

Smelt Monitoring Team  
Tuesday, June 2, 2020  
11:00 AM – 12:00 PM

**Executive summary:** In WY2020, larval and juvenile Delta Smelt have been detected in the Lower Sacramento River and Sacramento Deepwater Shipping Channel. One larval Delta Smelt (12 mm) was salvaged on April 13th at the Tracy Fish Collection Facility (TFCF). The expected OMR Index Values are -1,500 to -5,000. Based on real-time spatial distribution, turbidity data, and a lack of available PTM scenarios for -5,000 cfs, some agencies identified -3,500 cfs as an OMR level to manage larval and juvenile entrainment levels. Based on the absence of Delta smelt in the Central and south Delta and low turbidity in the Central and South Delta, Reclamation identified -5,000 cfs as an OMR level to manage larval and juvenile entrainment levels. The appropriate data and OMR level will be further discussed at WOMT

**1. Introductions**

CDFW, DWR, BOR, USFWS, K&W

**2. Group Introduction:**

The Smelt Monitoring Team (SMT) is a technical team that evaluates up-to-date biological and technical issues regarding Delta Smelt. The objective of the Smelt Monitoring Team is to provide information to the Water Operations Management Team (WOMT), Reclamation and California Department of Water Resources on measures to reduce adverse effects from Delta operations of the Central Valley Project (CVP) and the State Water Project (SWP) on Delta Smelt.

**3. 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.

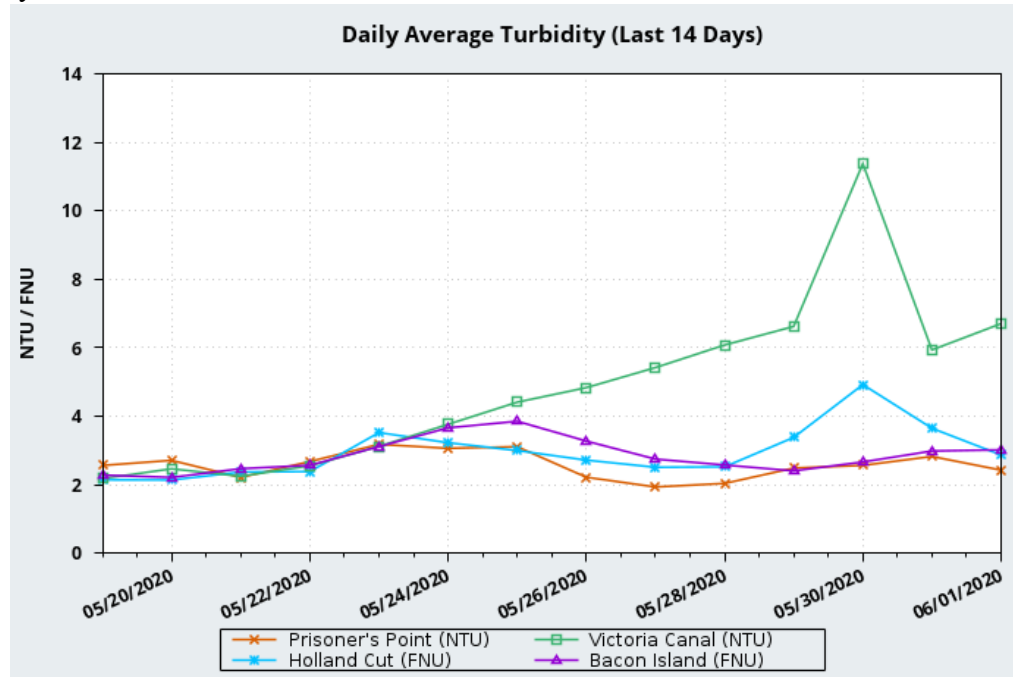
#### 4. Operations

Tributary/Division	Projected Intended Operations and Ranges for week
Clear Creek	<ul style="list-style-type: none"> <li>· Whiskeytown Release: 150-500 cfs (implementing spring pulse flow)</li> </ul>
Sacramento River	<ul style="list-style-type: none"> <li>· Shasta Storage: 3.53 MAF</li> <li>· Current Release: 10,500 cfs</li> <li>· Anticipated Weekly Range of Releases to Sacramento: 10,000 cfs to 12,000 cfs (As needed to support observed legal diversion demands on the Sacramento River in addition to Delta demands)</li> </ul>
Feather River	<ul style="list-style-type: none"> <li>· Oroville Storage: 2.42 MAF</li> <li>Current Release: 3,000 cfs</li> <li>· Anticipated Weekly Range of Releases to Feather: 2,500 cfs to</li> </ul>

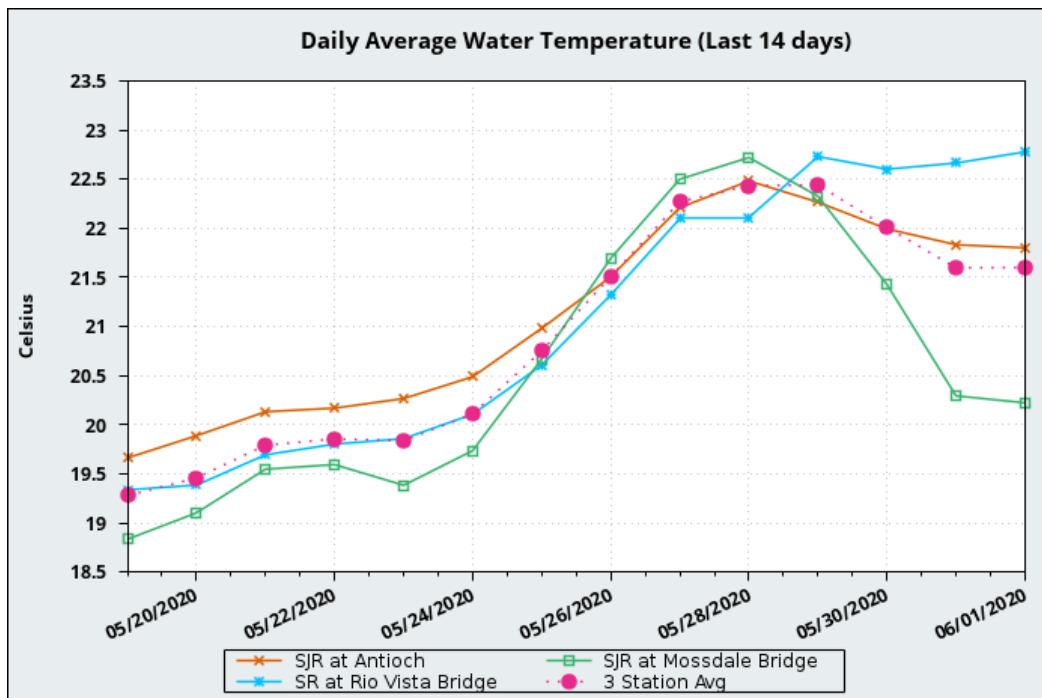
	4,000 cfs (As needed to support Delta water quality obligations)
American River	<ul style="list-style-type: none"> <li>· Folsom Storage: 0.79 MAF Current Release: 1,750 cfs</li> <li>· Anticipated Weekly Range of Releases to American: 1,750 to 2,500 cfs (As needed to meet Delta water quality objectives)</li> </ul>
Stanislaus River	<ul style="list-style-type: none"> <li>· New Melones Storage: 1.83 MAF</li> <li>· Current Release to Stanislaus: 1,500 cfs</li> <li>· Anticipated Weekly Range of Releases to Stanislaus: 1,000 cfs to 1,500 cfs (As needed to meet D-1641 flow requirements at Vernalis)</li> </ul>
Delta	<ul style="list-style-type: none"> <li>· Freeport: 10,000 to 14,000 cfs</li> <li>· Vernalis: 1,500 to 2,000 cfs</li> <li>· Delta Outflow index: 7,000 to 11,000 cfs</li> <li>· Combined Exports: 1,100 to 4,800 cfs</li> <li>· JPP: 900 to 4,200 cfs CC: 200 to 1,600 cfs</li> <li>· Expected OMR Index Values:-1,500 to -5,000 cfs</li> <li>· X2 position: 78 to &gt; 81 km · QWEST: -2,500 to +4,000 cfs · DCC: Closed during week, open on weekend</li> </ul>

## Review of Environmental Conditions:

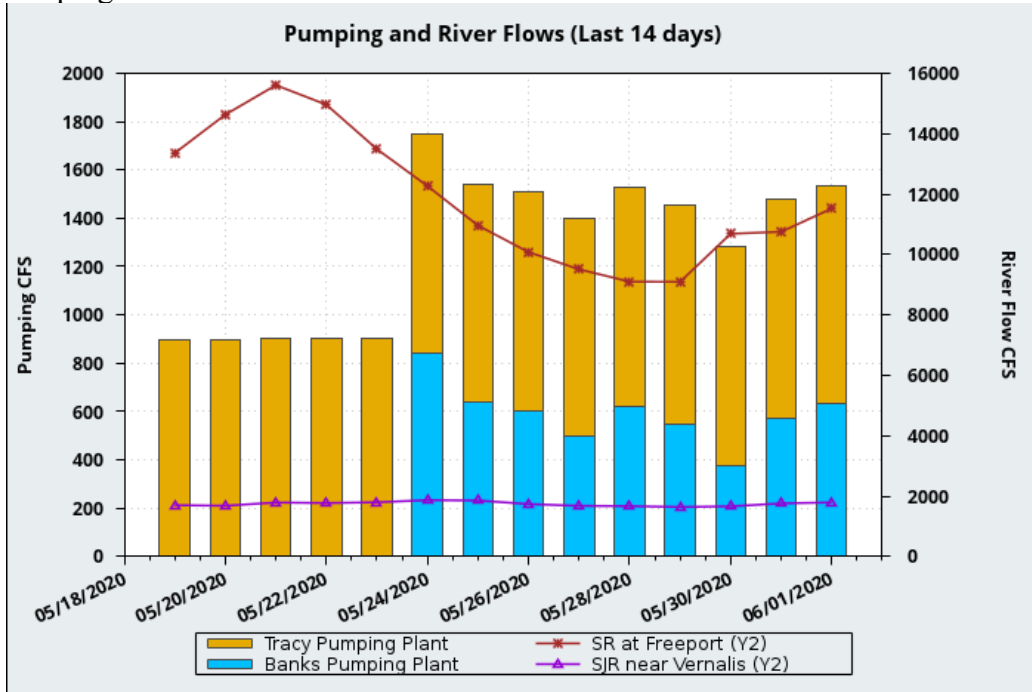
Turbidity:



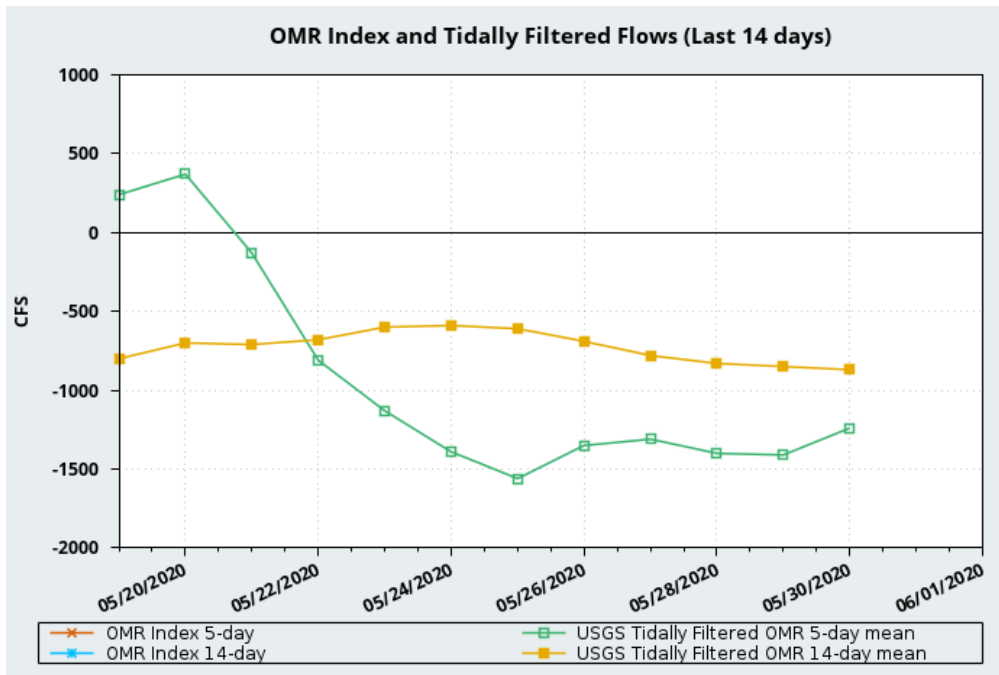
Temperature:

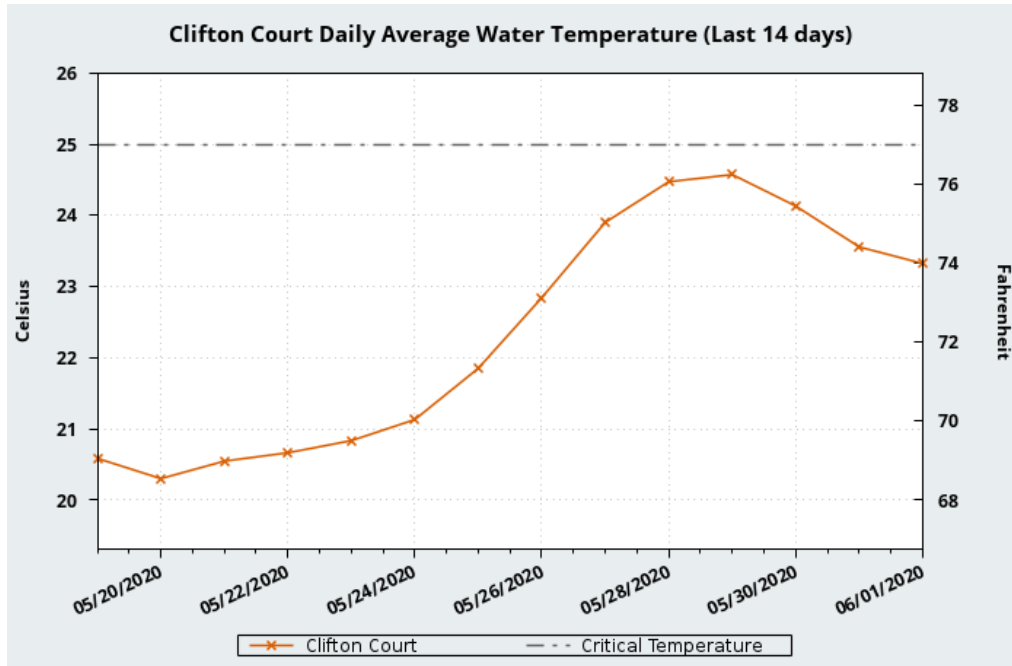


Pumping and Flows:



OMR Flows:





- As of June 1, the 3-station daily average temperature: 21.6°C
- Daily average turbidity at OBI on June 1 = 3.03 FNU; Current turbidity = 3.80 FNU
- Clifton Court daily average: 23.3°C; 73.99°F (0 days over 77°F, so not triggered)
- Forecast for Antioch: sunny and hot; NW/W/SW winds up to 11 mph; no precipitation

The data presented for conditions was accessed via SacPAS:

[http://www.cbr.washington.edu/sacramento/data/delta\\_smelt.html](http://www.cbr.washington.edu/sacramento/data/delta_smelt.html)

Controlling Factors: *Factors controlling Delta exports, 5/26/20 – 6/1/20*: Controlling factors for the previous week include Delta water quality criteria that may have limited exports [i.e., Emmaton electrical conductivity (EC), Delta outflow, Collinsville EC]. Controlling factors remained the same through the end of May (5/31/20). Beginning on 6/1/20, the preliminary injunction and ITP cease to be controlling factors, however water quality constraints will remain as controlling factors [i.e., Delta outflow, Emmaton electrical conductivity (EC), and Collinsville EC].

## 5. Fish Abundance, distribution, and lifestage:

### A. Survey Updates:

- 20 mm Survey 6 (May 25-29): still processing samples that were collected
  - o Have processed all central and south Delta stations: No delta smelt or longfin smelt
  - o Other stations (thus far):
    - 46 longfin smelt (24-33 mm)
    - No delta smelt
- 20 mm Survey 7 will run June 8-12. We will continue to drop three northern stations in order to minimize travel time.

- If summer tow net is deemed essential, we will stop 20 mm surveys; if not, we will proceed with 20mm surveys into July.

## **-EDSM**

- Published Week 8 abundance estimate: 15,516
- Finished 9<sup>th</sup> week of EDSM sampling last week and started 10<sup>th</sup> week today; they will be sampling Tuesday through Friday.
- Completed processing for samples collected through last Thursday May 28th.  
Preliminary results for the rest of last week:
  1. No Delta or longfin smelt in samples from last week
    1. EDSM processes samples based on date so Friday May 29 samples are the last to be processed for last week. Shipping Channel and Lower San Joaquin samples from May 29 remain to be processed; they have gone through their first ID, awaiting the second ID, but haven't heard that any smelt were ID'd in first round
    2. *Update: there was one 37 mm Delta Smelt identified in the field during the call. It was caught in Suisun Marsh at Montezuma Slough, not too far upstream from Grizzly Bay; ID was confirmed as Delta Smelt by multiple people when it was returned to the lab.*
- [https://www.fws.gov/lodi/juvenile\\_fish\\_monitoring\\_program/jfmp\\_index.htm](https://www.fws.gov/lodi/juvenile_fish_monitoring_program/jfmp_index.htm).

### **B. Salvage Monitoring:**

- No smelt in regular or larval sampling (larval data through 9:00 am 6/1/2020)
- No operational outages

## **6. Evaluation:**

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

*Group Response:* Turbidity at OBI is not expected to exceed 12 NTU in the next week. Daily average turbidity at Old River Bacon Island (Station ID: OBI) on 6/1/2020 was 3.0 FNU. The weather forecast does not predict precipitation events in the next seven days and the predicted northwest, west southwest and west winds are not expected to raise turbidity past 12 NTU.

*i. Discussion: No comments*

### **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 Response:* Larval and juvenile Delta Smelt have been detected in the Lower Sacramento and the Sacramento Deepwater Ship Channel. The Lower Sacramento River and Sacramento Deepwater Ship Channel are outside of the entrainment zone of the CVP and SWP pumps. However, the larval Delta Smelt observed at the CVP's Tracy Fish Collection Facility (TFCF) on 4/13/2020 indicates larval Delta Smelt may be present in the entrainment zone. Since this detection, no other larval, juvenile, or adult Delta Smelt have been seen in the entrainment zone of the CVP and SWP pumps. 20mm Survey 2 was cancelled due to COVID-19. 20mm Surveys have since been able to sample the South Delta. EDSM is not currently sampling the South Delta stratum. The size and rarity of recently hatched Delta Smelt may limit the ability of salvage and surveys to detect Delta Smelt. In the Operations Outlook, QWEST continues to be predicted to be negative to positive between -2,500 cfs to +4,000 cfs and OMR Index Values are predicted to be between -1,500 to -5,000 cfs. There is a two-day opening of the Delta Cross Channel Gates over the weekend that will create a positive response in QWEST and may facilitate outmigration.

*Discussion:*

**i. Discussion:**

**1.** There appears to be a discrepancy in the OMR values. In the update, you stated that QWEST would get as negative as -500 cfs.

**a.** The values reported in the answer to the assessment questions are pulled from the operations outlook. The values reported verbally are an estimate for today, not a projection of possibilities over the week. The response reflects a reasonable range for QWEST and OMR given current conditions.

**b.** Also, the response states that the "installation of the barriers will make OMR more negative." Given that all the barriers and most importantly, Grant Line are closed as of yesterday, the values should reflect the impacts of those installations. The way it is written makes it sound like the OMR could be end up being even more negative than -5000 cfs.

**i.** Agreed to remove that sentence.

**c.** Is there a possibility that -5000 could be a controlling factor this week?

**1.** A slim possibility... but there are a lot of moving parts this time of year for water quality standards.

**C. Based on real-time spatial distribution of Delta Smelt and currently available turbidity information, what is the OMR level between -3,500 and -5,000 cfs that**



**manages weekly entrainment in the context of annual larval and juvenile entrainment levels?**

*Group Response:* Within the previous 30 days, Delta Smelt have only been detected in the Sacramento Deep Water Ship Channel in the North Delta. However, the size and rarity of recently hatched Delta Smelt may limit the ability of salvage and surveys to detect Delta Smelt. South Delta CDEC reporting has shown isolated turbidity increases at Clifton Court, but OBI is expected to remain stable. Clifton Court Forebay temperatures are rising, but remain below the 77 °F threshold. Based on real-time spatial distribution, turbidity data, and a lack of available PTM scenarios for -5,000 cfs, some agencies identified -3,500 cfs as an OMR level to manage larval and juvenile entrainment levels. Based on the absence of Delta smelt in the Central and south Delta and low turbidity in the Central and South Delta, Reclamation identified -5,000 cfs as an OMR level to manage larval and juvenile entrainment levels. The appropriate data and OMR level will be further discussed at WOMT

*Discussion:*

- i. **Discussion:**
  2. DWR: Want to start including discussion of increasing temperatures since that impacts our discussion of risk and what OMR we find appropriate.
  3. Where does the reference to South Delta turbidity originate?
    - a. Originated in the data field crews were collecting from previous surveys, there were secchi depths approaching 1 m mark in Delta, but in more recent data collection, there is less info on that. Were also trying to connect this with observations at prior meetings about the turbidity popping up around Clifton court.
    - b. Do you know which survey this data is from?
      - i. Survey 5 20mm. For survey 6, secchi depth in the south Delta are more than 1m.
      - ii. Clifton Court measured 12.37 FNU turbidity yesterday. Continuing to see increased turbidity in that area. Would it be valuable for assessment to be more specific about where we are seeing turbidity increases, since some areas are more sensitive and pertinent to the analysis in terms of turbidity impacts on smelt mortality?
  4. Does everyone agree that OMR levels of no more negative than -5000 is the appropriate OMR to manage larval and juvenile entrainment levels?
    - a. We haven't detected any smelt in south Delta in over 30 days. We have 20mm and salvage data, which have not

detected delta smelt. Temperatures are rising and conditions unsuitable for these lifestages will soon drive them out to seek cooler temperatures; however, we are still in place where they can reside based on thermal tolerance. I am ok saying -5000; there have not been additional reported salvage in the past 30 days.

- b. Share yconcern that -5000 cfs is the upper range, but given the lack of fish? detections in South Delta, it would be hard to argue against managing at that level.
- c. If any young-of-year and smelt are still in that corridor, not sure there is any hydrologic pattern that would help them move out of there. Just want to focus on not entraining additional fish from elsewhere (e.g. lower SJ) and -5000 cfs meets those needs.
- d. Recognize that it would be convenient to increase exports based on other needs, but Delta Smelt historically resided in South delta year round and has become increasingly rare in the estuary. Even if we don't detect fish, we may still be putting them at risk. As fish abundance and salvage declined over the years, the export window based on perceived entrainment risk may be expanded as our ability to detect fish declines. Recognize that there is no concrete evidence of Delta Smelt presence outside the Deepwater Shipping Channel, but by assuming they are not near the high risk of entrainment and operating accordingly, we are reducing the habitat options for the species tth. The Smelt Monitoring Team is using the best tools available to us to provide recommendations, but In the best long-term interest of the species, , we cannot assume that lack of fish detections in the entrainment zone equals no entrainment risk. Temperature in South Delta should not to be the fundamental reason we stop operating more protectively since the South Delta used to serve as year-round habitat for delta smelt. Should make it clear that there are multiple considerations to decide an appropriate OMR.
- e. Delta smelt habitat depends on adequate flows. We are tasked with evaluating entrainment. But outflow is at least as important to improve survival as limiting entrainment.
- f. Given the status of species we should be as protective as possible but have to work within the bounds of the BiOp and ITP, which is currently a -3500 to -5000 OMR range.
- g. Time to revisit the 25 °C temperature criteria.
- h. We had limited information on temperature tolerance of Delta Smelt when the 25°C criterion was developed but we

now know they can tolerate higher temperatures. If there is any chance for the fish to produce progeny that are more temperature tolerant, we should help it by managing for climate change adaptation at higher temperatures.

- i. We could not find any evidence to back us away from the -5000 cfs OMR based on turbidity and real time detection info.
  - i. To say that Smelt monitoring team has determined that -5000 is an appropriate OMR level to manage entrainment does not reflect the opinion of all of the members. A number of members feel that -5000 is not protective enough and the group should be more protective (i.e., -3500 cfs).
  - ii. Group agreed not to elevate their disagreement to WOMT, particularly in light of the fact that they expect OMR to stay around -3000 cfs based on the operations outlook.
  - iii. There are only PTM runs for a -3500 cfs OMR, but not a -5000 cfs OMR. At -3500, there are a considerable number of particles entrained at Franks Tract, suggesting that -3500 cfs is definitely preferable over -5000 cfs. -3500 cfs may not be protective enough.
  - iv. We have pretty good resolution of particles injected at 901 (Frank's Tract) and their fates. However, when we look at 809 just downstream in the San Joaquin River, we have very little definition; it would be helpful to have an additional location between 809 and 901 so we can understand how particles are moving between the two. Useful to have a flux point between those two stations to see how many of the particles are moving from the lower San Joaquin River into Frank's Tract where they enter the entrainment zone.

**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 Response:* Larval Delta Smelt in the South Delta are at high risk of entrainment into the water export facilities. The expected OMR Index values are between -1,500 to -5,000. PTM results from 5/26/2020 suggest the low export scenario (-1500 cfs) results in <15%, and the high export scenario (-3500 cfs) results in <25% of particles injected into

the Central Delta could arrive at the CVP and SWP after 21 days. The high export scenario results in >25% of particle being entrained into the Old and Middle River corridor. The modeled entrainment zone extends into Franks Tract under the OMR conditions in the Operations Outlook. These results leave a large number of the fates of injected particles unresolved. Under current OMR conditions particle movement may be limited due to the stagnant conditions in parts of the South Delta.

*i. Discussion:*

5. This supports a more conservative OMR for this week: going from much more positive OMRs levels (closer to -1000) and then suddenly shifting to -5000 is a pretty big shift. A high number of these particles could be unresolved and therefore still residing in south and central Delta, which supports our -3500 recommendation.
6. Appreciate the additional detail in this draft.
7. Maybe talk about high export scenario – more than 25 percent of particles would be entrained into OMR corridor (here only talking about particles entrained in projects).
8. Clarifying question about PTM results: Are we concerned that higher export levels are too high to allow fish that are in the south Delta to leave? With those unresolved particles – is it that they are vulnerable to future exports?
  - a. Unresolved particles mean they haven't moved past a flux point, so they could be entrained in the future. Can't say definitively one way or the other.
  - b. For example, earlier this season OMR was fairly benign (close to most protective levels) for longfin, but when temperatures changed, they caused longfin to start moving and there was a large entrainment event. We know there was some delta smelt production in south Delta, so we can't say they are absent. In the PTM results, there are some unresolved particles which could represent Delta Smelt that stayed in South Delta. If conditions changed, that could change their fate. A more negative OMR could make them move and result in entrainment.

**7. Barker Slough Update**

No advice. Still in the Delta Smelt time period. Have not been detections at Station 716. There has consistently been less than 100 cfs exports; turbidity has been generally low; no evidence of smelt. Caveat: on May 30/31<sup>st</sup>, turbidity was slightly elevated, just over 12 FNU.

The Barker Slough visualization for data is now up on SacPas.

**8. Additional Considerations**

**a. New PTMS for new OMR ranges**

- Will do another set of PTM runs for the same sites, using -5000 cfs and -3500 cfs OMR scenarios. Those are the most likely operations scenarios for the coming weeks.

**b. Clifton Court Temperature Off-ramp:**

- When looking at temperature data for Clifton Court, CLC is the correct station – no combination of stations of anything else. Just the one station. Daily average temps at that station.

**c. Monitoring Team Expectations**

- Will discuss document distributed today on next week's call. If there are fatal flaws, elevate to your LTO or WOMT representatives.

**d. Surveys at Federal Facility**

- Got an email from Federal Facility acknowledging that “temperature triggers have not been met” but asking if the team would approve lowering the temperature trigger in order to end larval sampling earlier. They reported that their samples are overwhelmingly exotic fish. State takes their lead from federal facility, so ending sampling at one facility effectively ends it at both.
  - o On the one hand, EDSM sampled through May 19 and collected outside the entrainment zone in the Deepwater Shipping Channel shows that the minimum smelt length at that time (two weeks ago) was 17mm. If there are Delta Smelt in the South Delta, would they be similar in size to those in Shipping Channel? Acknowledge it is a lot of effort given all the other larval fish they are collecting. But given how rare smelt are, we need to sample as much possible. Would prefer they continue given how rare they are.
  - o Yes, agree; if 25% of particles are unresolved, there is potential for entrainment if OMR goes more negative than -3500 cfs.
  - o Need the larval sampling at the facilities to complement the field surveys.
  - o Group agreed to reevaluate request each week during the meetings.

**9. Next Meeting:**

June 9, 2020 at 11:00am

# Weekly Advice for Longfin Smelt

02 June 2020

## Summary of Risk

Current Lifestage(s) in the Delta: Larvae and Juveniles

South Delta Entrainment Risk: Low

Advice: No OMR restrictions are warranted. Recent distribution data and abiotic conditions suggest that Longfin Smelt are not present within the hydraulic footprint of the export facilities. No Longfin Smelt were detected in the south or central Delta according to the most recently available data from 20mm Survey 6 and Enhanced Delta Smelt Monitoring (EDSM). Furthermore, daily average water temperature within the Delta is expected to increase above levels at which Longfin Smelt are typically detected.

## 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.

### 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

offramp 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).

#### 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 30<sup>th</sup> or until daily mean water temperature at Clifton Court Forebay (CCF) is greater than 25°C for 3 consecutive days.

## Discussion of Criteria

### Larvae and Juveniles

#### 8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection

Note: Regular field sampling has been disrupted due to precautions in place to prevent the spread of COVID-19. Distribution data is limited. 20 mm Survey 2 was canceled. 20 mm Surveys 3 and 4 sampled the 12 south and central Delta stations listed in Condition of Approval 8.4.2. 20 mm Survey 5 sampled 43 of the 47 regular stations. Station 901 (Franks Tract in central Delta) was not sampled due to excessive vegetation.

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).

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).

20 mm 3: (April 13 through 15) One LFS larvae (FL = 15 mm) was collected at station 809 in in the lower San Joaquin River. See the [20-mm webpage](#) for reported catch and more information.

20 mm 4: (April 27 through 29) One juvenile LFS (FL = 22 mm) was collected at station 901 (Franks Tract).

20 mm 5: (May 11 through 18) sampled 41 of the 47 regular stations and did not report any Longfin Smelt in the south or central Delta. Stations 901, 720, 724, 726, 703, and 346 were not sampled. 20 mm Survey 5 collected 635 Longfin Smelt in Suisun Bay, Suisun Marsh and near the confluence of the Sacramento and San Joaquin Rivers. Fork lengths ranged from 16 to 32 mm.

20 mm 6: (May 25 – 29) sampled 44 of the 47 regular sites. Sample processing is ongoing. No Longfin Smelt were detected in the 12 south and central Delta stations listed in Condition of Approval 4.5.2. Forty-six Longfin Smelt were collected at stations in eastern Suisun Bay and near the confluence. Fork lengths ranged from 24 to 33 mm. See attachment “2020\_20mm\_Sur6\_SmeltCatch\_060220.pdf” for more details.

EDSM did not report any Longfin Smelt catch in samples collected last week (5/23-5/27).

Salvage: Longfin Smelt salvage has not been observed since May 17<sup>th</sup>. Total salvage to date is 1360 for SWP and 1326 for CVP. Longfin Smelt larvae were detected at the federal facility on the March 27, 28, 29, 30 and April 3, 5, 6, April 9 through 16, April 18, and April 28. Larval LFS were detected at the state salvage facility on April 1, April 10, April 13, and April 29. See the table below for a summary of salvage and larval detections.

Estimated salvage and larval detections at SWP and CVP for Water Year 2020. Note: Larval detections are reported as presence only.

DATE	State Daily Salvage	State Season Total	SWP Larvae Y or N	Federal Daily Salvage	Federal Season Total	CVP Larvae Y or N
3/17/2020	0	0	NC	4	4	N
3/24/2020	0	0	N	12	16	N
3/25/2020	0	0	N	8	24	N
3/27/2020	0	0	N	0	24	Y
3/28/2020	0	0	N	4	28	Y
3/29/2020	0	0	N	0	28	Y
3/30/2020	0	0	N	0	28	Y
4/1/2020	0	0	Y	8	36	N
4/3/2020	0	0	N	0	36	Y
4/5/2020	0	0	N	0	36	Y
4/6/2020	0	0	N	4	40	Y
4/9/2020	4	4	N	4	44	Y
4/10/2020	0	4	Y	8	52	Y
4/11/2020	0	4	N	48	100	Y
4/12/2020	2	6	N	100	200	Y
4/13/2020	6	12	Y	311.8	511.8	Y
4/14/2020	0	12	N	118.6	630.4	Y
4/15/2020	0	12	N	156.0	786.3	Y
4/16/2020	0	12	N	208.0	994.3	Y
4/17/2020	8	20	N	84.0	1078.3	N



4/18/2020	14	34	N	80.0	1158.3	Y
4/19/2020	8	42	N	0.0	1158.3	N
4/20/2020	0	42	N	12.0	1170.3	N
4/21/2020	4	46	N	28.0	1198.3	N
4/22/2020	8	54	N	0.0	1198.3	N
4/23/2020	12	66	N	16.0	1214.3	N
4/24/2020	28.0	94	N	12	1226.3	N
4/25/2020	94.0	188	N	8	1234.3	N
4/26/2020	218.0	406	N	12	1246.3	N
4/27/2020	230.0	636	N	0	1246.3	N
4/28/2020	58.0	694.0	N	12	1258.3	Y
4/29/2020	224.0	918.0	Y	16	1274.3	N
4/30/2020	118.0	1036.0	N	24	1298.3	N
5/1/2020	40.0	1076.0	N	4	1302.3	N
5/2/2020	24.0	1100.0	N	0	1302.3	N
5/3/2020	8.0	1108.0	N	4	1306.3	N
5/4/2020	18.0	1126.0	N	0	1306.3	N
5/5/2020	76.0	1202.0	N	0	1306.3	N
5/6/2020	76.0	1278.0	N	0	1306.3	N
5/7/2020	62.0	1340.0	N	0	1306.3	N
5/8/2020	12.0	1352.0	N	0	1306.3	N
5/9/2020	2.0	1354.0	N	4	1310.3	N
5/10/2020	0.0	1354.0	N	8	1318.3	N
5/11/2020	6.0	1360.0	N	4	1322.3	N
5/17/2020	0.0	1360.0	N	4	1326.3	N

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

## Current Conditions

As of June 1, 2020

Sacramento River flow at Freeport = 11,450 cfs. San Joaquin River flow at Vernalis = 1,790 cfs. X2 = 79 km and is expected to shift upstream. Qwest was approximately +4,200 cfs and is expected to turn

negative. Daily average OMR Index = -1,500 cfs and may become as negative as -5000 cfs as CVP exports increase. Daily average water temperature at Clifton Court Forebay was 23.3°C.

**Attachments**

2020\_20mm\_Sur6\_SmeltCatch\_060220.pdf

Table 1. Delta Smelt and Longfin Smelt catch per station from 2020 20-mm Survey 6, which was in the field 5/25/2020 – 6/1/2020. These data are preliminary and subject to change.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	MinOfLength	MaxOfLength	AvgOfLength	
2020	5	328		0	Not Sampled	0				San Pablo Bay
2020	5	329		0	Not Sampled	0				
2020	5	334		0	Not Sampled	0				
2020	5	335		0	Not Sampled	0				
2020	5	336		0	Not Sampled	0				
2020	5	323		0	Not Yet Processed	0				
2020	5	340		0	Not Yet Processed	0				Suisun Bay & West
2020	5	342		0	Not Yet Processed	0				
2020	5	343		0	Not Yet Processed	0				
2020	5	344		0	Not Yet Processed	0				
2020	5	345		0	Not Yet Processed	0				
2020	5	346		0	Not Yet Processed	0				
2020	5	405		0	Not Yet Processed	0				
2020	5	411		0	Not Yet Processed	0				
2020	5	418		0	Not Yet Processed	0				
2020	5	501		0	Not Yet Processed	0				
2020	5	504		0	Not Yet Processed	0				
2020	5	519	26-May-20	3	Longfin Smelt	2	26	30	28.00	
2020	5	602		0	Not Yet Processed	0				
2020	5	606		0	Not Yet Processed	0				
2020	5	609		0	Not Yet Processed	0				
2020	5	610		0	Not Yet Processed	0				
2020	5	508	26-May-20	3	Longfin Smelt	38	24	33	27.79	Confluence
2020	5	513		0	Not Yet Processed	0				
2020	5	520	26-May-20	3	Longfin Smelt	2	27	28	27.50	
2020	5	801		0	Not Yet Processed	0				
2020	5	804	26-May-20	3	No Smelt Catch	0				
2020	5	703	28-May-20	3	No Smelt Catch	0				Sac. River System
2020	5	704	27-May-20	3	Longfin Smelt	4	24	29	27.00	
2020	5	705	27-May-20	3	No Smelt Catch	0				
2020	5	706	29-May-20	3	No Smelt Catch	0				
2020	5	707	27-May-20	3	No Smelt Catch	0				
2020	5	711		0	Not Yet Processed	0				
2020	5	716		0	Not Yet Processed	0				
2020	5	718		0	Not Yet Processed	0				
2020	5	719	29-May-20	3	No Smelt Catch	0				
2020	5	720		0	Not Sampled	0				
2020	5	723		0	Not Yet Processed	0				
2020	5	724		0	Not Sampled	0				
2020	5	726		0	Not Sampled	0				
2020	5	809	26-May-20	3	No Smelt Catch	0				Central & South Delta
2020	5	812	27-May-20	3	No Smelt Catch	0				
2020	5	815	27-May-20	3	No Smelt Catch	0				
2020	5	901	26-May-20	3	No Smelt Catch	0				
2020	5	902	26-May-20	3	No Smelt Catch	0				
2020	5	906	27-May-20	3	No Smelt Catch	0				
2020	5	910	27-May-20	3	No Smelt Catch	0				
2020	5	912	27-May-20	2	No Smelt Catch	0				
2020	5	914	26-May-20	3	No Smelt Catch	0				
2020	5	915	26-May-20	3	No Smelt Catch	0				
2020	5	918	26-May-20	3	No Smelt Catch	0				
2020	5	919	27-May-20	3	No Smelt Catch	0				