

Weekly Fish and Water Operations Outlook 4/6/2021 – 4/12/2021

Dry and warm this week. No precipitation or snow in the weekly forecast.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Clear Creek	<ul style="list-style-type: none"> • Current Release: 225 cfs • Anticipated weekly range: 200 - 225 cfs 	<ul style="list-style-type: none"> • Spring-run Chinook salmon juveniles are rearing. Majority of juveniles are migrating downstream. • Fall-run Chinook salmon spawning has finished. Most eggs have hatched and fry have emerged. Fry/ juveniles are migrating downstream. • Steelhead juveniles are rearing and migrating downstream. Adults are in Clear Creek, adult spawning is occurring. Kelts moving back downstream.
Sacramento River	<ul style="list-style-type: none"> • Shasta Storage: 2.394 MAF • Current Release: 4,500 cfs • Anticipated Weekly Range of Releases to Sacramento: 4,500 –5,000 cfs 	<ul style="list-style-type: none"> • Juvenile winter-run Chinook salmon passage at Red Bluff Diversion Dam (RBDD; BY20 total through 3/25/2021: 2,095,841 fish; average historic passage (2011 – 2019) as of 04/04 99.8%) • Juvenile spring-run Chinook salmon passage at RBDD (BY20 total through 3/25/2021: 1,172,564 fish; average historic passage (2011 – 2019) as of 04/04 54.7%). Spring-run numbers reflect large hatchery releases of fall-run Chinook salmon from CNFH. • Fall-run Chinook salmon spawning is over. Most eggs have hatched and fry have emerged from the gravel. Fry/ juveniles are migrating downstream. Juvenile fall-run Chinook salmon passage (BY20) at RBDD ~8.5 million through 3/25/2021. • March is adult winter-run Chinook salmon migration peak into the upper river prior to spawning greater than 50% of adult escapement present). Some very early spawning may be occurring. • Earliest adult spring-run Chinook salmon are entering the Sacramento River. • Late fall-run adults are in the system, spawning is nearly over, >95% of eggs and larvae are in the gravel. • Steelhead juveniles are rearing and migrating downstream. Adults are in river, spawning is occurring. Kelts moving back downstream. • Green sturgeon adults are migrating upstream and holding prior to spawning and juveniles present. Very early spawning behavior may be occurring.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Feather River	<ul style="list-style-type: none"> ● Oroville Storage: 1.447 MAF ● Current Release: 1,500 cfs ● Anticipated Weekly Range of Releases to Feather: 800 - 1,500 cfs ● Daily average temperature compliance targets: 55°F at Fish Hatchery gage 	<ul style="list-style-type: none"> ● Spring-run Chinook juveniles are rearing in river. Majority of juveniles initiating downstream migration. ● Fall-run Chinook salmon spawning is over. Most eggs have hatched and fry have emerged from the gravel. Fry/ juveniles are migrating downstream. ● Juvenile steelhead rearing and migrating downriver. Adults in the river, some spawning is occurring. Kelts moving back downstream. ● Green sturgeon adults moving into the river and holding prior to spawning. Very early spawning may be occurring (none detected thus far).
American River	<ul style="list-style-type: none"> ● Folsom Storage: 0.363 MAF ● Current Release: 1,750 cfs ● Anticipated Weekly Range of Releases to American: 1,750 – 2,250 cfs 	<ul style="list-style-type: none"> ● Juvenile steelhead rearing. Adults in the river, some spawning is occurring. Kelts moving back downstream. ● Fall-run Chinook salmon spawning is over. Most eggs have hatched and fry have emerged from the gravel. Fry/ juveniles are migrating downstream. ● Peak Chinook salmon carcass observation occurred during the week of 12/21/2020. Carcass surveys over for this water year.
Stanislaus River	<ul style="list-style-type: none"> ● New Melones Storage: 1.532 MAF ● Current Release to Stanislaus: 400 cfs ● Anticipated Range of Weekly Releases to Stanislaus: 200 cfs to 1,500 cfs (spring pulse flow) 	<ul style="list-style-type: none"> ● Juvenile steelhead rearing. Adults in the river, some spawning is occurring. ● 8 O. mykiss passed the weir this water year. 1 of those 8 fish was clipped. Weir was pulled mid-January. ● Numbers of returning adult fall-run Chinook salmon are lower than historically observed and similar to last year. ● Fall-run Chinook salmon spawning is over. Most eggs have hatched and fry have emerged from the gravel. Fry/ juveniles are migrating downstream.
Delta	<ul style="list-style-type: none"> ● Freeport: 8,000 to 9,500 cfs ● Vernalis: 800 to 1,400 cfs ● Delta Outflow index: 6,500 to 8,000 cfs ● Combined Exports: 700 - 1,600 cfs ● JPP: 400 - 800 cfs ● CCF: 300 - 800 cfs ● Expected OMR Index Values: -600 to -1,500 cfs ● DCC Gates: Closed and anticipated to remain closed 	<ul style="list-style-type: none"> ● 5% winter-run Chinook salmon juveniles yet to enter the Delta and 40-50% in Delta. 45-55% exited the Delta past Chipps Island. ● 5-10% YOY spring-run Chinook salmon juveniles yet to enter the Delta and 75-90% in Delta. 5-15% exited the Delta past Chipps Island. ● 15-25% steelhead juveniles yet to enter the Delta and 35-50% in Delta. 35-40% exited the Delta past Chipps Island. ● Most adult winter-run Chinook salmon have moved through the Delta towards their spawning grounds. ● Earliest adult spring-run Chinook salmon are entering the Delta and migrating upstream. ● Adult late fall-run Chinook salmon and steelhead have finished immigrating through Delta towards spawning reaches. ● Green sturgeon adults and juveniles present. Adult green sturgeon are moving upriver to spawning grounds.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
		<ul style="list-style-type: none"> • Based on our understanding of life history and limited distribution data, Delta Smelt adults are present in Suisun Marsh and in the Sacramento River and north Delta. Temperature conditions are conducive for Delta Smelt spawning and historical data suggest larvae may be present. • Adult and age-1 Longfin Smelt have been detected downstream of the confluence and in the Sacramento River. Larval Longfin Smelt were detected in the Sacramento River, San Joaquin River, and the north Delta indicating spawning and hatching is continuing. Age-0 Longfin have been detected in the OMR corridor and in salvage at both salvage facilities. ITP condition 8.4.2 was triggered based on larvae detected at 2 of 12 criteria stations with catch >5/tow. No larvae were detected at 716 for 20mm #1, so condition 8.12 was not triggered.

Table 2a-b: WY 2021 relevant Fish and Environmental Criteria and Status in 2019 Reclamation LTO Action Cumulative loss for the duration of 2019 Biological Opinion began upon signature of ROD, 2/19/2020.

Table 2a: WY 2021 Salmonid Current Loss and Delta Smelt abiotic conditions. Relevant action(s): Additional Real-Time OMR Restrictions and Performance Objectives (4.10.5.10.2) and Onset of OMR Management (4.10.5.10.1).

Species/run	Threshold	Current Status	Weekly Salvage Trend	Updated
Green sturgeon	WY 2021 salvage = 74	WY 2021 salvage = 0 (0%)	No change expected	4/4/2021
Natural winter-run Chinook salmon	WY 2021 loss = 1,931 (50% of 3,862)	WY 2021 loss = 8.2 (0.43%)	Expected to increase	4/4/2021
Sacramento River Hatchery winter-run Chinook salmon	WY 2021 loss = 59 (50% of 117)	WY 2021 loss = 0 (0%)	Expected to increase	4/4/2021
Battle Creek Hatchery winter-run Chinook salmon	WY 2021 loss = 298 (3-yr avg) & 372 (1-yr)	WY 2021 loss = 0 (0%)	Expected to increase	4/4/2021
Hatchery yearling spring-run Chinook salmon surrogates	> 0.5% of each release group: 1) 1/8/2021: 66,912 = 334.6 2) 1/22/2021: 57,357 = 286.8 3) 1/29/2021: 64,807 = 324.0	1) 0 (0%) 2) 6.4 (2.2%) 3) 0 (0%)	Expected to increase	4/4/2021
Natural steelhead	Dec 1 – Mar 31 = 707 (50% of 1,414) Apr 1 – June 15 = 776 (50% of 1,552)	Dec 1 – Mar 31 = 41.2 (5.83%) Apr 1 – June 15 = 0 (0%)	Expected to increase	4/4/2021
Delta smelt	Daily Average turbidity at Old River at Bacon Island > 12 NTU	Turbidity = 2.60 FNU	No change expected	4/5/2021

Table 2b: 10-Year Salmonid Cumulative Loss

Species/run	Threshold	Current Status	Updated
Natural winter-run Chinook salmon	Loss = 8,738	Cumulative loss = 191.2 (2.19%)	4/4/2021
Hatchery winter-run Chinook salmon	Loss = 5,356	Cumulative loss = 0 (0%)	4/4/2021
Natural steelhead	Loss = 6,038 (Dec 1 – Mar 31) Loss = 5,826 (Apr 1 – June 15)	Cumulative loss = 443.19 (7.34%, Dec 1 – Mar 31) 325 (5.58%, Apr 1 – June 15)	4/4/2021

Table 3a-c: Relevant Water Year 2021 Fish Criteria and Status for Listed Fish under the SWP Long-Term Incidental Take Permit.

Table 3a: Chinook Salmon

<u>Action</u>	<u>Timeframe</u>	<u>Current Action Status</u>	<u>Threshold(s)</u>	<u>Current Relevant Data</u>	<u>Weekly Trend</u>	<u>Last Updated</u>	<u>Comments</u>
OMR Mgmt. triggered (8.3.2)	Jan. 1 - Jun. 30 <i>(when ≥ 5% of spring-run or winter-run in Delta)</i>	In effect	- 5% of the Winter-run or Spring-run population in Delta	45-60% of the Winter Juveniles are in the Delta	no change expected; Threshold previously met	4/5/21	Based on Action Assessment from 3/30/21 SaMT call
Winter-run yearly loss (8.6.1)	Nov. 1 - Jun. 30	In effect (Based on JPE Value)	- cum. loss of unclipped (natural) Winter-run [1.17% of JPE] = 3,862 cum. loss of clipped (hatchery) Winter-run Sacramento release [0.12% of JPE] = 117 Winter run Battle Creek release [0.12% of JPE] = 45	Current yearly loss = 8.2; 0 hatchery	There is potential for additional salvage to be observed this week	4/5/21	Based on 4/4/21 salvage data
Winter-run discrete daily loss (8.6.2)	Nov. 1 - Dec. 31	Not in effect	11/1-11/30: loss of 6/day unclipped older juv. Winter-run 12/1-12/31: loss of 26/day unclipped older juv. Winter-run	max single daily loss from previous week = 0.00 fish (no WR observed yet)	NA	NA	Action 8.6.2 ended on 12/31/20 per ITP
Winter-run relative daily loss (8.6.3)	Jan. 1 - May 31	In effect (Based on JPE Value)	4/1 - 4/30: 0.00507% = 16.74	max single daily loss from previous week = 0 fish	There is potential for similar salvage to be observed this week	4/5/21	Based on 4/4/21 salvage data
Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	In effect: Coleman spring-run surrogate release = Group 1 of 322,538 CWT ad-clip fall-run on 3/10/2021; Group 2 of a total of	- Coleman Group 1 of 322,538 ad-clip x 0.25% = 806.35 fish - Coleman Group 2 of 372,072 ad-clip x 0.25% = 930.18 fish	Cumulative loss Coleman fall-run = 0.00 fish Feather river spring -run = 0.00 fish	There is potential for the first Coleman fall-run surrogate salvage to be observed this week	4/5/21	Based on 4/4/21 salvage data

<u>Action</u>	<u>Timeframe</u>	<u>Current Action Status</u>	<u>Threshold(s)</u>	<u>Current Relevant Data</u>	<u>Weekly Trend</u>	<u>Last Updated</u>	<u>Comments</u>
		372,072 CWT ad-clip fall-run were released separately(185,395 on 3/24/21 and 186,677 on 3/26/21); Feather river hatchery spring run surrogate release = approximately 514,027 coded wire tagged ad clipped Spring-run on 3/19/21	<u>OR</u> - Feather 514, 027 ad-clip x 0.25 % = 1285.07 fish <u>OR</u> -Nimbus Fall-run cum. loss - >0.25% for any release group (Yet to be released)				

Table 3b: Delta Smelt

<u>Action</u>	<u>Timeframe</u>	<u>Current Action Status</u>	<u>Threshold(s)</u>	<u>Current Relevant Data</u>	<u>Weekly Trend</u>	<u>Last Updated</u>	<u>Comments</u>
Integrated Early Winter Pulse Protection ('First Flush') (8.3.1)	Dec. 1 - Jan. 31	Not in effect, off-ramped	- three-day Freeport daily flow running avg \geq 25,000 <u>AND</u> [three-day Freeport turbidity running avg \geq 50 FNU <u>OR</u> Smelt Monitoring Team recommendation]	N/A	N/A	N/A	N/A
Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	In effect	Occurs after the Integrated Early Winter Pulse protection or February 1, whichever comes first - avg. OBI turbidity > 12 NTU	OBI daily turbidity: 2.47 FNU	Unchanged from last week	4/5/21	Data from 4/4/21
Larval and/Juvenile	ongoing	In effect	- 5-day cum. salvage of juv. DS \geq 1 [average	current 5-day salvage = 0	No change from last	4/5/21	Based on salvage data from 4/4/21

<u>Action</u>	<u>Timeframe</u>	<u>Current Action Status</u>	<u>Threshold(s)</u>	<u>Current Relevant Data</u>	<u>Weekly Trend</u>	<u>Last Updated</u>	<u>Comments</u>
Delta smelt Protection (8.5.2)			3-yr FMWT index + 1] <u>OR</u> 3-day cum. salvage of juv. DS >11		week		

Table 3c: Longfin Smelt

<u>Action</u>	<u>Timeframe</u>	<u>Current Action Status</u>	<u>Threshold(s)</u>	<u>Current Relevant Data</u>	<u>Weekly Trend</u>	<u>Last Updated</u>	<u>Comments</u>
Early Adult Protection (8.3.3)	Dec. 1 - Feb. 28	Not in effect	- Cum. salvage > [most recent FMWT/10] = 3 fish <u>OR</u> - Smelt Monitoring Team determines high likelihood of LFS movement into high-risk areas	N.A.	N.A.	N.A.	N.A.
OMR Mgt. for Adults (8.4.1)	Dec. 1 -Feb. 28	Not in effect, off-ramped	- Smelt Monitoring Team recommendation	N.A.	N.A.	N.A.	N.A.
Larval and Juvenile longfin smelt Entrainment Protection (8.4.2)	Jan 1 – Jun 30	In effect	- LFS larvae or juveniles in >=4 SLS or 20 mm stations in central and south Delta, OR - LFS catch/tow >5 larvae or juveniles in >=2 stations	20mm#1: 2/12 SC Delta stations detected LFS larvae with catch >5/tow. No detections at 716 in 20mm#1. YOY LFS salvage at facilities last week.	20mm#1 almost finished processing, 20mm#2 out this week.	4/5/21	SLS triggered 8.4.2 on 1/26, 2/2, 2/23, 3/9, 3/16 20mm #1 triggered 8.4.2 on 3/29, 8.12 not triggered
High Flow OMR Off-Ramp for longfin smelt (8.4.3)	Based on the status of 8.3.3, 8.4.1, & 8.4.2	In effect	- Sac. R. at Rio Vista >55,000, <u>OR</u> SJR at Vernalis >8,000	Rio Vista = 5,500 to 7,000 cfs SJ = 800 to 1,400 cfs		4/5/21	

Table 3d: OMR

<u>Action</u>	<u>Timeframe</u>	<u>Current Action Status</u>	<u>Threshold(s)</u>	<u>Current Relevant Data</u>	<u>Weekly Trend</u>	<u>Last Updated</u>	<u>Comments</u>
OMR Mgmt. Offramp (8.3.2)	Jun. 1 – Jun. 30	Not in effect	<p>- >95% of the Winter-run and Spring- run populations have migrated past Chipps Island <u>AND</u></p> <p>- Current daily average water temperature at Mossdale exceeds 22.2°C for 7 non-consecutive days in June <u>AND</u></p> <p>- Current daily average water temperature at Prisoners Point exceeds 22.2°C for 7 non consecutive days in June.</p> <p>Current daily mean water temperature at CCF is greater than 25°C for three consecutive days</p>	N.A.	N.A.	N.A.	N.A.

Table 4. Fish monitoring gear efficiency and disruptions: COVID-19 impacts.

Monitoring Survey	Status (as of 4/6/2021)
Delta	
SWP regular counts, CWT reading, and larval sampling	Ongoing (possible delay in processing CWT fish)
CVP regular counts, CWT reading, and larval sampling	Ongoing (possible delay in processing CWT fish)
Smelt Larval Survey	Ended 3/17/2021
20mm Survey	Began 3/22/21
Spring Kodiak Trawl	Ongoing
Bay Study	Back on the water as of 2/4/2021
DJFMP- Chipps and Sacramento Trawls	The Sacramento trawl has switched to mid-water and is scheduled to go out 4 times this week. Chipps trawl is scheduled to go out four times this week.
DJFMP- Seines	Only sampling north Delta and lower Sacramento runs this week.
EDSM	Ongoing: Phase II begins 3/29/2021. No EDSM sampling this week
EMP	December-February discrete survey canceled. Began again in March.
Mossdale	Suspended (CDFW still waiting for approval to begin monitoring))
USGS Flow monitoring	Continuous monitoring continues
Sacramento River	
Red Bluff Diversion Dam screw trap	Ongoing
Knights Landing screw trap	Ongoing through modified staffing
Tisdale screw trap	Ongoing through modified staffing
Redd dewatering and stranding surveys	Ongoing
Sacramento Carcass and Redd Surveys	Continuing
Feather River	
Feather River screw trap	Suspended indefinitely
San Joaquin River	
SJRRP CDFW Field Monitoring	Suspended indefinitely
SJRRP USFWS and USBR Field Monitoring	Ongoing since 8/31