

Smelt Monitoring Team
Tuesday, April 7, 2020
11:00 AM – 12:00 PM

1. Introductions

2. Relevant Actions and Triggers:

Currently under larval and juvenile Delta Smelt protection of 2019 Biological Opinion:

“Reclamation and DWR to manage exports to limit entrainment to be protective of larval and juvenile Delta Smelt on or after March 15 of each year, if QWEST is negative, and larval or juvenile Delta Smelt are within the entrainment zone of the pumps based on real time sampling of spawning adults or young of life stages...

Reclamation coordinated with the Service on the Life Cycle Model entrainment module and proposes to operationalize results through the management of OMR reverse flows. When the secchi depth in the south Delta is less than one meter as determined by the weekly assessments based on EDSM and other available data, Reclamation will operate to OMR no more negative than 3,500 cfs. When the secchi depth in the south Delta is greater than 1 meter, Reclamation and DWR will operate to OMR no more negative than -5,000 cfs.”

Currently under the Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta (2081-2019-066-00) (relevant actions and triggers below):

Onset of OMR management 8.3: From onset of OMR Management (initiated as described in 8.3.1 through 8.3.3) to the end (8.8) Permittee shall maintain a 14-day average OMR index no more negative than -5000 cfs, except during OMR Flex operations (8.7) or if a more positive OMR index is required.

Longfin Smelt larvae and juvenile protections 8.4.2:

1. Detections at 4 of the 12 SLS/20-mm stations in south and central Delta, or,
2. Catch per tow > 5 at 2 of the 12 SLS/20-mm stations

High flow off-ramp for Longfin Smelt 8.4.3: OMR management for LFS as described in 8.4.1 and 8.4.2 are not required, or would cease if previously required, when river flows are >55,000 cfs in the Sacramento River at Rio Vista or >8,000 cfs in the San Joaquin River at Vernalis. If flows subsequently drop <40,000 cfs in the Sacramento River at Rio Vista or <5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of 8.4.1 and 8.4.2 shall resume.

Delta Smelt larvae and juvenile protection 8.5.2: Cumulative 5 day salvage $\geq 1 +$ average of 3 years' prior FMWT indices (rounded down), Permittee shall restrict south Delta exports for 7 consecutive days to maintain a 7 day average OMR index no more negative

than -5,000 cfs. If 5 day cumulative salvage threshold is met or exceeded, SMT should immediately convene to conduct a risk assessment (8.1.5.2) and determine future risk of entrainment and take of larval and juvenile DS. SMT may provide advice to further restrict south Delta exports to maintain a more positive OMR than -5000 cfs.

End of OMR management 8.8: OMR Management season through June 30, or until the species-specific off-ramps occur. LFS and DS offramp- Daily mean water temperature at Clifton Court (CCF) > 25°C for three consecutive days.

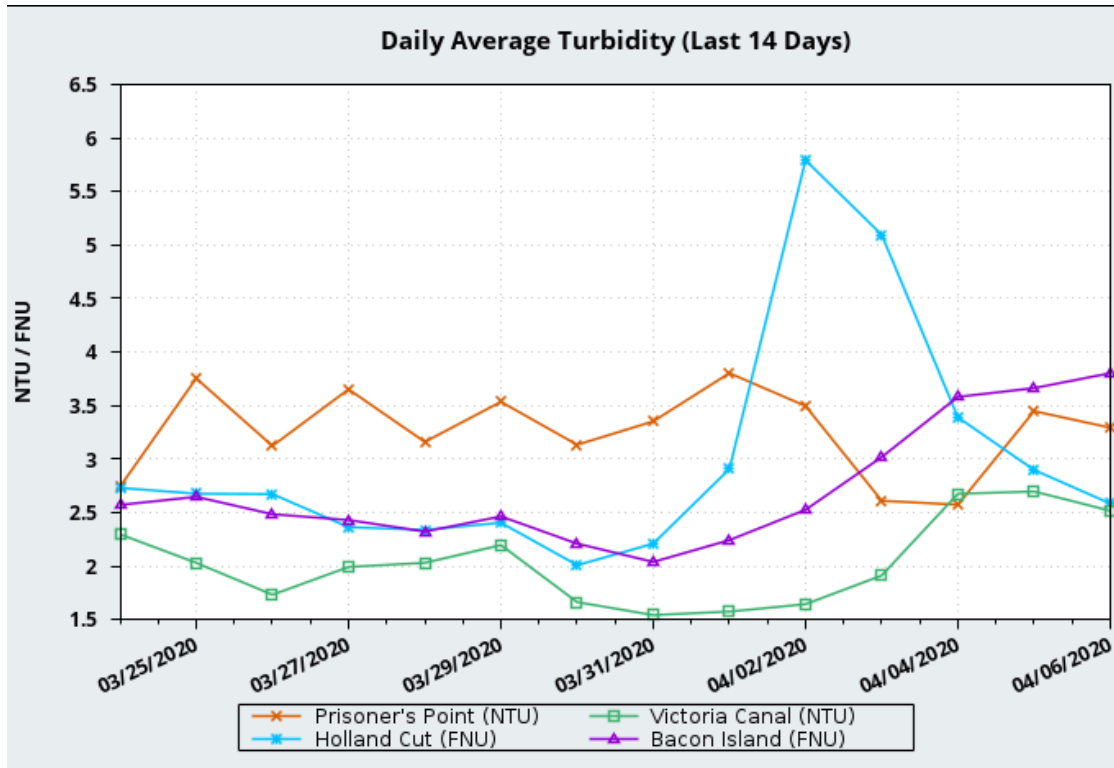
3. Operations

Tributary/Division	Projected Intended Operations and Ranges for week
Clear Creek	Whiskeytown Release: 200 cfs
Sacramento River	Shasta Storage: 3.59 MAF Shasta Release: 4,500 cfs (a decrease to 4,000 cfs is possible)
Feather River	Oroville Storage: 2.29 MAF Oroville Release to Feather: 1,750 cfs
American River	Folsom Storage: .47 MAF Nimbus Release to American: 1,500 cfs (a decrease to 1,250 cfs is possible)
Stanislaus River	New Melones Storage: 1.89 MAF Goodwin Release to Stanislaus: 300 cfs to 1,350 cfs (Spring Pulse Flow)
Delta	Freeport: 10,000 to 18,000 cfs Vernalis: 1,500 to 3,000 cfs Delta Outflow index: 9,000 to 20,000 cfs Exports JPP: 800 to 3,600 cfs CC: 500 to 1,500 cfs Expected OMR Index Values: -1,000 to -3,500 cfs Maximum Allowable OMR: -5,000 cfs

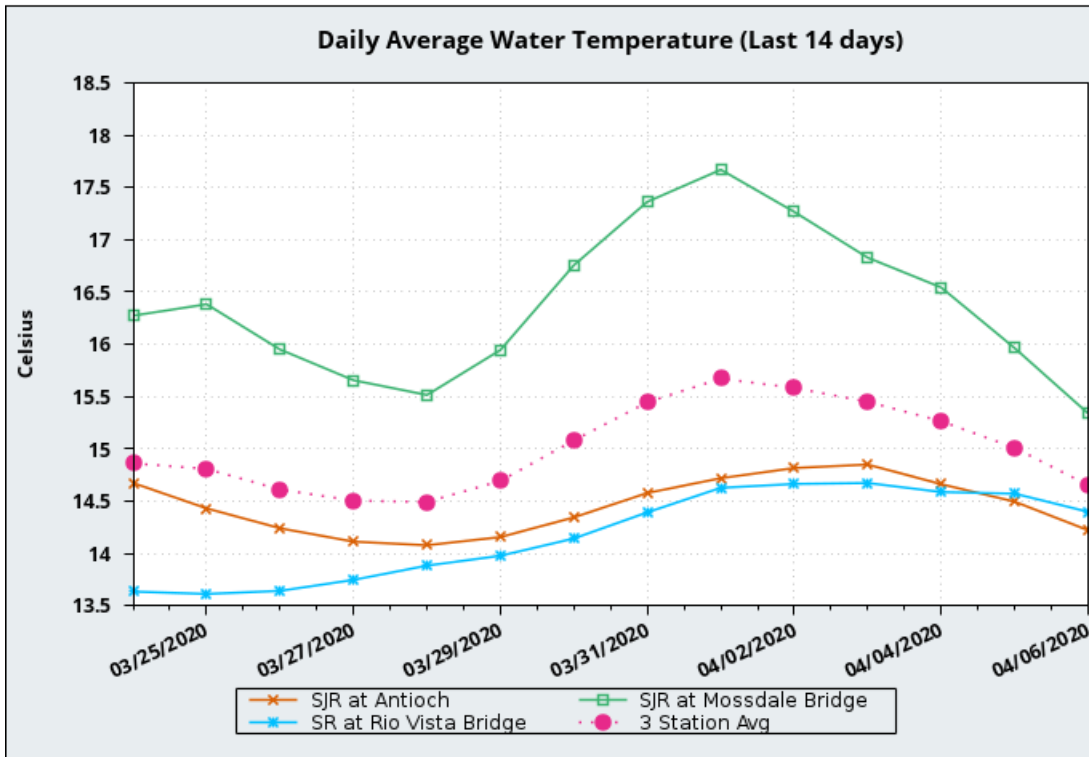
	X2 position: 74 to >81 km QWEST: +1,000 cfs to +5,000 cfs DCC: Closed
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Review of Environmental Conditions:

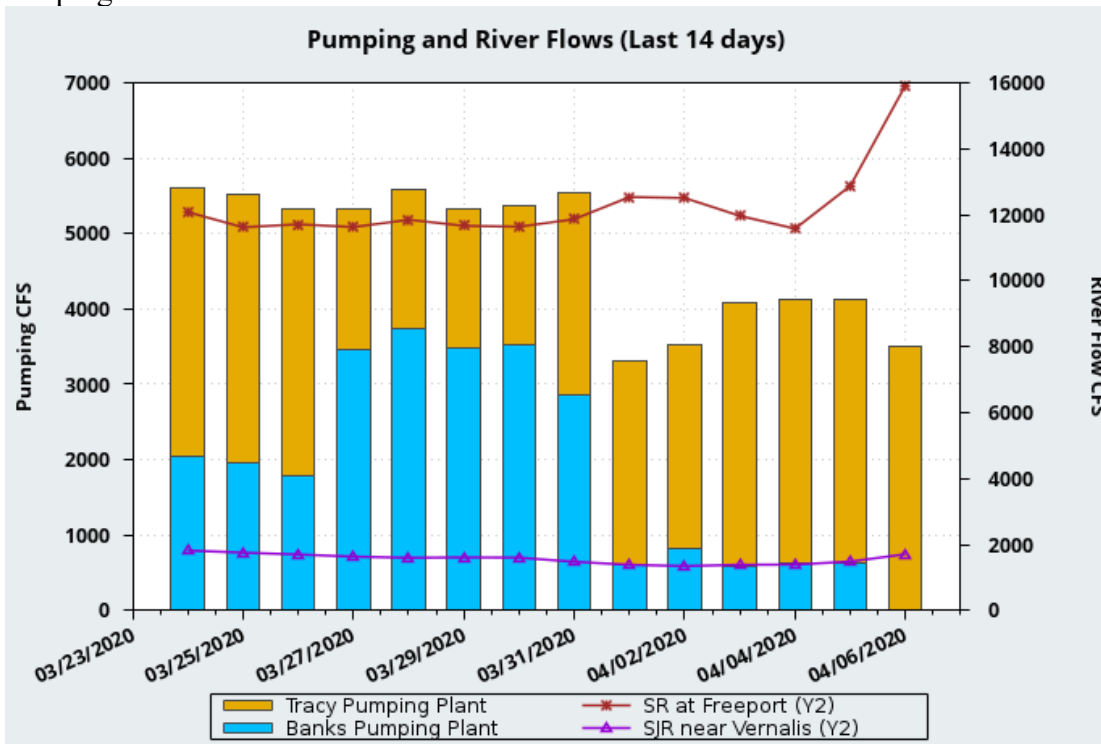
Turbidity:



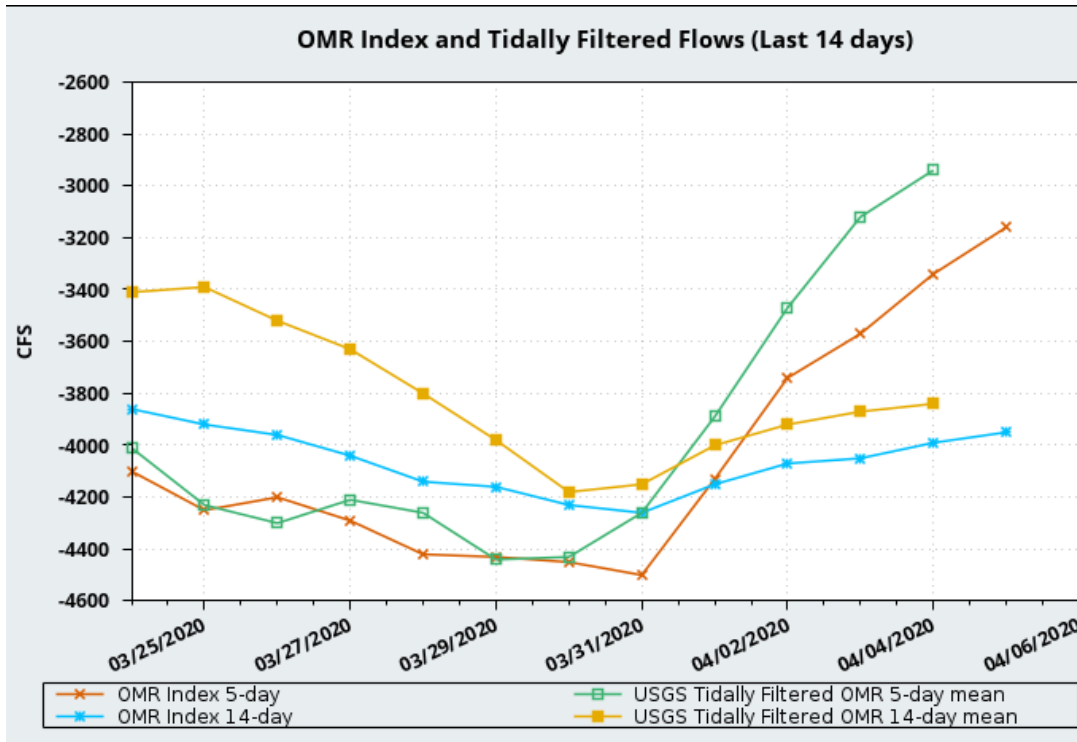
Temperature:



Pumping and Flows:



OMR Flows:



On April 5: the three station average temperature was 15.12 C. X2 position was 79 km. Turbidity at OBI was 3.7 NTU (April 5th) and 3.1 NTU (April 7th). QWEST was 3,800 cfs (April 6th). Clifton Court Forebay (CCF) daily average water temperature is 15.66 C or 60.19 C, zero consecutive days >70 F. Weather forecast for the week is mostly clear with increasing temperatures.

The data presented for conditions was accessed via SacPAS:

http://www.cbr.washington.edu/sacramento/data/delta_smelt.html

4. Fish Abundance, distribution, and lifestage:

A. Survey Updates:

-CDFW surveys on hold, no new surveys taking place. Processing of samples is ongoing and slow given current distancing procedures. As of now, SKT probably cancelled for rest of season and 20-mm is on hold.

-SLS #6 is complete with processing almost done and QA/QC needs to be complete. 8 Delta smelt at station 508, 7 at station 513, and 4 at 405. Large percentage of fish still have yolk sacs(87%). All fish were between 5-7mm. 370 Longfin Smelt with 35 of those in the South and Central Delta stations (~9%).

-20-mm #1: No Delta Smelt in South or Central Delta stations. 40% of samples remain to be processed. 134 Longfin Smelt so far, 29 of those in the South and Central Delta stations (~21%).

-EDSM Week 17: Started Phase 2 larval survey last week. Two Delta Smelt (6.2, 7.8mm) were detected in the lower Sacramento River on Tuesday March 31. Still processing

samples from last Wednesday and Thursday. Anticipate sending out the abundance estimate for last week's sampling on Friday April 10. During Phase 2 larval sampling, EDSM is sampling lower San Joaquin, Suisun Bay, Suisun Marsh, Shipping Channel, Cache Slough, and lower Sacramento River strata. EDSM is not sampling in the South Delta. Due to an employee expressing Covid like symptoms EDSM is off the water today Tuesday April 7. They are expected to resume sampling this week after following appropriate DOI policies.

Note: the daily and weekly EDSM reports are found on the USFWS Lodi website: https://www.fws.gov/loidi/juvenile_fish_monitoring_program/jfmp_index.htm.

B. Salvage Monitoring:

- No delta smelt salvaged last week.

-SWP data for last week will be available and sent out Thursday.

-CVP salvaged 8 Longfin Smelt last week, seasonal total through the 5th was 36. Additional 4 Longfin Smelt salvaged yesterday, seasonal total as of now is 40.

-Note- salvage database is double-counting larvae currently, this is being addressed. Above data is correct as it is reported from the datasheets.

5. Evaluation:

A. Is OBI turbidity likely to exceed 12NTU during the next week? What conditions are likely to create this turbidity event?

Group consensus: Turbidity is spiking regionally in the system from the Valley rain event that occurred the last three days. However, these turbidity spikes are not near OBI. OBI turbidity is not likely to reach 12 NTU.

Discussion:

- We had a big storm, will that cause turbidity to enter the entrainment zone?
 - Could result in a small uptick, but hard to believe it would result in turbidity over 12 NTU
 - Still below 3 NTU for most stations
- Statement: Turbidity is in the system but not a threat to the entrainment zone because of more positive OMR.
 - I would anticipate turbidity to go down a little bit because the Stanislaus pulses are drawn from water that has sat in reservoirs, not storm runoff.
 - Only turbidity pattern you might be concerned about is turbidity coming out via surface flow from the Tuolumne or Merced.

B. After March 15 and if QWEST is negative, are larval or juvenile Delta Smelt within the entrainment zone of the CVP and SWP pumps based on surveys?

- *Group Consensus:* Based on the survey data no Delta Smelt have been detected in the entrainment zone. However, we don't have adequate survey data from the entrainment zone to say anything definitively.

Discussion:

- Based on surveys, no larval or juvenile smelt detected in entrainment zone
 - We haven't sampled the south Delta since SLS 6; and don't have any data to confirm presence or absence in the entrainment zone.
 - How about saying that this question is "not applicable due to lack of evidence"?
 - I think it is applicable: we have caught smelt outside the entrainment zone and longfin inside the entrainment zone.
 - There is no one sampling in the south delta; don't have surveys running in the proper area to say that right now.
 - There could be delta smelt there but we don't know for sure.

C. What is the OMR level to manage the annual larval entrainment based on DSM recruitment level from the FWS LCM? How does this information from the real-time spatial distribution of DSM operationalize the LCM?

-*Group Consensus:* The group needs more information regarding the LCM to answer this question.

Discussion:

- We have an acknowledged limitation based on sampling data. We have parameters based on entrainment model but don't have Secchi depth data from the South Delta; without that, our ability to make a conclusive answer to this is limited;
- Switching to turbidity would be more helpful for real-time decision-making.

D. What do hydrodynamic models, informed by EDSM or other relevant data, suggest the estimated percentage of larval and juvenile DSM that could be entrained may be?

Group Consensus: With more positive OMR flows, there is less risk of entrainment for Delta Smelt. The expected OMR Index Values is: -1,000 to -3,500 cfs for the next week. These flows are more positive than the previous week. Entrainment potential is lower this week than last due to more positive OMR values.

Discussion:

- Not comfortable saying we could estimate a percentage of entrained fish without PTM.
 - Given lack of current survey info, would be hard to estimate distribution and how likely they are to be entrained.
 - General agreement with the above statement.
- At most, we could say entrainment risk will be decreasing because OMR flows will be more positive, but other than that, we can't say much.
- STATEMENT: With more positive OMR flows, there is less risk of entrainment if fish are there but we can't put a hard number on it.

8. Additional Considerations

- With the full moon tomorrow, that could possibly indicate that the peak of spawning could occur soon. Moyle's 2002 book says most spawning occurs early April to mid-May coincident with new and full moons. Points to heading into peak spawning event.
- Also holding out hope that cool spring will mean a protracted spawning event. Potential this year for multiple spawning events.
- PTM runs could be useful in absence of fish survey data, however staffing is extremely limited and can't be run remotely. At this time a PTM is of limited use for management of OMR, since expecting to be at minimum health and safety export levels of 1500 cfs from April 10th-May 10th due to D-1641.

9. Next Meeting:

April 14, 2020 at 11:00am

Weekly Advice for Longfin Smelt

Overview

Longfin Smelt larvae and juveniles within the south and central Delta are at high risk of entrainment, however, OMR restrictions beyond those already in place may not benefit the species.

The period for Barker Slough advice ended on March 31.

Basis for Advice

The 2020 [Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta 2081-2019-066-00](#) (ITP) states that advice to Water Operations Management Team (WOMT) shall be based the following Conditions of Approval:

Adults

December 1 through February 28

8.3.3 Adult Longfin Smelt Entrainment Protection. After December 1, if an Integrated Early Warning Pulse Protection (Condition of Approval 8.3.1) has not yet initiated, Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5000 cfs and initiate OMR management (Condition of Approval 8.3) if:

- Cumulative combined LFS expanded salvage (total estimated LFS counts at CVP and SWP salvage facilities) beginning December 1 through February 28 exceeds the most recent FMWT index divided by 10, OR
- Real-time monitoring of abiotic and biotic factors indicates a high risk of LFS movement into areas at high risk of future entrainment as determined by DWR and CDFW Smelt Monitoring Team staff.

When evaluating the possibility of LFS movement into the areas that may be subject to an elevated risk of entrainment, the SMT shall evaluate catch of LFS with fork length ≥ 60 mm by the Chipps Island Trawl as an early warning indicator for LFS migration movement into the Delta, in addition to other available survey and abiotic data.

8.4.1 OMR Management for Adult Longfin Smelt. From the onset of OMR Management (Condition of Approval 8.3) through February 28, the SMT shall conduct weekly, or more often as needed, risk assessments and decide whether to recommend an OMR flow requirement between -5000 cfs and -1250 cfs to minimize entrainment and take of adult LFS. The SMT may provide advice to restrict south Delta exports for seven consecutive days to achieve a seven-day average OMR index within three risk categories:

- Low risk: OMR between -4000 cfs to -5000 cfs

- Medium risk: OMR between -2500 cfs to -4000 cfs
- High risk: OMR between -1250 cfs to -2500 cfs

The team shall provide its advice to WOMT (Condition of Approval 8.3.1) and operational decisions shall be made following the process described in Condition of Approval 8.1.4

Larvae and Juveniles

8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection. From January 1 through June 30, when a single Smelt Larva Survey (SLS) or 20 mm Survey (20 mm) sampling period exceeds one of the following thresholds:

- LFS larvae or juveniles found in four or more of the 12 SLS or 20 mm station in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919), or
- LFS catch per tow exceeds five LFS larvae or juveniles in two or more of the 12 stations in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919).

Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMR index no more negative than -5000 cfs. Permittee shall also immediately convene the SMT to conduct a risk assessment (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into south Delta export facilities, determine if an OMR flow restriction is warranted, and recommend an OMR flow limit between -1250 cfs and -5000 cfs. The SMT risk assessment and operational advice shall be reviewed by WOMT (Condition of Approval 8.1.3) via the Collaborative Real-time Decision-making process (Condition of Approval 8.1.4). Permittee shall operate to the export restriction and OMR flow target approved through Conditions of Approval 8.1.3 and 8.1.4. Each week the SMT shall convene to conduct a new risk assessment and determine whether to maintain, or off-ramp from, export restrictions based on the risk to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management).

From January 1 through June 30, DWR and CDFW SMT staff shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities. As part of the risk assessment the SMT shall provide advice on the appropriate OMR flow targets to minimize LFS entrainment or risk of entrainment, or both. The SMT shall provide its advice to WOMT (Condition of Approval 8.1.3) and use the Collaborative Approach to Real-time Risk Assessment process described in Condition of Approval 8.1.4 to determine if OMR flow restriction is warranted and determine the OMR flow limit between -1250 and -5000 cfs. The OMR flow limit shall be in place until the next risk assessment conducted by the SMT determines that it is no longer necessary to minimize take or related impacts to LFS, or until the DS and LFS off-ramp has been met as described in the Condition of Approval 8.8 (End of OMR Management).

High Flow Off-Ramp and End of OMR Management

8.4.3 High Flow Off-Ramp from Longfin Smelt OMR Restrictions. OMR management for adult, juvenile, or larval LFS as described in Conditions of Approval 8.4.1 and 8.4.2 are not required, or would cease if previously required, when river flows are (a) greater than 55,000 cfs in the Sacramento River at Rio Vista

or (b) greater than 8,000 cfs in the San Joaquin River at Vernalis. If flows subsequently drop below 40,000 cfs in the Sacramento River at Rio Vista or below 5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of Conditions of Approval 8.4.2 and 8.4.2 shall resume.

8.8 End of OMR management

Conditions of Approval in place to minimize take of Delta and Longfin Smelt shall remain in effect until June 30th or until daily mean water temperature at Clifton Court Forebay (CCF) is greater than 25°C for 3 consecutive days

Barker Slough

8.12 Barker Slough Pumping Plant Longfin Smelt Protection. Permittee shall operate the BSPP to protect larval LFS from January 15 through March 31 of dry and critical water years. If the water year type changes after January 1 to below normal, above normal or wet, this action will be suspended. If the water year type changes after January to dry or critical, Permittee shall operate according to this Condition of Approval.

From January 15 through March 31 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate as BSPP to less than 60 cfs when larval LFS are detected at Station 716. In addition, in its weekly meetings from January 15 through March 31, the SMT shall review LFS abundance and distribution survey data and other pertinent abiotic and biotic factors that influence the entrainment risk of larval LFS at the BSPP. When recommended by the SMT, and as approved through the decision-making process described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP according to the advice provided by the SMT.

Discussion of Criteria

Adults

The period relevant to adult Longfin Smelt protections ended on February 28th.

8.3.3 Adult Longfin Smelt Entrainment Protection. No Longfin Smelt were salvaged from December 1 through February 28 of Water Year 2020. The most recent FMWT index is 44.

8.4.1 OMR Management for Adult Longfin Smelt. Not applicable

Larvae and Juveniles

8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection

SLS 6: (March 16 through 18) LFS larvae or juveniles were collected at 6 of the 12 relevant stations (809, 812, 815, 901, 902, 906). Catch per tow was greater than 5 at 3 of the 12 relevant stations (809, 812 and 901). See attachment "2020_SLS_Sur6_Smelt Catch_04062020.pdf" and the [SLS webpage](#) for reported catch and more information.

20 mm 1: (March 16 through 18) LFS larvae or juveniles were collected at 4 of the 12 relevant stations (809, 812, 815, 901). Average catch per tow was greater than 5 at 2 of the 12 relevant stations (809 and 812). See attachment "2020_20mm_Sur1_SmeltCatch_04062020.pdf" and the [20-mm webpage](#) for reported catch and more information.

Salvage: 40 Juvenile LFS have been salvaged this water year. Larvae were detected at the federal facility on the March 27, 28, 29, 30 and April 3, 5 and 6. One larval LFS was detected at the state salvage facility on April 1.

High Flow Off-Ramp and End of OMR Management

8.4.3 High Flow Off-Ramp from Longfin Smelt OMR Restrictions. Flow in the Sacramento and San Joaquin Rivers remained below the off-ramp thresholds of 55,000 cfs for the Sacramento River at Rio Vista and 8,000 cfs for the San Joaquin River at Vernalis.

8.8 End of OMR management. Daily average water temperature at CCF has not exceeded 25°C.

Barker Slough

8.12 Barker Slough Pumping Plant Longfin Smelt Protection. The period relevant to Barker Slough Operations for the Longfin Smelt protection ended March 31.

Current Conditions

AS of April 6, 2020

Sacramento River flow at Freeport = 16100 cfs. San Joaquin River flow at Vernalis = 1730 cfs. X2 = 79 km. Qwest was approximately + 4000 cfs and is expected to peak tomorrow. Daily average OMR Index = - 3400 cfs and is expected to become less negative later this week.

Summary of Risk

Review of PTM runs, conducted for the April 1 call, showed that particles injected into central Delta stations 815 and 901 were entrained past Bacon Island and into CVP and SWP export facilities at similar rates, though entrainment was higher under the -3000 cfs to -4000 cfs OMR scenario compared to the -2000 cfs OMR scenario. See attachment "PTM Forecast 3_24_2020.pdf" for PTM results. LFS larvae and juveniles south of Bacon Island will likely be entrained and lost to the population.

LFS juveniles and larvae in the south and central Delta are at high risk of entrainment, however, further OMR restrictions may not benefit the species. Pulse flows, which may begin as early as April 10, have the potential to provide hydrology that is conducive to downstream transport of young of year LFS. Overall risk is lower than last week due to OMR becoming less negative.

No advice was warranted for Barker Slough Pumping Plant Operations.

Attachments

Note: Attachments are imbedded PDFs. Double click images on following pages to open.

2020_SLS_Sur6_Smelt Catch_04062020.pdf

2020_20mm_Sur1_SmeltCatch_04062020.pdf

PTM Forecast 3_24_2020.pdf

Table 1. Longfin Smelt catch per station from 2020 Smelt Larva Survey, Survey 6, which was in the field 3/16/2020 - 3/18/2020. Longfin Smelt incidental lake permit criteria stations are highlighted in blue (Barker Slough Pumping Plant) and yellow (South Delta exports).

Study Year	Survey #	SLS Station	Turbidity	Sample Status	Species	Smelt Catch	Min O/L length	Max O/L length	Avg O/L length
2020	6	411	13.5	Not yet processed	Longfin Smelt	14	6	8	6.857143
2020	6	418	17.7	Processed	Longfin Smelt	No Smelt Catch			
2020	6	501	17.4	Processed	Longfin Smelt	18	6	10	8.055556
2020	6	504	17.2	Processed	Longfin Smelt	2	7	10	8.5
2020	6	508	16.9	Processed	Delta Smelt	8	5	6	5.75
2020	6	508	16.9	Processed	Longfin Smelt	12	7	12	7.916667
2020	6	513	14.8	Processed	Longfin Smelt	1	7	7	7
2020	6	513	14.8	Processed	Delta Smelt	7	6	7	6.142857
2020	6	518	23.7	Processed	Longfin Smelt	6	6	10	7.5
2020	6	520	16.6	Processed	Longfin Smelt	No Smelt Catch			
2020	6	602	18.9	Processed	Longfin Smelt	2	8	10	9
2020	6	606	31.8	Processed	Longfin Smelt	51	7	15	8.88
2020	6	609	25.8	Processed	Longfin Smelt	12	7	12	7.833333
2020	6	610	20.7	Processed	Longfin Smelt	6	7	10	8.166667
2020	6	703	19.2	Processed	Longfin Smelt	58	6	13	6.5
2020	6	704	12	Processed	Longfin Smelt	17	7	11	8.294118
2020	6	705	3.5	Processed	Longfin Smelt	62	8	17	11.14
2020	6	706	7.2	Processed	Longfin Smelt	9	8	10	8.777778
2020	6	707	4.4	Processed	Longfin Smelt	3	7	12	10.333333
2020	6	711	3.5	Not yet processed	Longfin Smelt	1	7	7	7
2020	6	723	3.7	Processed	Longfin Smelt	No Smelt Catch			
2020	6	801	15.3	Processed	Longfin Smelt	15	6	11	7.1
2020	6	804	9	Processed	Longfin Smelt	14	6	14	8.9
2020	6	806	6.8	Processed	Longfin Smelt	6	8	12	9.3
2020	6	812	5.1	Processed	Longfin Smelt	7	8	12	10.1
2020	6	815	3.3	Processed	Longfin Smelt	4	11	13	11.8
2020	6	901	7.7	Processed	Longfin Smelt	14	9	13	10.5
2020	6	902	4.5	Processed	Longfin Smelt	2	10	11	10.5
2020	6	906	2.8	Processed	Longfin Smelt	2	9	9	9.0
2020	6	910	2.8	Processed	Longfin Smelt	No Smelt Catch			
2020	6	912	2	Processed	Longfin Smelt	No Smelt Catch			
2020	6	914	3.2	Processed	Longfin Smelt	No Smelt Catch			
2020	6	915	5	Processed	Longfin Smelt	No Smelt Catch			
2020	6	918	5.9	Processed	Longfin Smelt	No Smelt Catch			
2020	6	919	1.7	Processed	Longfin Smelt	No Smelt Catch			

Barker ITP

SWP ITP Delta Station

Table 1. Delta Smelt and Longfin Smelt catch per station from 2020 20-mm Survey 1, which was in the field 3/16/2020 - 3/18/2020. These data are preliminary and subject to change.

Year	Survey	Station	Date	# Traps	Species	Total	Min	Max	Avg
2020	1	328		0	Not Sampled				
2020	1	330		0	Not Sampled				
2020	1	334		0	Not Sampled				
2020	1	335		0	Not Sampled				
2020	1	336		0	Not Sampled				
2020	1	338		0	Not Sampled				
2020	1	340		0	Not yet Processed				
2020	1	342		0	Not yet Processed				
2020	1	343		0	Not yet Processed				
2020	1	344		0	Not yet Processed				
2020	1	345		0	Not yet Processed				
2020	1	346		0	Not yet Processed				
2020	1	405		0	Not yet Processed				
2020	1	411		0	Not yet Processed				
2020	1	418		0	Not yet Processed				
2020	1	501		0	Not yet Processed				
2020	1	504		0	Not yet Processed				
2020	1	508		0	Not yet Processed				
2020	1	512		0	Not yet Processed				
2020	1	518		0	Not yet Processed				
2020	1	520		0	Not yet Processed				
2020	1	609		0	Not yet Processed				
2020	1	610		0	Not yet Processed				
2020	1	608	16-Mar-20	0	Not yet Processed				
2020	1	610	16-Mar-20	3	Longfin Smelt	3	8	12	10.00
2020	1	601	17-Mar-20	0	Not yet Processed				
2020	1	601	17-Mar-20	2	Longfin Smelt	2	6	11	8.50
2020	1	608	17-Mar-20	1	Longfin Smelt	1	8	14	11.00
2020	1	703	0	Not yet Processed					
2020	1	704	17-Mar-20	0	Not yet Processed				
2020	1	705	17-Mar-20	0	Not yet Processed				
2020	1	706	17-Mar-20	0	Not yet Processed				
2020	1	707	0	Not yet Processed					
2020	1	711	0	Not yet Processed					
2020	1	716	18-Mar-20	3	No Smelt Catch	0			
2020	1	718	18-Mar-20	0	No Smelt Catch	0			
2020	1	719	18-Mar-20	3	Longfin Smelt	1	9	9	9.00
2020	1	720	18-Mar-20	3	No Smelt Catch	0			
2020	1	723	0	Not yet Processed					
2020	1	724	18-Mar-20	3	Longfin Smelt	1	10	10	10.00
2020	1	726	0	Not yet Processed					
2020	1	800	17-Mar-20	2	Longfin Smelt	16	9	13	11.50
2020	1	812	17-Mar-20	3	Longfin Smelt	5	9	11	10.17
2020	1	815	17-Mar-20	2	Longfin Smelt	3	10	12	11.33
2020	1	801*	18-Mar-20	3	Longfin Smelt	4	8	12	11.00
2020	1	802*	18-Mar-20	3	No Smelt Catch	0			
2020	1	806*	18-Mar-20	3	No Smelt Catch	0			
2020	1	808*	18-Mar-20	3	No Smelt Catch	0			
2020	1	810*	18-Mar-20	3	No Smelt Catch	0			
2020	1	812*	18-Mar-20	3	No Smelt Catch	0			
2020	1	814*	18-Mar-20	3	No Smelt Catch	0			
2020	1	818*	18-Mar-20	3	No Smelt Catch	0			
2020	1	819*	18-Mar-20	3	No Smelt Catch	0			

* Indicates reduced tow time

PTM Injection and Output Locations

- Injection Location ●
- Flux Output ▮
- Ref Flux Direction ←

