Weekly Fish and Water Operations Outlook 3/16/2021 – 3/22/2021

Showers lingering over the region today, with difficult travel conditions persisting in the mountains. Dry conditions on Tuesday and Wednesday, then a return to wetter conditions Thursday and Friday. The weekend looks mostly dry.

Tributary/ Division	**Anticipated Weekly Ranges**	**Related Environmental and Fish Conditions**
Clear Creek	• Current Release: 200 cfs • Anticipated weekly range: 200 cfs	• 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 are beginning to migrate downstream. • Steelhead juveniles are rearing and migrating downstream. Adults are in Clear Creek, adult spawning is occurring. Kelts moving back downstream.
Sacramento River	• Shasta Storage: 2.312 MAF • Current Release: 3,500 cfs • Anticipated Weekly Range of Releases to Sacramento: 3,250 - 3,750 cfs	• Juvenile winter-run Chinook salmon passage at Red Bluff Diversion Dam (RBDD; BY20 total through 3/11/2021: 2,094,148 fish; average historic passage (2011 – 2019) as of 03/14 99.0%) • Juvenile spring-run Chinook salmon passage at RBDD (BY20 total through 3/11/2021: 118,104 fish; average historic passage (2011 – 2019) as of 03/14 28.0%) • Fall-run Chinook salmon spawning is over. Most eggs have hatched and fry have emerged from the gravel. Fry are beginning to migrate downstream. Juvenile fall-run Chinook salmon passage (BY20) at RBDD ~8.1 million through 3/11/2021. • March is peak of adult winter-run Chinook salmon migration into the upper river prior to spawning. • Earliest adult spring-run Chinook salmon are entering the Sacramento River. • Late fall-run adults are in the system, spawning is occurring. • 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.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Feather River	• Oroville Storage: 1.370MAF • Current Release:1,050 cfs • Anticipated Weekly Range of Releases to Feather: 1,050 cfs • Daily average temperature compliance targets: 55°F at Fish Hatchery gage	• 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. Some fry are beginning to migrate 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.
American River	• Folsom Storage: 0.337 MAF • Current Release: 2,000 cfs • Anticipated Weekly Range of Releases to American: 1,200 - 2,500 cfs	• 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 are beginning to migrate downstream. • Peak Chinook salmon carcass observation occurred during the week of 12/21/2020. Carcass surveys over for this water year.
Stanislaus River	• New Melones Storage: 1.543 MAF • Current Release to Stanislaus: 200 cfs • Anticipated Range of Weekly Releases to Stanislaus: 200 cfs to 400 cfs	• 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 are beginning to emigrate downstream.
Delta	• Freeport: 8,000 to 11,500 cfs • Vernalis: 800 to 1,200 cfs • Delta Outflow index: 6,800 to 9,500 cfs • Combined Exports: 700 to 4,000 cfs • JPP: 800 to 1,650 cfs • CCF: 300 to 3,000 cfs • Expected OMR Index Values: -800 to -3,500 cfs • DCC Gates: Closed and anticipated to remain closed	• 5-10% winter-run Chinook salmon juveniles yet to enter the Delta and 65-75% in Delta. 20-25% exited the Delta past Chipps Island. • 25-30% YOY spring-run Chinook salmon juveniles yet to enter the Delta and 70-75% in Delta. 0% exited the Delta past Chipps Island. • 30-40% steelhead juveniles yet to enter the Delta and 35-50% in Delta. 20-25% exited the Delta past Chipps Island. • Adult winter-run Chinook salmon are moving through the Delta towards their spawning grounds. • Earliest adult spring-run Chinook salmon are entering the Delta and migrating upstream. • Most adult late fall-run Chinook salmon and steelhead have finished immigrating through Delta. • 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
		• 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. The Delta Smelt detected in the Sacramento Deep Water Ship Channel may be freshwater residents, and may not be representative of migratory movement. Temperature conditions are conducive for Delta Smelt spawning to commence. • Adult and age-1 Longfin Smelt have been detected downstream of the confluence and in the Sacramento River. EDSM detected two adult Longfin Smelt in the lower San Joaquin River (one expressing eggs). Larval Longfin Smelt were detected in the Sacramento River, San Joaquin River, and the north Delta indicating spawning and hatching is continuing. Larvae have been detected in the OMR corridor and in larval fish sampling at both salvage facilities. ITP condition 8.4.2 was triggered based on larvae detected at 4 of 12 criteria stations, and the SMT made a recommendation of –2500 cfs for OMR based on distribution and hydrology data. Condition 8.12 was also triggered on 2/26 with the detection of 2 larvae at station 716.

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. Hatchery and natural winter-run Chinook salmon, spring-run Chinook salmon surrogates, and natural steelhead relevant action(s): Additional Real-Time OMR Restrictions and Performance Objectives (4.10.5.10.2). Delta smelt relevant action(s): 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	3/14/2021
Natural winter-run Chinook salmon	WY 2021 loss = 1,931 (50% of 3,862)	WY 2021 loss = 8.2 (0.43%)	Expected to increase	3/14/2021
Sacramento River Hatchery winter-run Chinook salmon	WY 2021 loss = 59 (50% of 117) 1/30/2021 release: 302,166 WRCS	WY 2021 loss = 0 (0%)	Expected to increase	3/14/2021
Battle Creek Hatchery winter-run Chinook salmon	WY2021 loss= 298 (3-yr) & 372 (1-yr) 3/8/2021 release: 79,024 WRCS 3/10/2021 release: 44,105 WRCS	WY 2021 loss = 0 (0%)	Expected to increase	3/14/2021
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	1) 0 (0%) 2) 6.4 (2.2%)	Expected to increase	3/14/2021

Species/run	Threshold	Current Status	Weekly Salvage Trend	Updated
	3) 1/29/2021: 64,807 = 324.0	3) 0 (0%)		
Natural steelhead	Dec 1 – Mar 31 = 707 (50% of 1,414)	Dec 1 – Mar 31 = 34.1 (4.83%)	Expected to increase	3/14/2021
Delta smelt	Daily Average turbidity at Old River at Bacon Island >12 NTU	Turbidity = 3.64 FNU	No change expected	3/16/2021

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%)	3/14/2021
Hatchery winter-run Chinook salmon	Loss = 5,356	Cumulative loss = 0 (0%)	3/14/2021
Natural steelhead	Loss = 6,038 (Dec 1 – Mar 31)	Cumulative loss = 436.1 (7.22%) (Dec 1 – Mar 31)	3/14/2021

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

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
OMR Mgmt. triggered (8.3.2)	Jan. 1 - Jun. 30 *(when ≥ 5% of spring-run or winter- run in Delta)*	In effect	- 5% of the Winter-run or Spring-run population in Delta	**75-85% of the Winter Juveniles are in the Delta**	**no change expected; Threshold previously met**	**3/15/21**	**Based on Action Assessment from 3/9/21 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	**Current yearly loss = 8.2; 0 hatchery**	**There is potential for additional salvage to be observed this week**	**3/15/21**	**Based on 3/14/21 salvage data**

			release [0.12% of JPE] = **117** Winter run Battle Creek release [0.12% of JPE] **= 45**				
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)	**3/1 - 3/31: 0.0146% = 48.20**	**max single daily loss from previous week = 4.33 fish**	**There is potential for similar salvage to be observed this week**	**3/15/21**	**Based on 3/14/21 salvage data**
Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	In effect: Coleman spring-run surrogate release = 322,538 CWT ad-clip fall-run on 3/10/2021. Feather river hatchery spring run surrogate release = approximately 688,000 coded wire tagged ad clipped Spring-run this coming week.	- Feather CWT Spring-run surrogates cum. loss >0.25% for any release group <u>OR</u> - Coleman 322,538 ad-clip x 0.25% = 806.35 fish <u>OR</u> -Nimbus Fall-run cum. loss - >0.25% for any release group	Cumulative loss Coleman fall-run = 0.00 fish (no Coleman surrogate FR observed yet)	There is potential for the first Coleman fall-run surrogate salvage to be observed this week	**3/15/21**	**Based on 3/14/21 salvage data**

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, Offramped	- three-day Freeport daily flow running avg >= 25,000 <u>AND</u>	**N/A**	**N/A**	**N/A**	**N/A**

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
			[three-day Freeport turbidity running avg >=50 FNU OR Smelt Monitoring Team recommendation]				
Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	In effect	Occurs after the Integrated Early Winter Pulse protection or February 1 (whichever until April 1 ,)comes first - avg. OBI turbidity > 12 NTU	**OBI daily turbidity: 3.32 FNU**	**Slight decrease from last week**	**3/15/21**	**Data from 3/14/21**
Larval and/Juvenile Delta smelt Protection (8.5.2)	ongoing	In effect	- 5-day cum. salvage of juv. DS >= 1 [average 3-yr FMWT index + 1] OR, 3-day cum. salvage of juv. DS >11	**current 5-day salvage = 0**	**No change from last week**	**3/15/21**	**Based on salvage data from 3/14/21**

Table 3c: Longfin Smelt

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
Early Adult Protection (8.3.3)	Dec. 1 - Feb. 28	Not in effect	- Cum. salvage > [most recent FMWT/10] = 3 fish OR - 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	**SLS#5: 8/12 SC Delta stations processed, 12 LFS @ 809, 2 @ 812, 1 @ 815, 1 @ 901, 2 @**	**More SLS #5 results coming this week**	**3/15/21**	**SLS # results triggered 8.4.2, 8.12 still triggered from SLS #4, -2500 OMR recommendation from 3/9 meeting**

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
				915. Last larval LFS at facilities was 3/6.			
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, OR SJR at Vernalis >8,000	**Rio Vista = 6,000 to 8,500 cfs** **SJ = 800 to 1,200 cfs**		**3/15/21**	

Table 3d: OMR

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
OMR Mgmt. Offramp (8.3.2)	Jun. 1 – Jun. 30	Not in effect	- >95% of the Winter-run and Spring- run populations have migrated past Chipps Island AND - Current daily average water temperature at Mossdale exceeds22.2°C for 7 non-consecutive days in June AND - Current daily average water temperature at Prisoners Point exceeds 22.2°C for 7 non consecutive days in June. Current daily mean water temperature at CCF is greater than 25°C for three consecutive days	**N.A.**	**N.A.**	**N.A.**	**N.A.**

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

Monitoring Survey	**Status (as of 3/16/2021)**
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	Ends 3/17/2021
20mm Survey	Begins in 3/22/21
Spring Kodiak Trawl	Ongoing
Bay Study	Back on the water as of 2/4/2021
DJFMP- Chipps and Sacramento Trawls	Chipps Island and Sacramento Trawls ongoing, missing some trawls.
DJFMP- Seines	Ongoing (w/the exception of SF Bay sites)
EDSM	Ongoing: Phase II begins 3/29/2021
EMP	December-February discrete survey canceled. Began again in March.
Mossdale	Suspended
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