Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 3/21/2017 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: http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html.

CDFW: Bob Fujimura, Duane Linander, Jerry Morinaka, Jason Julienne
DWR: Farida Islam, Bryant Giorgi, Kevin Reece, Mike Ford
EPA: Erin Foresman
NMFS: Barb Byrne
Reclamation: Tom Patton, Towns Burgess, Mike Hendrick, Elissa Buttermore
SWRCB: Chris Kwan, Chris Carr
USFWS: Felipe Carillo, Leigh Bartoo

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/djfmp)
3. Smelt Working Group update
4. Current Operations
5. Hatchery Releases
6. Fish Monitoring: Tracking of acoustic-tagged hatchery winter-run Chinook salmon
7. Fish Monitoring: Salvage
8. Fish Monitoring: RSTs/trawls/seines
9. DOSS Estimates of Fish Distribution and Assessments of Entrainment Risk
10. DOSS advice
11. Next DOSS meeting

Agenda Item 2.
RPA Implementation Review

Delta RPA Actions in effect during March:

Action IV.1.2[1] (DCC gate operations):

- From February 1 to May 20, the gates will remain closed**.**

[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.2.3[2] (OMR Management)

- Implementation of this action in WY 2017 began 1/1/17, and requires that Old and Middle River (OMR) flow be no more negative than -5,000 cfs.
- Since the action went into effect on 1/1/17, no salvage-based triggers that would require more positive OMR levels have been exceeded.

Upcoming Delta RPA Action in effect during April and May:

Action IV.2.1[3] (I:E ratio)

- Implementation will begin 4/1/17, and restricts exports to a specific Vernalis flow-to-combined export ratio, or 1,500 cfs for human health and safety, whichever is greater.
- Under the current Wet yeartype (based on the San Joaquin Basin yeartype, which is expected to remain Wet under upcoming forecasts), the required I:E ratio will be 4:1.
- **Offramp:** Exports are not restricted by the I:E ratio requirements of Action IV.2.1 when Vernalis flow is equal to or greater than 21,750 cfs.

Agenda Item 3.

Smelt Working Group update

The Smelt Working Group (SWG) did not meet this week.

[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 68-70 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

Agenda Item 4.
Current Operations

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	0*	Jones Pumping Plant	3,750**
Reservoir Releases (cfs)			
Feather - Oroville	47,000	American - Nimbus	5,000
		Sacramento - Keswick	8,500***
		Stanislaus - Goodwin	1,250
		Trinity - Lewiston	300
Reservoir Storage (in TAF)			
San Luis (SWP)	1,062	San Luis (CVP)	963
Oroville	2,810	Shasta	3,582
New Melones	1,726	Folsom	482
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	65,000
Outflow Index (cfs)	~93,000	San Joaquin River at Vernalis (cfs)	28,500
E:I	4% (3-day avg.) 3% (14-day avg.)	X2	<56 km

*Clifton Court Forebay is shut down for repairs to the intake structure.
**Includes ~900 cfs of pumping for the SWP because of the Clifton Court repairs.
***Keswick releases will increase to 10,000 cfs on Thursday, 3/23/17.

Approximate OMR flows as of 3/20/17:

	Index (cfs)
Daily	+12,700
5-day	+13,000
14-day	+12,800

Approximate OMR flows as of 3/18/17:

	USGS gauges (cfs)	Index (cfs)
Daily	+13,200	+12,700
5-day	+13,500	+12,900
14-day	+13,700	+13,000

Factors controlling Delta exports:

- 3/14 – 3/21: Delta exports limited by real-time demand or available plant capacity.

The weather forecast predicts rain today and tomorrow with more rain expected Friday and Sunday.

Agenda Item 5.

Hatchery Releases

On Monday March 20, 2017, the California Department of Fish and Wildlife released approximately 1,000,000 brood year 2016 spring run Chinook salmon from Feather River Hatchery/Thermalito Annex into the Feather River (split approximately evenly between release sites at Gridley Boat Ramp and Boyd's Pump). This release included 100% Coded Wire Tagged (CWT) and marked (adipose fin clip) fish.

Agenda Item 6.

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

Livingston Stone National Fish Hatchery released approximately 141,388 hatchery winter-run Chinook at Caldwell Park in Redding on 2/2/17. 569 were acoustic-tagged with JSATS tags and NOAA's Southwest Fisheries Science Center (SWFSC) is tracking movement of these acoustic-tagged fish past several "real-time" receiver locations near Colusa and Sacramento. From 3/13/17 through 3/19/17, 94 acoustic-tagged hatchery winter-run Chinook salmon were detected at the receivers at Colusa, for a seasonal total of 202 fish (36%) past Colusa. Over the same period, a total of 71 detections were reported at the I80/Hwy50 Bridge receivers, for a seasonal total of 90 (16%). The Tower Bridge receiver stopped operating on 2/27/17.

Agenda Item 7.

Fish Monitoring: Salvage[4]

Reclamation currently has staff on call every morning for rapid genetic identification in case of exceedance of a trigger in Action IV.2.3 based on loss density of older juvenile Chinook salmon ("older juvenile" is a size-based category that includes winter-run-sized and larger juvenile Chinook). Given current salvage patterns (few older juveniles), the historical timing of winter-run outmigration past Chipps (typically peaking in March) and current OMR conditions (~12,000 cfs and likely to remain above 10,000 cfs for some time), Burgess (Reclamation) reported that Reclamation is reviewing the need for rapid genetic identification past 3/31/17 and asked for input from DOSS members.

The group noted that the current positive OMR flows of ~12,000 cfs are satisfying the most restrictive action response under Action IV.2.3 (the second stage trigger requires OMR to be no more negative than -2,500 cfs), so export operations wouldn't be affected even if an older juvenile trigger were hit. Given that conditions (high Vernalis inflows and relatively low exports) are expected to keep OMR flows positive for at least another month, there was general agreement that there was no need to keep staff on call for rapid genetic identification.

[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: March 13-March 19, 2017

Prepared by Bob Fujimura on March 20, 2017 14:57

Preliminary Results -Subject to Revision

Criteria	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0
Wild steelhead	0	0	0	0	0	0	0	→	0
Exports									
SWP daily export	1,344	0	0	0	3,449	291	0	↘	726
CVP daily export	7,421	7,419	6,136	5,609	7,267	7,285	7,278	↘	6,916
SWP reduced counts	0%				0%	0%		→	0%
CVP reduced counts	0%	0%	0%	17%	0%	0%	0%	↗	2%

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

Tan highlighted date indiates a major outage (> 1 h) of a fish salvage facility; TFCF: 3/16 = 4 hrs

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;

		Weekly Total			Season Total	
Category		Salvage	Loss	Trend	Salvage	Loss
Wild						
	Winter Run	0	0	→	20	58
	Spring Run	20	13	↘	40	95
	Late Fall Run	0	0	→	20	73
	Fall Run	4	3	↘	8,469	19,302
	Unclassified	0	0	→	84	NC
	Total	**24**	**16**		**8,633**	**19,528**
Hatchery						
	Winter Run	0	0	→	317	948
	Spring Run	0	0	→	0	0
	Late Fall Run	0	0	→	639	1,387
	Fall Run	0	0	→	116	192
	Unclassified	0	0	→	6	NC
	Total	**0**	**0**		**1,078**	**2,527**

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

NC = can not be calculated

Steelhead Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	0	0	→	28	77
Hatchery	0	0	→	29	118
Total	**0**	**0**		**57**	**196**

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

Generated by Bob Fujimura on March 20, 2017

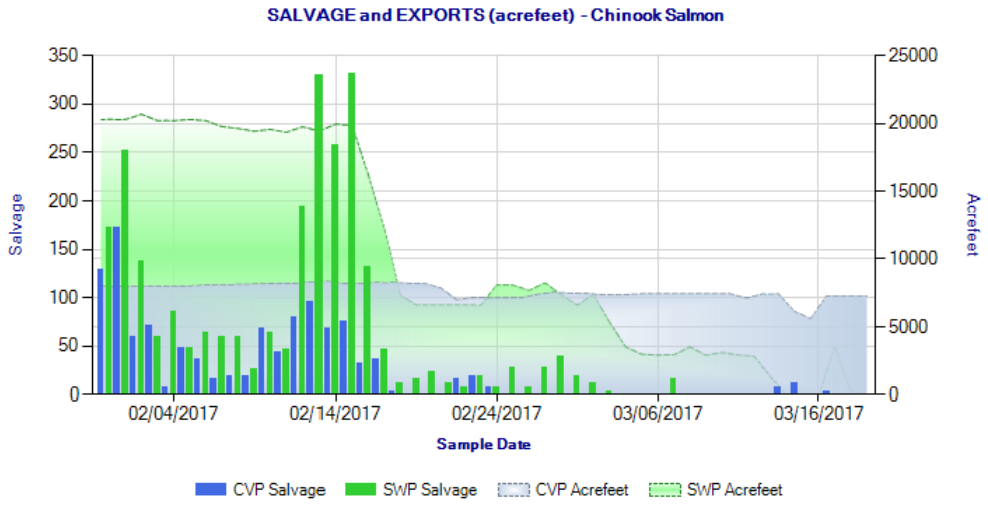


Figure 1. Daily salvage of Chinook Salmon (all races) and water exports from the state and federal fish salvage facilities during Jan 31 through March 19, 2017. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

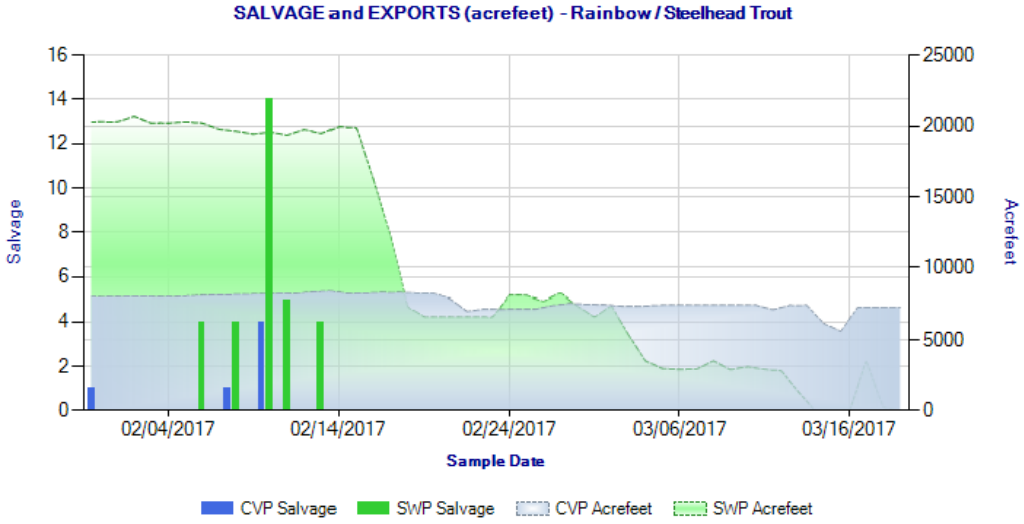


Figure 2. Daily salvage of Steelhead and water exports from the state and federal fish salvage facilities during Jan 31 through March 19, 2017. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

CONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES through 3/20/17

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]
12/9/2016	LF	Coleman NFH	Battle Creek	Production	1492.21	861,966	n/a	0.173	n/a	n/a	12/18/2016	1/23/2017
12/12/2016	LF	Coleman NFH	Battle Creek	Spring Surrogate	181.82	75,000	n/a	0.242	n/a	0.50%	12/22/2016	1/19/2017
12/21/2016	LF	Coleman NFH	Battle Creek	Spring Surrogate	346.73	81,279	n/a	0.427	n/a	0.50%	12/30/2016	1/29/2017
1/9/2017	LF	Coleman NFH	Battle Creek	Spring Surrogate	0.00	75,000	n/a	0	n/a	0.50%	*	*
2/2/2017	W	Livinstone NFH	Sacramento River	WR	0.00	141,388	n/a	0	n/a	0.50%	*	*
11/29/2016	S	SJRRP	San Joaquin River	Experimental	116.82	544	n/a	0.273	n/a	n/a	1/8/2017	1/17/2017
11/29/2016	F	SJRRP	San Joaquin River	Experimental	6.05	1,200	n/a	0.014	n/a	n/a	12/27/2016	1/14/2017

UNCONFIRMED HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2016/2017

Facility	Unknown CWT Loss[5]	Unread CWT Loss[6]	Unknown Hatchery Loss[7]	Acoustic Tag Loss[8]	Number of Unassigned CWTs[9]
SWP	141.38				
CVP	2.6				
TOTAL	**143.98**				

[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.

Agenda Item 8.

Fish Monitoring: The following table presents fish monitoring data summarized over the identified sampling dates. Unless otherwise noted, any reported sizes are fork length. Chinook run assignments are based on length-at-date criteria. DOSS acknowledges the limitations of the length-at-date criteria, particularly in distinguishing between young-of-year spring run Chinook and young-of-year fall-run Chinook. When reviewing spring-run catch in the monitoring data, DOSS considers that run misclassifications might arise from both large genetic fall-run falling into the spring-run sized class and small genetic spring-run falling into the fall-run size class.

Location	Chipps Is. Midwater Trawl[A, E]	Sacramento Trawl[A]	Beach Seines[A]	Knights Landing RST[B]	Tisdale RST[C]	GCID RST[D]	Mossdale Kodiak Trawl[A]
Sample Date	3/12-3/18	3/12-3/18	3/12-3/18	3/12-3/19	3/12-3/16	3/18-3/20	--
FR Chinook	1	127	148	32	1	12	
SR Chinook	9	29	9	17	2	7	
WR Chinook	15	17				2	
LFR Chinook							
Ad-Clipped Chinook	5	13		7 WR		46 WR	
Steelhead (ad-clip)	2	3		15		1	
Steelhead (wild)	14	5					
Green Sturgeon							
Flows (avg. cfs)				21,614	21,850	2,415	
W. Temp. (avg. °F)				55	54	55	
Turbidity (avg. NTU)				65	63	61	

[A] Based on data reported for the 3/12-3/18 period at www.baydeltalive.com. No sampling at Mossdale reported.

[B]Knights Landing RST sampling period was from 3/12 at 9:15 am to 3/19 at 9:15 am.

[C]Tisdale RST sampling period was from 3/12 at 10:30 am to 3/16 at 10:00 am.

[D]GCID RST sampling resumed at 10:00 am on 3/17.

Enhanced Delta Smelt Monitoring (EDSM) Catch

EDSM data posted on DJFMP website:
https://www.fws.gov/lodi/juvenile_fish_monitoring_program/jfmp_index.htm

Chinook run assignments for unclipped fish are based on length-at-date criteria. DOSS acknowledges the limitations of the length-at-date criteria, particularly in distinguishing between young-of-year spring run Chinook and young-of-year fall-run Chinook. When reviewing spring-

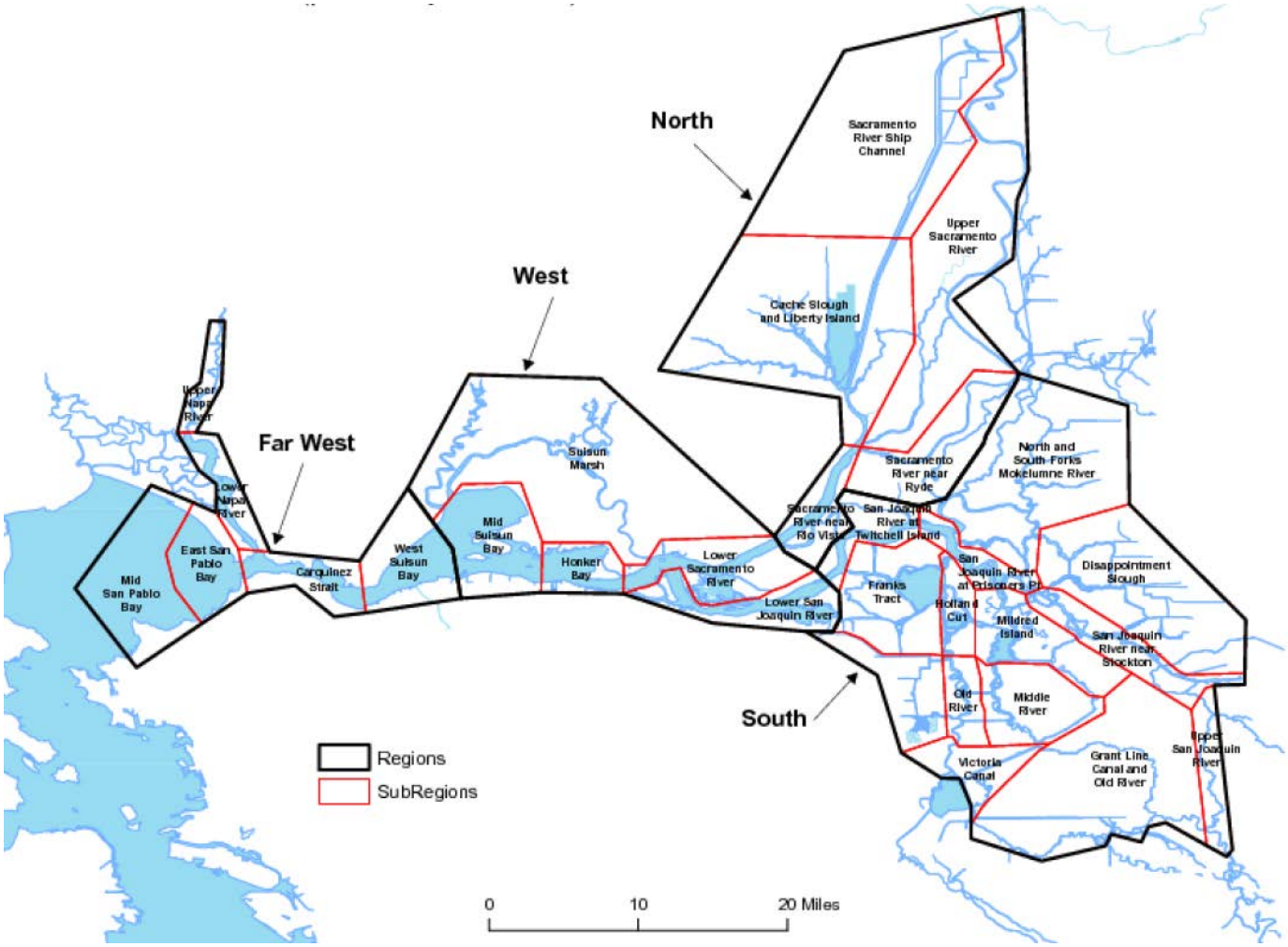
run catch in the monitoring data, DOSS considers that run misclassifications might arise from both large genetic fall-run falling into the spring-run sized class and small genetic spring-run falling into the fall-run size class.

For the sampling period 3/13/17-3/16/17, a total of 16 fall-run-sized Chinook, 3 spring-run Chinook, 2 winter-run, and 1 adipose clipped steelhead were caught across all sampling sites. Salmonid catch in the EDSM sampling is summarized in the table below by subregion, and in the bubble plots by individual sampling location.

	Raw catch							Catch per 10-minute tow*						
Subregion	Winter-run Chinook	Spring-run Chinook	Fall-run Chinook	Late-fall-run Chinook	Tagged Chinook	Tagged Steelhead	Total Tow Minutes	Winter-run Chinook	Spring-run Chinook	Fall-run Chinook	Late-fall-run Chinook	Tagged Chinook	Tagged Steelhead	Region
Sacramento River near Ryde	0	0	2	0	0	0	80	0.00	0.00	0.25	0.00	0.00	0.00	North
Upper Sacramento River	1	1	9	0	0	0	80	0.13	0.13	1.13	0.00	0.00	0.00	
Disappointment Slough	0	0	1	0	0	0	160	0.00	0.00	0.06	0.00	0.00	0.00	South
North and South Forks Mokelumne River	1	0	0	0	0	0	80	0.13	0.00	0.00	0.00	0.00	0.00	
San Joaquin River at Prisoner's Pt	0	0	1	0	0	0	200	0.00	0.00	0.05	0.00	0.00	0.00	
Mid Suisun Bay	0	1	0	0	0	0	75	0.00	0.13	0.00	0.00	0.00	0.00	West
Suisun Marsh	0	1	2	0	0	0	50	0.00	0.20	0.40	0.00	0.00	0.00	
East San Pablo Bay	0	0	0	0	0	1	80	0.00	0.00	0.00	0.00	0.00	0.13	Far West
Lower Napa River	0	0	1	0	0	0	52.5	0.00	0.00	0.19	0.00	0.00	0.00	
Total	**2**	**3**	**16**	**0**	**0**	**1**	**857.5**							

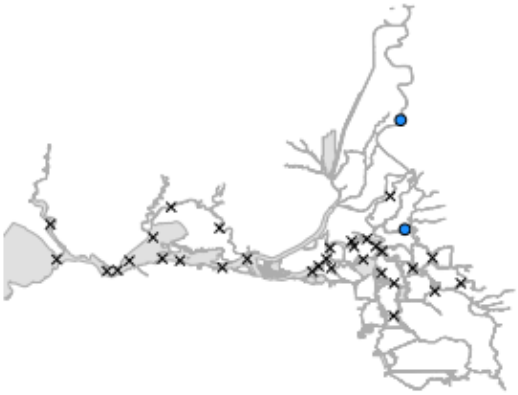
*Raw catch/Total tow minutes*10

Map of EDSM sampling regions and subregions:

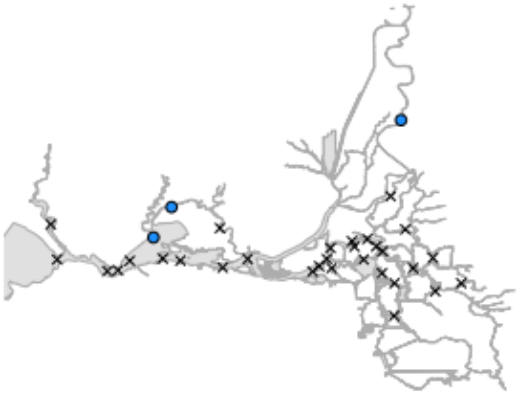


EDSM Sampling 3/13/17 − 3/16/17

Unclipped Winter−run Chinook



Unclipped Spring−run Chinook



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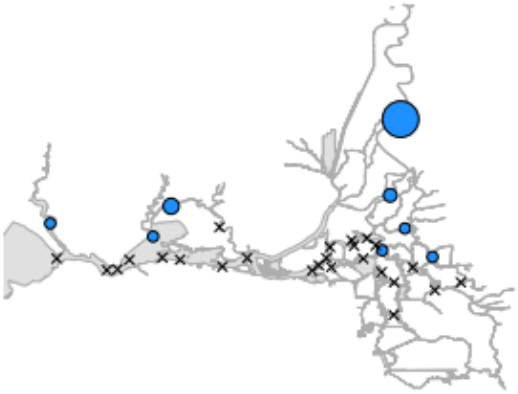
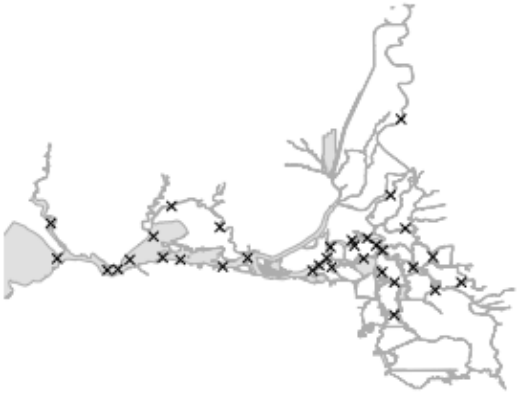
All unclipped Chinook

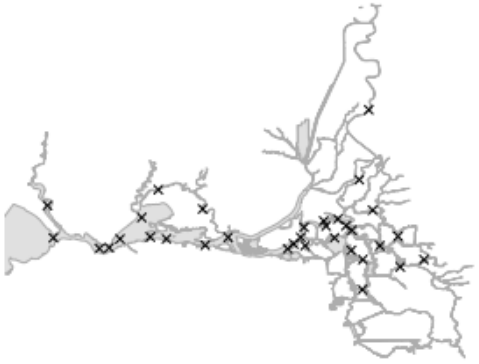


All clipped Chinook

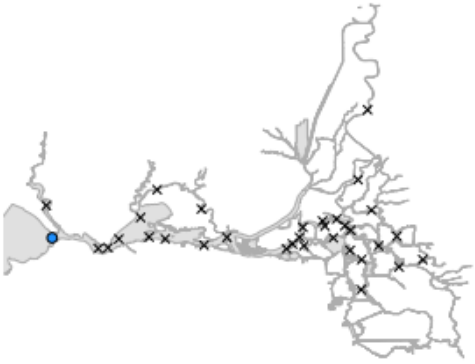


EDSM Sampling 3/13/17 − 3/16/17

All unclipped steelhead



All clipped steelhead



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Agenda Item 9.

DOSS Estimates of Fish Distribution and Assessment of Entrainment Risk

DOSS estimates of the current distribution of listed Chinook, 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)
Wild young-of-year (YOY) winter-run Chinook salmon	0%-2% (Last week: same)	15%-35% (Last week: 30%-50%)	65%-85% (Last week: 50%-70%)
Wild young-of-year (YOY) spring-run Chinook salmon	5%-15% (Last week: same)	40%-60% (Last week: same)	35%-50% (Last week: same)
Hatchery winter-run Chinook salmon (released 2/2/17)	10%-30% (Last week: 15%-35%)	30%-55% (Last week: 30%-65%)	30%-60% (Last week: 15%-45%)

* DOSS acknowledges the limitations of the length-at-date criteria, particularly in distinguishing between young-of-year spring run Chinook and young-of-year fall-run Chinook. When reviewing spring-run catch in the monitoring data, DOSS considers that run misclassifications might arise from both large genetic fall-run falling into the spring-run sized class and small genetic spring-run falling into the fall-run size class.

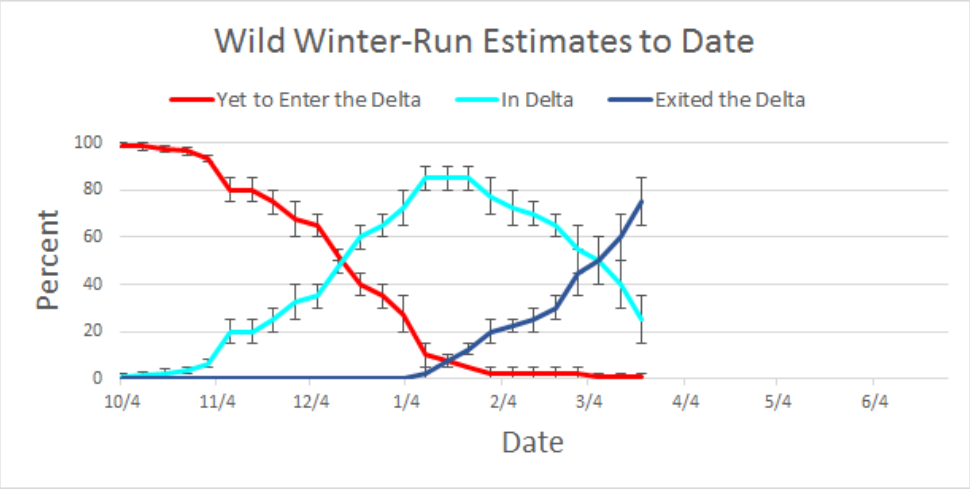
Rationale for changes in distribution

Wild winter-run Chinook: Over the past week 17 juvenile winter-run-sized Chinook salmon were observed at the Sacramento trawl and 15 at Chipps Island. 2 were also detected in the EDSM sampling – one in the Mokelumne River and one in the Sacramento upstream of the Delta Cross Channel. Some Sacramento River weirs were not spilling over the past week, reducing the opportunities for winter-run Chinook to enter the flood bypasses and not pass by some sampling locations. Because fish were observed at Chipps Trawl and due to seasonal timing, DOSS estimated that some winter-run Chinook moved past Chipps Island. In mid-March, some winter-run Chinook may have left the Delta and entered the ocean; others may be potentially rearing westward in Honker, Grizzly, Suisun and San Pablo Bays.

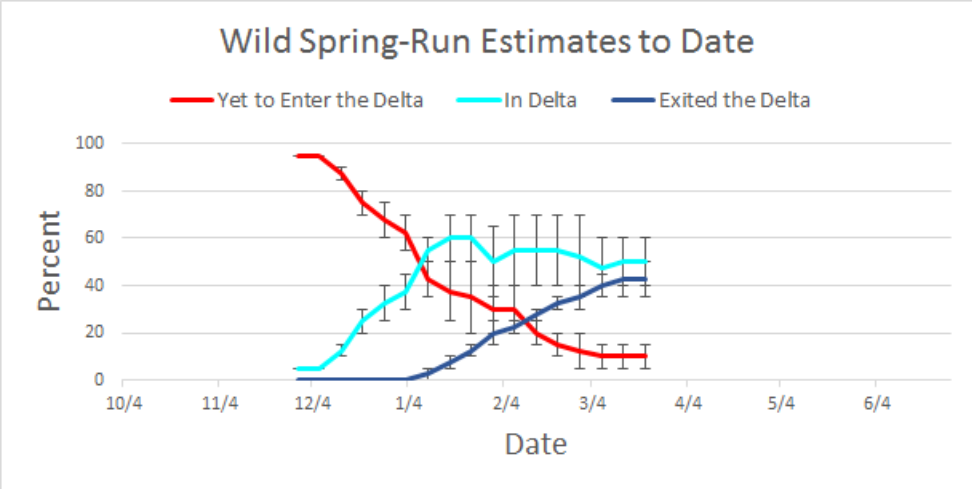
Wild spring-run Chinook: Over the past week, 17 juvenile spring-run-sized Chinook were observed at Knights Landing, 29 at the Sacramento trawl, 9 in the beach seines, and 9 at Chipps Island. Three juvenile spring-run-sized Chinook were also observed in the EDSM sampling -- two in the Suisun Bay area and one in the Sacramento upstream of the Delta Cross Channel. Some Sacramento River weirs were not spilling over the past week, reducing the opportunities for spring-run Chinook to enter the flood bypasses and not pass by some sampling locations. While spring-run-sized fish were observed at multiple monitoring sites this week, DOSS decided to leave the distributions unchanged since there was general agreement that the current distribution estimates seemed appropriate for mid-March. In mid-March, many of the spring-run Chinook that have exited past Chipps Island may potentially be rearing westward in Honker, Grizzly, Suisun and San Pablo Bays.

Hatchery winter-run Chinook: Over the past week, 84 winter-run-sized adipose clipped Chinook were observed at receivers at Colusa and 17 at the I80/50 Bridge. This marked increase in tag detections may be due to increased detection range at lower flows, fewer fish spilling into

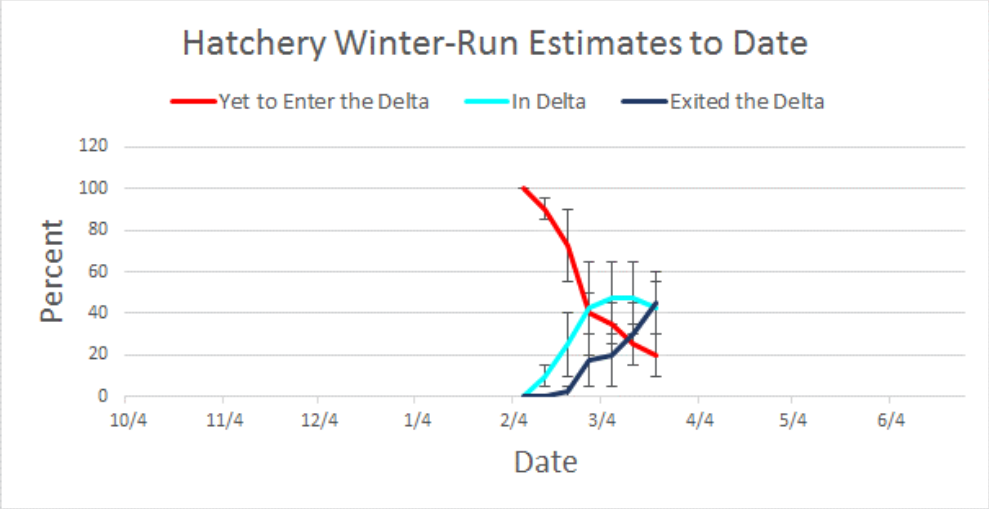
bypasses, increased fish movement, or all three factors. Based on the increase in detections and seasonal timing, DOSS estimates that more hatchery winter-run have moved through the Delta. Winter-run-sized ad-clipped Chinook were also reported at the GCID rotary screw traps showing continued presence of (likely) hatchery winter-run upstream of the Delta. With high Sacramento River flows at the time of the winter-run hatchery release (early February), many hatchery winter-run may have reared upstream on inundated floodplains.



WY 2017 wild winter-run distribution estimates to date.



WY 2017 wild spring-run distribution estimates to date.



WY 2017 hatchery winter-run distribution estimates to date.

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:** HIGH
  - Flow and turbidities, which are cues for salmonid movement, remain high.

- Some fish are going into bypasses. Fish entering the Yolo Bypass will exit the bypass downstream of the Georgiana Slough junction, reducing entrainment risk into the interior Delta.
- For the period 3/14/17 to 3/20/17, the Tisdale weir spilled[7] for two days and the Fremont weir spilled for a single day. The Moulton and Colusa weirs did not spill during this period.
- Overall, despite bypass overflow, the group assessed the exposure risk as high.

- **Routing Risk:** LOW
  - Continued high river flows are expected to mute the tidal effects at Georgiana Slough (reducing the risk of routing into Georgiana Slough).
  - Delta Cross Channel is closed.

- **Overall Entrainment Risk:** MEDIUM

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

DOSS notes that these risk assessments at negative OMR levels are not relevant to current OMR levels of ~12,000 cfs, which are projected to stay >10,000 through the weekend.

- **Exposure Risk:** MEDIUM
  - OMR is positive and salvage has dropped over the past week.
  - Beginning in mid-January, saw salmonid catch (fall-run-sized Chinook, no steelhead to date) at Mossdale. Mossdale sampling has not occurred since 2/10/17 due to high flows.
  - Of the fish predicted to be "In the Delta", DOSS expects that many are in the Yolo Bypass and not at risk of entrainment into the export facilities.

- **OMR/Export Risk:**
  - OMR -2,500 cfs: LOW
  - OMR -3,500 cfs: MEDIUM
  - OMR -5,000 cfs: HIGH
  - OMR -6,250 cfs[8]: incrementally HIGHER (given projected hydrology and high Vernalis flow)

  Some members expect the relative risk of entrainment of an OMR limit of -6,250 compared to -5,000 cfs to further increase when Vernalis flows decrease.

- **Overall Entrainment Risk:**
  - OMR -2,500 cfs: LOW

[7] A summary of river stage relative to crest height of the weirs on the Sacramento River is available at: http://www.cbr.washington.edu/sacramento/data/alert_weirs.html

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

- OMR -3,500 cfs: LOW-MEDIUM (given projected hydrology and high Vernalis flow)
- OMR -5,000 cfs: MEDIUM-HIGH (given projected hydrology and high Vernalis flow)
- OMR -6,250 cfs[6]: incrementally higher within MEDIUM-HIGH (given projected hydrology and high Vernalis flow)

Considering the high Sacramento River and Vernalis flows forecasted through the weekend, and with the expectation that most ESA-listed salmonids will be entering the Delta from the Sacramento basin, most members agreed that overall entrainment risk into the export facilities is lower at most OMR levels than it would be under lower flow conditions. The overall entrainment risk was driven in large part by the MEDIUM exposure risk and less so (given projected hydrology) by the OMR/Export Risk.

Considering projected hydrologic conditions, the difference between OMR levels of -5,000 and -6,250 represents an incrementally elevated overall entrainment risk to Sacramento Basin salmonid populations. This assessment is likely to change should export levels continue at the current levels and Vernalis flows decrease, at which point risk to Sacramento Basin salmonids will increase.

Agenda Item 10.
DOSS Advice to NMFS and WOMT: None

Agenda Item 11.
Next Meeting: The next DOSS conference call will be on **3/28/17 at 9am**.