)
Daily	2,200	2,000
5-day	2,200	2,100
14-day	2,600	2,400

Approximate OMR as of 4/22/19:

	Index (cfs)
Daily	1,900
5-day	2,000
14-day	2,200

Weather Forecast

Warmer temperatures this week may increase inflows due to snowmelt.

Agenda Item 4.

Smelt Working Group

The Smelt Working Group met on Monday, 4/22/19, at 10 am.

SWG did not provide any advice for Delta Smelt due to high outflow. The Longfin Smelt Incidental Take permit is still off-ramped due to high flow in the Sacramento and San Joaquin Rivers.

Seven Delta Smelt larvae have been collected so far this season.

Longfin Smelt larvae are concentrated downstream of Carquinez Strait.

RPA

Action 3 (Protection of larval Delta Smelt) has been in place since February 6th.

Agenda Item 5.

Fish Monitoring: The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. Empty cells indicate zero catches at those locations with sample dates shown.

Location	GCID RST ^A	Tisdale RST ^B	Knights Landing RST ^C	Beach Seines ^D	Sacramento Trawl ^D	Chippis Is. Midwater Trawl ^D	Mossdale Kodiak Trawl ^E
Sample Date	-	4/15-4/22	4/15-4/21	4/14-4/20	4/14-4/20	4/14-4/20	4/14-4/21
Chinook							10
FR Chinook		258	104	54	44	66	
SR Chinook		107	111	6	70	317	
WR Chinook					9	15	
LFR Chinook		5	4		1		
Chinook (ad-clip)		78 FR 50 SR	38 FR 49 SR		52	161	
Steelhead (wild)			1			1	
Steelhead (ad-clip)						3	
Green Sturgeon							
Flows (avg. cfs)		33,452	25,401				
W. Temp. (avg. °F)		56	56.0				
Turbidity (avg. NTU)		40.0	31.00				

^A The GCID trap was raised on 2/22 due to predicted high flows.

Tisdale RST sampling period was from 4/15 at 10:00 am to 4/22 at 0930.

^C Knights Landing RST sampling period was from 4/15 at 10:15 am to 4/21 at 1045.

^D Data reported in the 4/14 to 4/20 DJFMP sampling summary *4 of the ad-clipped fish observed at Sac trawl, and 2 at Chippis Island trawl were left pelvic fin and ad-clipped, indicating they were Battle Creek winter-run from LSNFH.

^E Mossdale trawls sampled by CDFW (Region 4) instead of the DJFMP between 4/1 and 6/30.

Tracking of acoustic-tagged winter-run Chinook salmon released at Caldwell Park

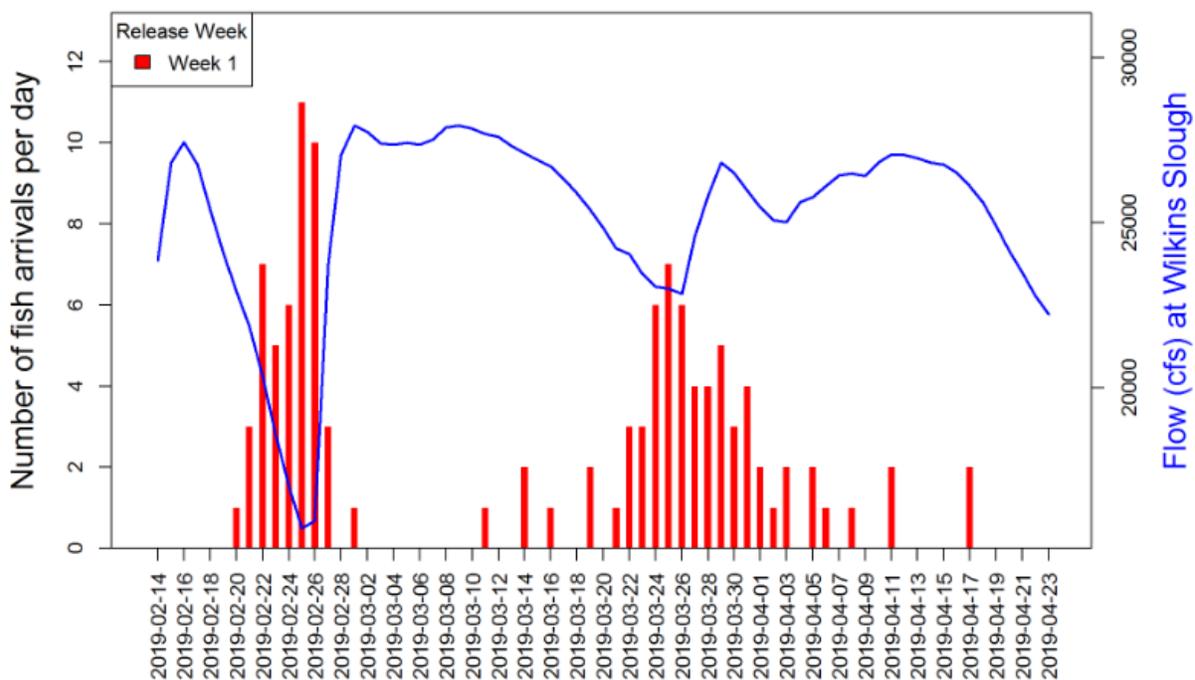
The Livingston Stone National Fish Hatchery released acoustic-tagged (JSATS) winter-run Chinook salmon from brood year 2018. The following table provides the detection frequencies downstream of the release site. Detections through 4/22/19 below.

Date of release	2/14/19
# acoustically tagged (JSATS)	649 fish
Butte City Bridge	195 (30%)

Tower Bridge	112 (17%)
Minimum survival to Tower Bridge	25%
I-80/50 Bridge	126 (19%)
Georgiana Slough	21 (3%)
Detections at Benicia Bridge	162 (25%)
Minimum survival to Benicia Bridge	26%

[Hatchery-origin winter-run Chinook salmon: https://calfishtrack.github.io/real-time/pageLSWR_2019.html](https://calfishtrack.github.io/real-time/pageLSWR_2019.html)

Detections at Tower Bridge (downtown Sacramento) versus Sacramento River flows at Wilkins Slough



Tracking of acoustic-tagged winter-run Chinook salmon released at Battle Creek

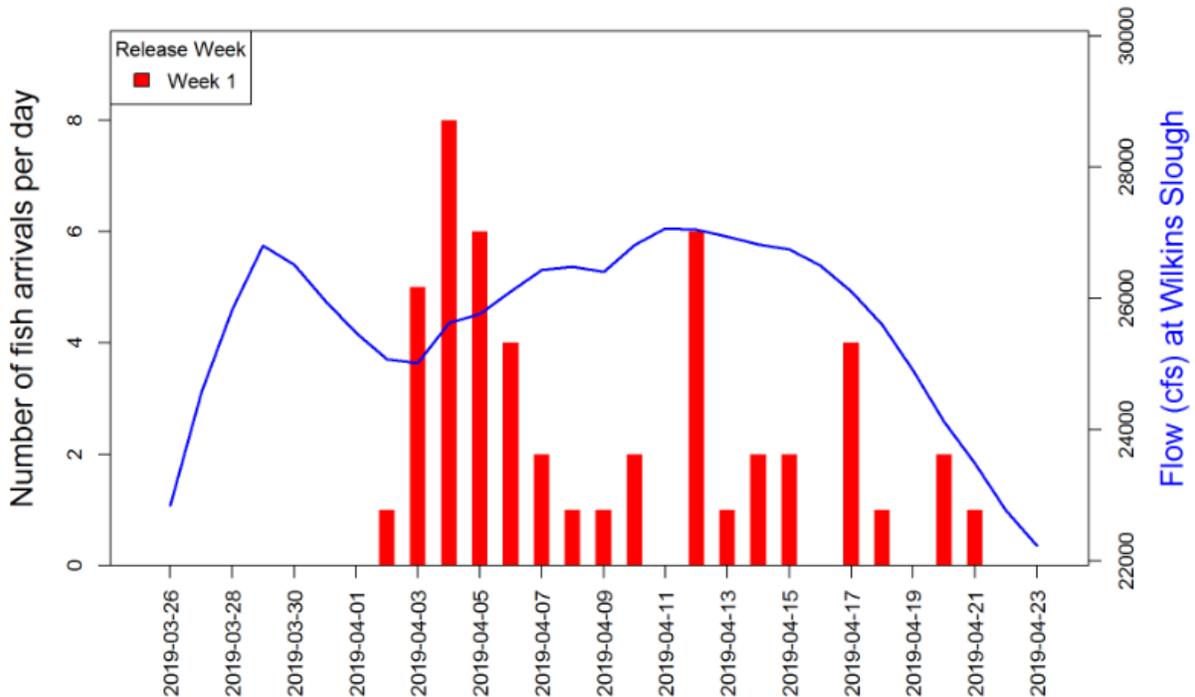
The Livingston Stone National Fish Hatchery released acoustic-tagged (JSATS) winter-run Chinook salmon from brood year 2018. The following table provides the detection frequencies downstream of the release site. Detections through 4/22/19 below.

Date of release	3/26/19
# acoustically tagged (JSATS)	500 fish
Butte City Bridge	30 (6%)
Tower Bridge	49 (10%)
Minimum survival to Tower Bridge	19%
I-80/50 Bridge	68 (13%)
Georgiana Slough	22 (4%)

Detections at Benicia Bridge	59 (12%)
Minimum survival to Benicia Bridge	12%

Hatchery-origin Battle Creek winter-run Chinook salmon: https://calfishtrack.github.io/real-time/pageBCJSWR_2019.html

Detections at Tower Bridge (downtown Sacramento) versus Sacramento River flows at Wilkins Slough



Lower American River

RST catch from 1/10 to 4/15/19 on the American River at Watt Avenue: 14,457 unmarked fall-run, 62 spring-run, 18 winter-run, 41 late-fall-run, and 243 steelhead have been observed.

Feather River

Cook (DWR) provided Feather River RST data for two RST sites on the Feather River. At the Eye Side Channel from 4/15 to 4/20, 55 fall-run Chinook salmon, 5 late-fall-run and 2 steelhead were observed. At the Herringer site from 4/10 to 4/14, 120 fall-run Chinook salmon, 8 late-fall-run, and 3 ad-clipped spring-run were observed.

Agenda Item 6.

Fish Monitoring: Salvage

This report covers 4/15/2019 – 4/21/2019

Prepared 4/23/2019 by Kyle Griffiths – Preliminary Results, subject to change

Chinook Salmon:

WILD ORIGIN (UNCLIPPED)

Unclipped (wild origin) winter run-sized Chinook were observed at the state salvage facility on 4/20. Weekly salvage for this group was $n = 8$. Total WY19 salvage for this race to date is $n = 184$.

Non-clipped spring run-sized Chinook were salvaged at the state facility 4/15, 4/16, 4/17, 4/20 & 4/21, and at the federal facility 4/17, 4/18, & 4/20. Weekly salvage for this race is $n = 53$. Total WY19 salvage for this race to date is $n = 186$.

Wild origin fall-run-sized Chinook were salvaged at the federal facility only on 4/16, 4/17, 4/18, & 4/19. The total weekly salvage for this group was $n = 24$. Total WY19 salvage for this race to date is $n = 3,698$.

Weekly salvage of wild-origin Chinook was $n = 85$. Total WY19 salvage of wild-origin fish is $n = 4,075$.

CLIPPED (HATCHERY ORIGIN)

Clipped (hatchery origin) Spring-run-sized Chinook were observed at the state facility 4/15, 4/16, 4/17, 4/19, 4/20, & 4/21, and the federal facility 4/16, 4/18. These fish originated from SJRRP's SCARF Spring run releases with a single exception from the SJRRP efficiency trials. Weekly salvage for clipped Chinook was $n = 69$. The total WY19 salvage for clipped salmon to date is $n = 1,648$.

DOSS Weekly Salvage Update

Reporting Period: April 15-April 21, 2019

Prepared by Kyle Griffiths on April 22, 2019 17:3

Preliminary Results -Subject to Revision

Criteria	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	3.15	3.29	0	↗	0.92
Wild steelhead	3.83	3.14	3.82	0.78	0.26	1.70	0	↗	1.93
Exports									
SWP daily export	1,695	2,044	1,775	2,052	1,866	1,652	1,139	↘	1,746
CVP daily export	3,540	3,465	3,472	3,464	3,444	3,444	3,466	↘	3,471
SWP reduced counts	0	0	0	0	0	0	0		
CVP reduced counts	0	0	0	0	8%	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	8	33	↗	184	537
Spring Run	53	153	↗	186	549
Late Fall Run	0	0	→	3	13
Fall Run	24	18	↗	3,698	4,011
Unclassified	0	0	→	4	NC
Total	85	205		4,075	5,110
Hatchery					
Winter Run	0	0	→	131	561
Spring Run	69	238	↗	1,155	4,029
Late Fall Run	0	0	→	354	776
Fall Run	0	0	→	4	3
Unclassified	0	0	→	4	NC
Total	69	238		1,648	5,369

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

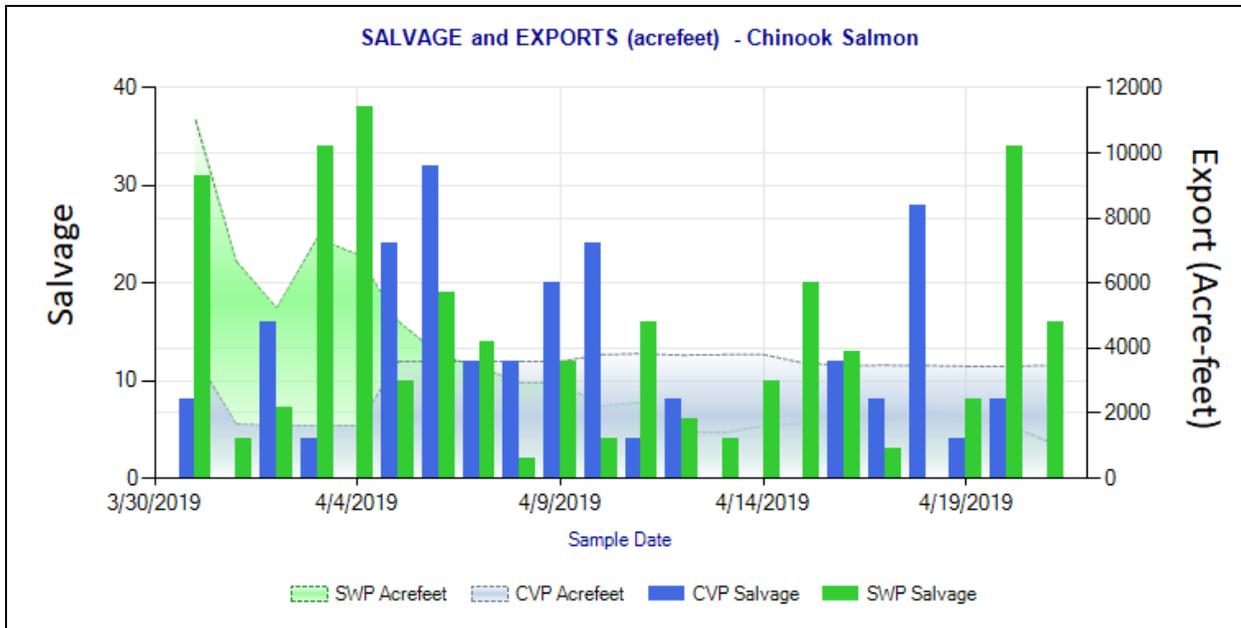


Fig 1. Chinook Salmon Salvage (values = number of fish salvaged) and export (acre-feet) at state/federal salvage facilities. All CS races/origins combined. Dates: 3/31 - 4/21/2019.

Steelhead

Unclipped Steelhead were observed at the state facility on 4/15, 4/16, 4/17, 4/18, & 4/20, and at the federal facility 4/15, 4/17, & 4/19. The weekly salvage total of unclipped Steelhead was $n = 25$, raising the total WY19 salvage to date to $n = 358$.

Clipped steelhead were observed at the state facility only on 4/15, 4/17, 4/18, 4/19, & 4/21. The weekly salvage total of clipped Steelhead was $n = 25$, raising the total WY19 salvage to date to $n = 1,787$.

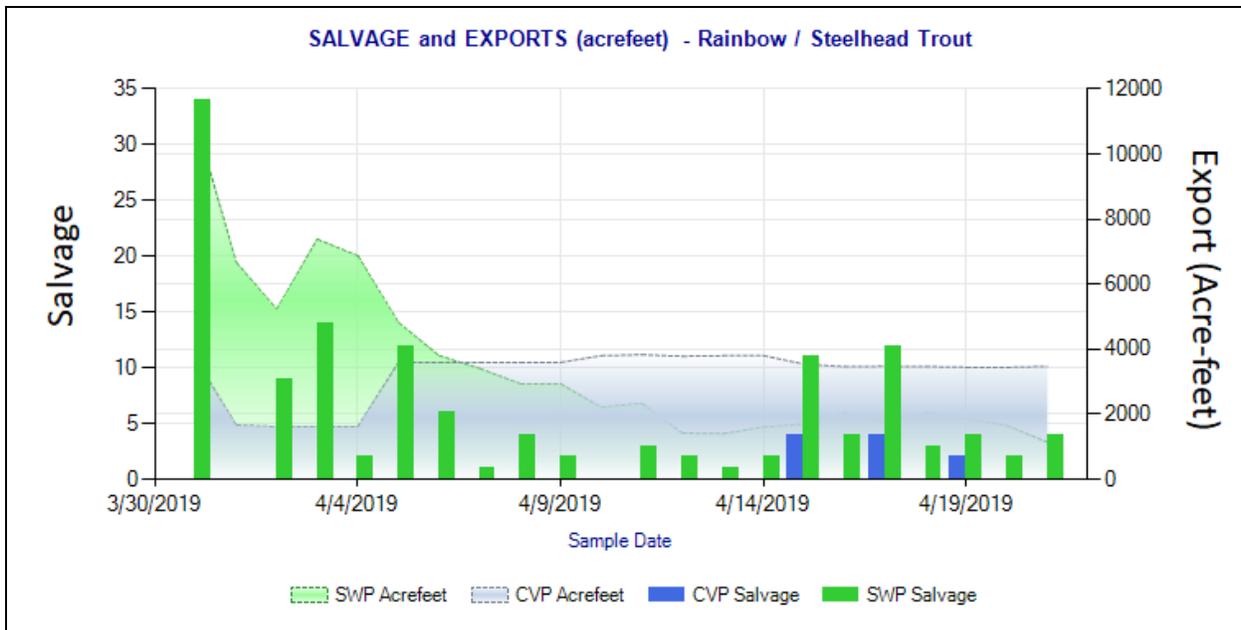


Figure 2. Salvage of clipped & unclipped Steelhead for state & federal salvage facilities. Dates: 3/31 - 4/21/2019.

Sturgeon

No sturgeon were salvaged at either facility this week.

Operations:

The federal facility reported a three-hour outage between 0800 - 1100 on 4/19 to remove and install repaired hydrolox screens.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES as of 4/22/19

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 Trigg	Date of First Loss ⁴	Date of Last Loss ⁴
12/3/2018	LF	Coleman NFH	Battle Creek	Spring Surrogate	67.33	61,277	n/a	0.110	n/a	0.5%	12/27/2018	2/16/2019
12/14/2018	LF	Coleman NFH	Battle Creek	Spring Surrogate	24.57	66,266	n/a	0.037	n/a	0.5%	12/27/2018	2/10/2019
1/4/2019	LF	Coleman NFH	Battle Creek	Spring Surrogate	457.26	73,952	n/a	0.618	n/a	0.5%	1/16/2019	2/20/2019

SWP and CVP adipose-fin clipped Chinook lost from 10/1/2018 through 4/15/2019.

¹Number 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.

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

Agenda Item 7.

Hatchery Releases

On 4/22/19 the California Department of Fish and Wildlife (CDFW) released approximately 516,425 brood year 2018 spring-run Chinook salmon from the Feather River Hatchery into the Feather River at Gridley Boat Ramp and Boyd’s Pump. This release includes 100% marked (adipose fin clip) and CWT fish. Additionally, an experimental release of 600 acoustic tagged fish are included with these releases.

Agenda Item 8.

DOSS Estimates of Fish Distribution

DOSS estimates of the current distribution of listed Chinook salmon 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>Young-of-year (YOY) winter-run Chinook salmon</i>	0-1% (Last week: 0-1%)	4-10% (Last week: 9-15%)	90-95% (Last week: 85-90%)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	5% (Last week: 5%)	30-35% (Last week: 40-45%)	60-65% (Last week: 50-55%)
<i>Hatchery winter-run Chinook salmon</i>	0-1% (Last week: 0-1%)	4% (Last week: 4-10%)	95% (Last week: 90-95%)

Rationale for distribution

Wild winter-run Chinook:

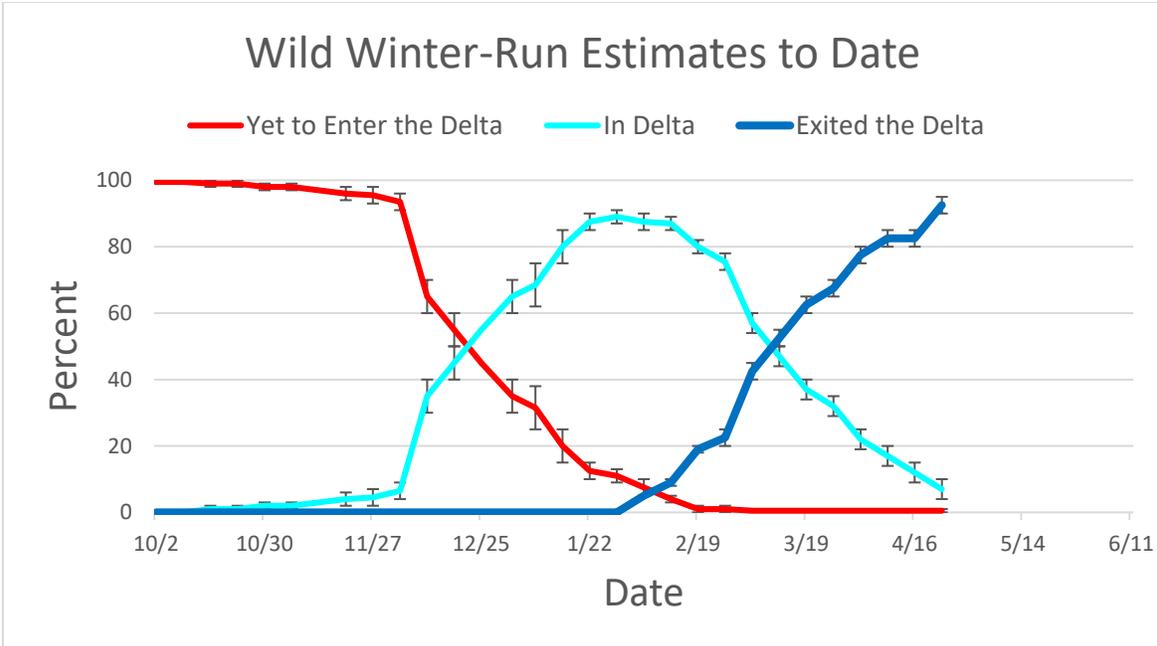
Nine wild winter-run Chinook salmon were observed at Sacramento trawl and 15 at Chipps Island trawl. Since fish were observed at monitoring locations, and due to life history and seasonal timing, DOSS estimates that an additional 5 percent of wild winter-run Chinook salmon population has exited the Delta past Chipps Island and few fish remain upstream of Knights Landing.

Wild spring-run Chinook:

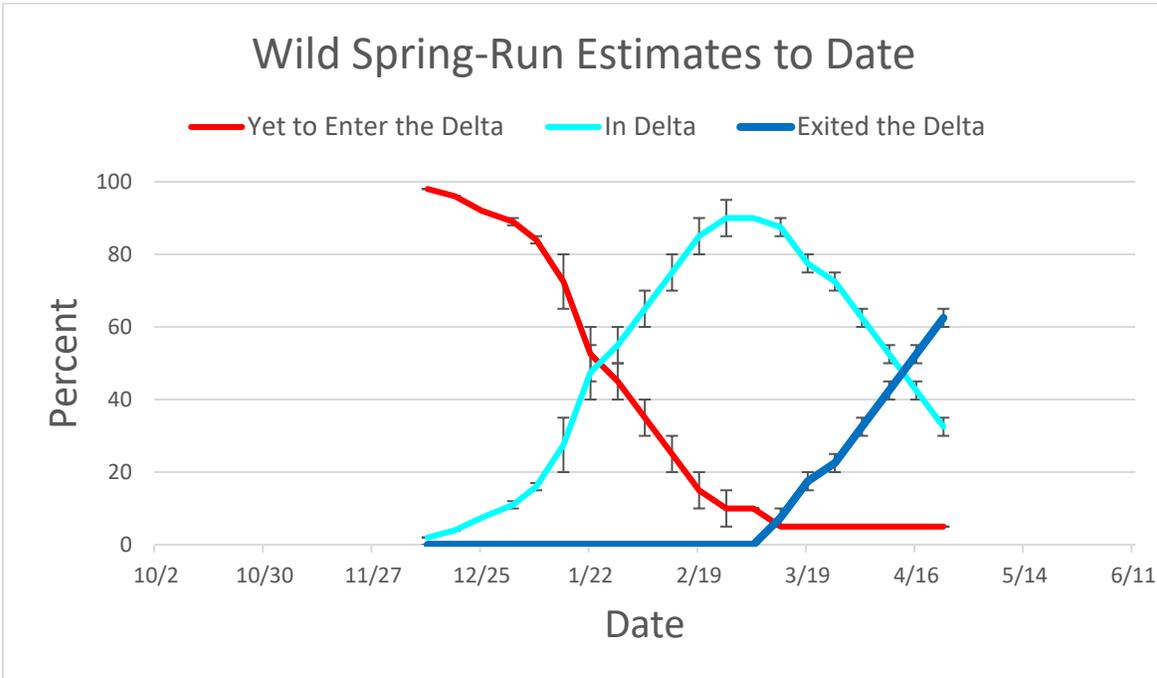
107 wild spring-run Chinook salmon were observed at Tisdale, 111 at Knights Landing, 6 at the beach seines, 70 at Sacramento trawl, and 66 at Chipps Island trawl. Many of these fish are assumed to be unmarked hatchery fall-run Chinook recently released upstream. Since more fish were observed at monitoring locations, and due to life history and seasonal timing, DOSS estimates that an additional 10 percent of the population has exited the Delta past Chipps Island and 5 percent remain upstream of Knights Landing.

Hatchery winter-run Chinook:

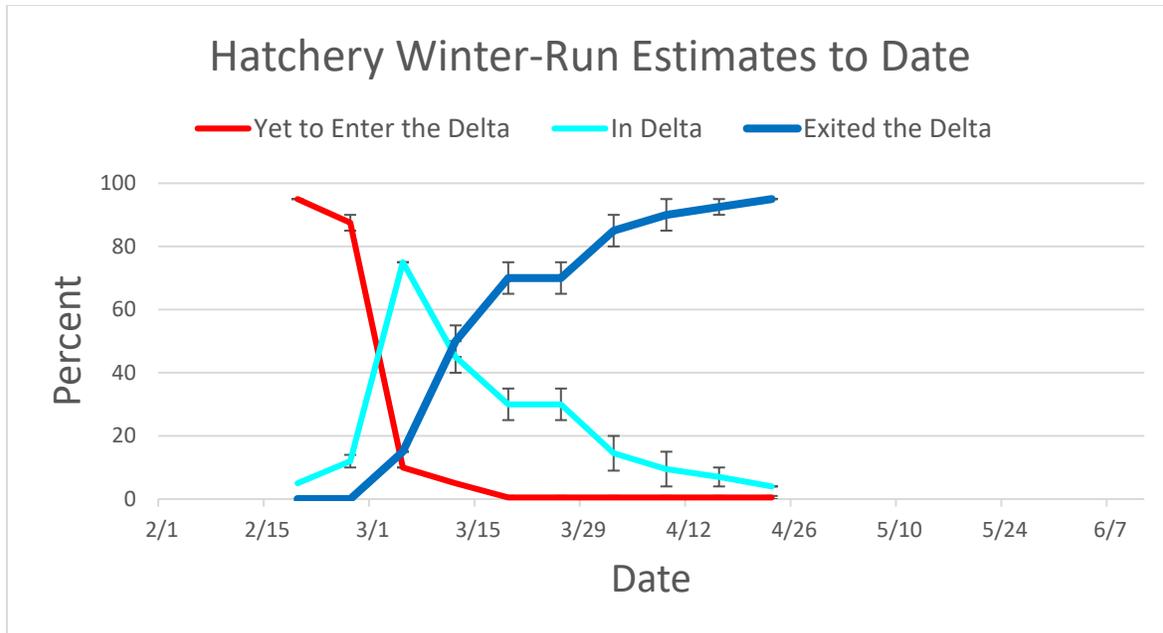
195 acoustically-tagged (AT) hatchery winter-run have been detected at Butte City Bridge, 112 at Tower Bridge, 126 at I80-50, and 162 at Benicia Bridge. Since a few more fish were detected by receivers this past week at Sacramento and Benicia Bridge locations, DOSS estimates the majority of the group has migrated through the Delta past Chipps Island. This estimate assumes a high in-river survival rate and does not account for predation or other sources of mortality.



WY 2019 wild winter-run distribution estimates to date.



WY 2019 wild spring-run distribution estimates to date.



WY 2019 hatchery winter-run distribution estimates to date.

Agenda Item 9.

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-MEDIUM**
 - Approximately 4-10% of winter run juveniles estimated to be in the Delta.
 - Approximately 30-35% of spring run juveniles estimated to be in the Delta.
 - Central Valley steelhead are in the system, including the Delta.
- **Routing Risk: LOW**
 - DCC is closed.
 - Flows are elevated on the Sacramento River (~72,800 cfs) which increases the muting of tidal effects around Georgiana Slough and Threemile Slough. Flows are expected to remain above 30,000 cfs for the duration of the week.
- **Overall Entrainment Risk: LOW**
 - Inflows from the Sacramento River are expected to remain high over the next week which balances exports to remain in the Low to Medium entrainment risk.

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

- **Exposure Risk: LOW-MEDIUM**
 - Listed Chinook salmon and steelhead have been salvaged and observed in monitoring sites in the Delta.
 - Flows at San Joaquin River are decreasing, but so is exports based on inflows at Vernalis. The risk of entrainment, especially for steelhead remains unchanged.
 - OMR is expected to remain positive over the next week.
 - Exposure risk is medium for San Joaquin steelhead and low for Sacramento listed fish.
- **OMR/Export Risk:**
 - OMR -2,500 cfs: LOW
 - OMR -3,500 cfs: LOW
 - OMR -5,000 cfs: MEDIUM
 - OMR -6,250 cfs⁴: MEDIUM-HIGH
 - OMR -7,500 cfs⁴: HIGH
 - OMR -9,000 cfs⁴: HIGH
- **Overall Entrainment Risk:**
 - OMR -2,500 cfs: LOW-MEDIUM
 - OMR -3,500 cfs: LOW-MEDIUM
 - OMR -5,000 cfs: MEDIUM
 - OMR -6,250 cfs⁴: MEDIUM-HIGH
 - OMR -7,500 cfs⁴: HIGH
 - OMR -9,000 cfs⁴: HIGH

⁴By request of management, DOSS also assessed risks at an OMR flow more negative than -5,000 cfs.

These assessments are based on anticipated and current hydrology and fish distributions for the next week.

Agenda Item 10.

DOSS Advice to WOMT and NMFS: None

Agenda Item 11.

Next Meeting: The next DOSS conference call will be on **4/30/19 at 9am.**

Call-in info for next week (4/30):

Phone #: 866-434-5269

Participant Code: 392299

*No WebEx