Weekly Fish and Water Operations Outlook 6/15/2021 – 6/21/2021

Seasonably warm weather to start the week. By mid-week, temperatures are very hot, peaking with excessive heat warnings from Thursday afternoon through Saturday. Slight cooling trend begins on Sunday into early next week.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Clear Creek	• Current Release: 125 cfs • Anticipated weekly range: 125 - 600 cfs	• Majority of young of year (YOY) juvenile spring-run Chinook salmon juveniles have migrated out of the system and have exited the Delta. • Spring-run adults are holding within the Clear Creek system. • All fall-run Chinook salmon are at juvenile stage. Nearly all juveniles have migrated downstream by mid-June and have exited the Delta. • Steelhead juveniles are rearing and migrating downstream. Adult spawning is finished by mid-June. End of Kelts moving back downstream.
Sacramento River	• Shasta Storage: 1.881 MAF • Current Release: 7,500 cfs • Anticipated Weekly Range of Releases to Sacramento: 7,100- 8,000 cfs	• Juvenile winter-run Chinook salmon passage at Red Bluff Diversion Dam (RBDD; BY20 total through 6/2/2021: 2,096,218 fish; average historic passage (2011 – 2019) as of 6/13 100.0%) • Juvenile spring-run Chinook salmon passage at RBDD (BY20 total through 6/2/2021: 1,436,729 fish; average historic passage (2011 – 2019) as of 6/13 100.0%). Spring-run numbers reflect large hatchery releases of fall-run Chinook salmon from CNFH. • All fall-run Chinook salmon are at juvenile stage. Nearly all juveniles have migrated downstream by mid-June and have exited the Delta. Juvenile fall-run Chinook salmon passage (BY20) at RBDD ~11 million through 6/2/2021. • Majority of adult winter-run adults have migrated to spawning areas (>90%) based on historical timing. Based on the last 20 years, peak winter-run spawning occurs early to mid-July. • Adult spring-run Chinook salmon are entering the Sacramento River and moving upstream into tributaries and the upper mainstem of the Sacramento River. Peak of entry into the Sacramento River system is in May and June. • More than 90% of this year's brood have reached the fry life stage based on hydrology and historical timing. • Steelhead juveniles are rearing and migrating downstream. Spawning is essentially finished by early June. Kelts are in river and moving downstream. • Green sturgeon adults are migrating upstream and holding prior to spawning and juveniles present. Based on historical timing, the peak of spawning behavior occurs from mid-April to mid-June. Some post-spawn adults may be moving back downstream at this time.
Feather River	• Oroville Storage: 1.262 MAF • Current Release: 2,550 cfs	• Majority of juveniles have migrated downstream and have exited the Delta by mid-June. Early adults may be entering the system and holding. • Nearly all juveniles have migrated downstream by mid-June and have exited the Delta.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
	• Anticipated Weekly Range of Releases to Feather: 2,250 – 3,000 cfs (to support Delta WQ as needed) • Daily average temperature compliance targets: 60°F at Fish Hatchery gage	• Juvenile steelhead rearing and migrating downriver. Spawning essentially finished by June. Kelts moving back downstream. • Green sturgeon adults moving into the river and holding prior to spawning. Based on historical timing, mid-April to mid-June is the peak of green sturgeon spawning activity. • Green sturgeon spawning may be occurring (none detected yet).
American River	• Folsom Storage: 0.336 MAF • Current Release: 1,850 cfs • Anticipated Weekly Range of Releases to American: 1,850 – 1,200 cfs	• Juvenile steelhead rearing. Spawning is finished by mid-June. Kelts moving downstream. • Nearly all juveniles have migrated downstream by mid-June and exited the Delta.
Stanislaus River	• New Melones Storage: 1.308 MAF • Current Release to Stanislaus: 1,500 cfs • Anticipated Range of Weekly Releases to Stanislaus: 1,500 to 1,200 cfs	• Juvenile steelhead rearing. Spawning is complete by mid-June. Kelts moving back downstream • 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. • Nearly all juveniles have migrated downstream by mid-May. Outmigration numbers appear to be lower than last year for juveniles migrating downstream. • Rotary screw traps have not shown a strong young of year migration signal. • Mossdale trawl fall-run sized Chinook salmon, numbers are decreasing
Delta	• Freeport: 5,500 to 7,000 cfs • Vernalis: 1,200 to 1,500 cfs • Delta Outflow index: 3,000 to 4,500 cfs • Combined Exports: 850 to 1,100 cfs • JPP: 0 to 800 cfs • CCF: 100 to 850 cfs • Expected OMR Index Values: -1,000 to -1,600 cfs • DCC Gates: Opening 6/16/2021	• Warmer conditions may halt out-salmonid out-migrations • Almost all adult winter-run Chinook salmon have moved through the Delta towards their spawning grounds. • Adult spring-run Chinook salmon are entering the Delta and migrating upstream. • Green sturgeon adults and juveniles present. Some late arriving adult green sturgeon are still moving upriver to spawning grounds. Potential for early post-spawning adults to be moving back downstream into Delta. • Based on our understanding of life history and limited distribution data, Delta Smelt adults are present in the Sacramento River and north Delta. Delta Smelt larvae have been detected in the Deep Water Ship Channel and Lower Sacramento River. Spawning is expected to be complete with warm temperatures. No Delta Smelt larvae were detected at 716 for 20mm #6, so ITP condition 8.12 was not triggered. • Adult and age-1 Longfin Smelt have been detected downstream of the confluence and are likely out of the Delta. Age-0 Longfin Smelt are being detected in the Sacramento River, Suisun Marsh, and Suisun Bay. ITP condition 8.4.2 was not triggered by 20mm #6.

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 Trend**	**Updated**
End of OMR Flow Management for Juvenile Salmonids	1) 7 days in June when daily average water temperature at Mossdale exceeds 71.6F *OR* 2) > 95% of salmonids have migrated past Chipps Island. 3) Valid through June 30 for winter-run and spring-run Chinook salmon. Valid through June 15 for steelhead.	1. Water temperatures from June 1 – June 7 exceeded 71.6F 2. Triggered for winter-run Chinook salmon (99-100% exited). Not triggered for steelhead. Triggered for spring-run Chinook salmon (98-100% exited). 3. Not yet June 30	1) Met (*n* = 7) 2) Increasing 3) June 15th met OMR Flow Management for juvenile salmonids ended.	6/15/2021
Green sturgeon	WY 2021 salvage = 74	WY 2021 salvage = 0 (0%)	No change expected	6/13/2021
Natural winter-run Chinook salmon	WY 2021 loss = 1,931 (50% of 3,862)	WY 2021 loss = 8.2 (0.43%)	No change expected	6/13/2021
Sacramento River Hatchery winter-run Chinook salmon	WY 2021 loss = 59 (50% of 117)	WY 2021 loss = 0 (0%)	No change expected	6/13/2021
Battle Creek Hatchery winter-run Chinook salmon	WY 2021 loss = 298 (3-yr avg) & 372 (1-yr)	WY 2021 loss = 0 (0%)	No change expected	6/13/2021
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%)	No change expected	6/13/2021
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 (5.8%) Apr 1 – June 15 = 49.8 (6.4%)	No change expected	6/13/2021
Delta smelt	Daily Average turbidity at Old River at Bacon Island >12 NTU Consecutive days above daily avg. 77°	Turbidity = 3.40 FNU Days = 0	No change expected	6/13/2021

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%)	6/13/2021
Hatchery winter-run Chinook salmon	Loss = 5,356	Cumulative loss = 0 (0%)	6/13/2021
Natural steelhead	Loss = 6,038 (Dec 1 – Mar 31) Loss = 5,826 (Apr 1 – June 15)	Cumulative loss = 443.19 (7.3%, Dec 1 – Mar 31) 374.8 (6.4%, Apr 1 – June 15)	6/13/2021

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)*	Not in effect	- 5% of the Winter-run or Spring-run population in Delta	**0-1% of the Winter Juveniles are in the Delta**	**Offramp has been triggered**	**6/15/21**	**Based on Action Assessment from 6/1/21 SaMT call**
Winter-run yearly loss (8.6.1)	Nov. 1 - Jun. 30	Not 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**	**Offramp has been triggered**	**6/15/21**	**Based on 6/6/21 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	Not in effect	Loss Threshold: 5/1 -5/31: 0.0077%= 25.42	max single daily loss from previous week = 0 fish	There is potential for similar salvage to be observed this week	6/1/21	Based on 5/31/21 salvage data
Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	Not 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 372,072 CWT ad-clip fallrun were released separately(185,395 on 3/24/21 and 186,677 on 3/26/21) Group 3 of a total of 1,347,465 on 4/8/21; Feather river hatchery spring run surrogate release = approximately Group 1 of 514,027 coded wire tagged ad clipped Springrun on 3/19/21 Group 2 of 500,312 coded wire tagged ad clipped Springrun on 4/1/2021	- 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 - Coleman Group 3 of 1,347,465 ad-clip x 0.25% = **3368.66 fish** <u>OR</u> - Feather 514,027 ad-clip x 0.25 % = **1285.07** fish - Feather 500,312 ad-clip x 0.25 % = **1250.78** fish	Cumulative loss Coleman fallrun = 0.00 fish Feather river spring –run = 0.00 fish	Offramp has been triggered	**6/15/21**	**Based on 6/6/21 salvage data**

Table 3b: Delta Smelt

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
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 >= 25,000 AND [three-day Freeport turbidity running avg >=50 FNU OR Smelt Monitoring Team recommendation]	**N/A**	**N/A**	**N/A**	**N/A**
Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	Not in effect	Occurs after the Integrated Early Winter Pulse protection or February 1, whichever comes first - avg. OBI turbidity > 12 NTU	**N/A**	**N/A**	**N/A**	**N/A**
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**	**6/14/21**	**Based on salvage data from 6/10/21**

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.**

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
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 (CSD), OR - LFS catch/tow >5 larvae or juveniles in >=2 stations	**- 20mm#6 detected zero LFS at 12 CSD stations.- No detections at 716.** **- No YOY LFS salvage last 2 weeks.**		**6/14/21**	**-8.4.2 not currently triggered** **-Last salvage was on 5/31** **-SLS triggered 8.4.2 on 1/26, 2/2, 2/23, 3/9, 3/16** **-20mm triggered 8.4.2 on 3/30**
High Flow OMR OffRamp 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 = 1,000 to 4,000 cfs** **SJ = 800 to 1,500 cfs**		**6/7/21**	

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	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 nonconsecutive 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	**Mossdale: 23.1** **Prisoners Point: 23.1** **Clifton Court: 22.8**	**There is potential for the temperature to increase.**	**6/7/21 (data collected on 6/6/21)**	Mossdale temperature has been above 22.2 for all of the first 7 days of June. Prisoners Point temperature has been above 22.2 for all of the first 7 days of June. Clifton Court temperature has been below 25.

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

Monitoring Survey	**Status (as of 6/15/2021)**
Delta	
SWP regular counts, & CWT reading	Ongoing (possible delay in processing CWT fish)
CVP regular counts, & CWT reading	Ongoing (possible delay in processing CWT fish)
Smelt Larval Survey	Ended 3/17/2021
20mm Survey	Ongoing
Spring Kodiak Trawl	Ends 4/29/2021
Summer Townet Survey	Ongoing (Began 6/7/2021)
Bay Study	Boat Issue identified 6/15
DJFMP- Chipps and Sacramento Trawls	Ongoing
DJFMP- Seines	San Joaquin Suspended Due to boat issues.
EDSM	Ongoing
EMP	Ongoing
Mossdale	Ongoing. CDFW is sampling three days/week (started 5/10)
USGS Flow monitoring	Continuous monitoring continues
Sacramento River	
Red Bluff Diversion Dam screw trap	Ongoing
Knights Landing screw trap	Traps raised due to temperatures. Anticipate re-starting in September.
Tisdale screw trap	Traps raised due to temperatures. Anticipate re-starting in September.
Redd dewatering and stranding surveys	Ongoing
Sacramento Carcass and Redd Surveys	Continuing
Feather River	
Feather River screw trap	Ongoing (started 3/10). Will be pulling the high-flow channel trap due to safety conditions.
San Joaquin River	
SJRRP CDFW Field Monitoring	Suspended indefinitely
SJRRP USFWS and USBR Field Monitoring	Ongoing since 8/31