

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

Executive summary: In WY2020, larval Delta Smelt have been detected in the Lower Sacramento River and 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 -500 to -1,000 for the next week. These OMR flows are more positive than the levels identified in Reclamation's Action and USFWS BiOp necessary to limit larval entrainment mortality.

1. Introductions

CDWF, NMFS, DWR, BOR, USFWS, K&W

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 ≥ 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: 395-200 cfs (implementing spring pulse flow fluctuating between 150-800 cfs)
Sacramento River	Shasta Storage: 3.61 MAF Current Release: 9,500 cfs Anticipated Weekly Range of Releases to Sacramento: 9,000 cfs to 9,500 cfs (As needed to support observed legal diversion demands on the Sacramento River in addition to Delta demands)
Feather River	Oroville Storage: 2.46 MAF Current Release: 2,050 cfs Anticipated Weekly Range of Releases to Feather: 1,550 cfs to 3,000 cfs (As needed to support Delta water quality obligations)

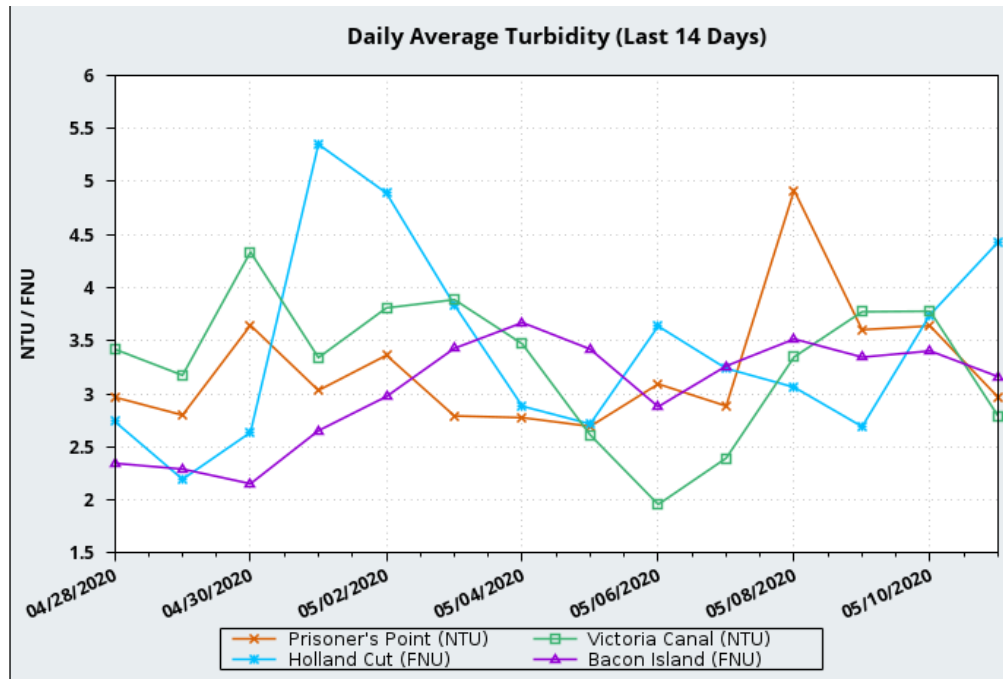
American River	Folsom Storage: 0.73 MAF Current Release: 1,250 cfs Anticipated Weekly Range of Releases to American: 1,250 to 2,000 cfs (As needed to meet Delta water quality objectives)
Stanislaus River	New Melones Storage: 1.89 MAF Total Current Release to Stanislaus: 1,000 cfs Anticipated Weekly Range of Releases to Stanislaus: 1,000 cfs to 1,300 cfs (As needed to meet D-1641 flow requirements at Vernalis)
Delta	Freeport: 7,000 to 11,000 cfs Vernalis: 1,500 to 2,000 cfs Delta Outflow index: 8,000 to 11,000 cfs Combined Exports: 800 to 1,500 cfs JPP: 800 to 1,500 cfs CC: 0 to 600 cfs Expected OMR Index Values: -500 to -1,500 cfs X2 position: > 81 km QWEST: +1,000 cfs to +2,500 cfs DCC: Closed

Discussion:

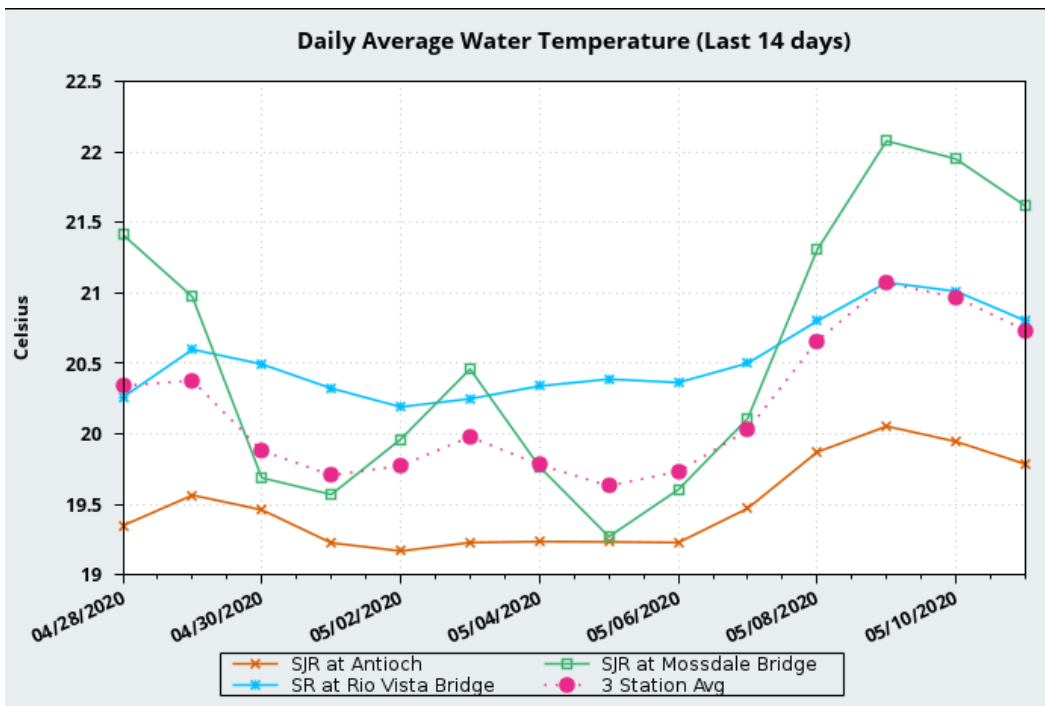
1. The Fish and Water Ops Update does not reflect injunction and should be updated before it goes to WOMT.
 1. The more negative end of the OMR range would be quite a bit more positive; closer to the -1000 mark in the OMR range
2. May 22/23rd is the end date for the Banks Outage.
3. Additional thoughts:
 1. NMFS provided an update: Suit brought against the 2019 ROC on LTO by Pacific Coast Salmon Fishery and others. Last night, the court ruled that action 4.2.1 from 2009 BiOp should be put in place instead of current RTO; this reinstates the 2:1 San Joaquin River I:E ratio for May, limiting maximum combined exports to 1500 cfs, which is the minimum export level. Essentially, court ruled that there would be irreparable harm to steelhead without this injunction. How is that 1500 cfs divvied? up according to COA?
 1. Generally, when you are operating to an OMR, would try to split it around 60/40 for CVP/SWP but right now also balancing for upstream conditions. Balanced conditions is 65/35.
 2. NOTE: the preliminary injunction is only through the end of May.

Review of Environmental Conditions:

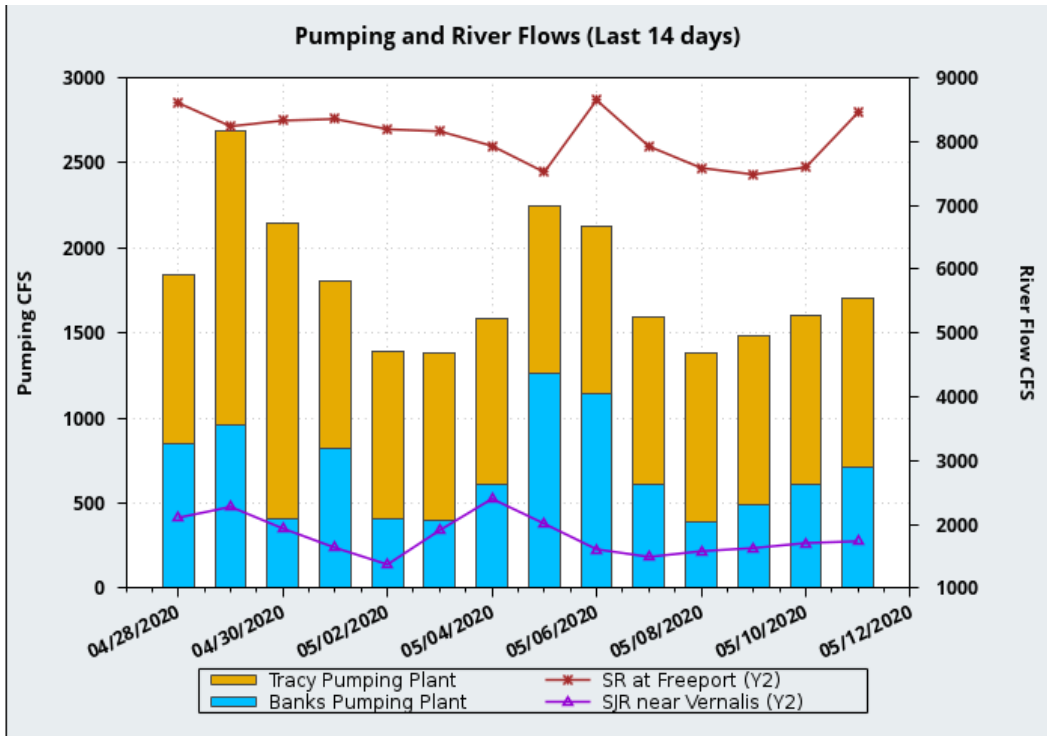
Turbidity:



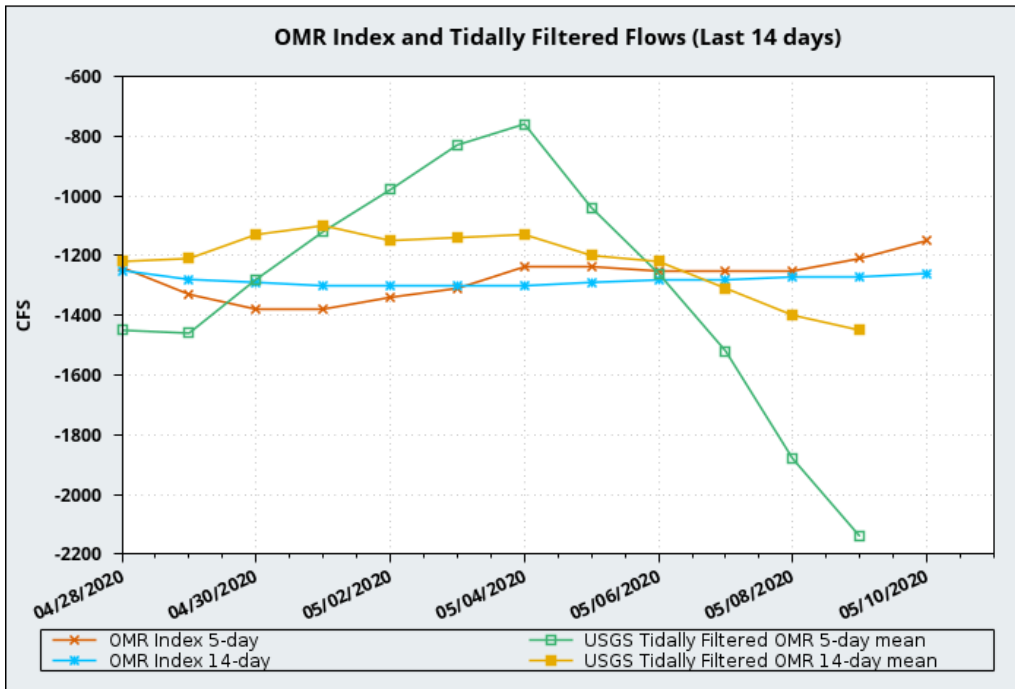
Temperature:

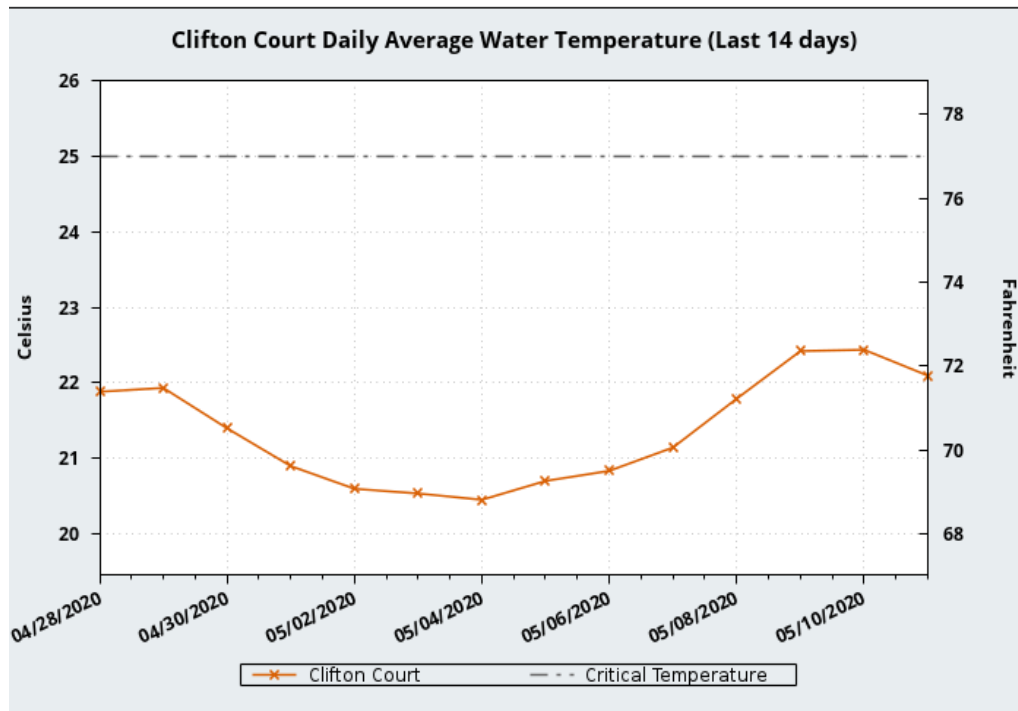


Pumping and Flows:



OMR Flows:





- As of May 11, the 3-station daily average temperature: 20.74°C
- Daily average turbidity at OBI on May 11 = 3.2 FNU; Current turbidity = 2.90 FNU
- Clifton Court daily average: 22.10°C; 71.78°F (0 days over 77°F, so not triggered)
- Forecast for Antioch: chance of light rain today and tomorrow; then partly cloudy the rest of the week; predicted west and northwest wind

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:

- - **20mm Survey 5** (May 11-18): Began yesterday. Sampling at 44/47 stations, including representative stations from every delta region; they are dropping three sites in the Northern Sac (#720, 724, 726) due to safety and logistics concerns. As of now, no samples have been processed but updates will be provided online.

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a. -EDSM-

- Finished 6th week of larval sampling last week
- The week 5 (April 27-May 1) larval sampling abundance report was distributed on May 8, but because there were no smelt collected, there was no abundance estimate generated.
- Started week 7 larval sampling –plan to sample Monday through Thursday this week
- Larval samples have been processed through last Tuesday; still processing samples collected Wednesday and Thursday; preliminary results from last week:
 1. 1 Delta Smelt (27.5 mm) caught on 5/5/2020 in the Lower Sacramento River Shipping Channel

2. Longfin Smelt:
 1. 5/4 – 1 in Sacramento Deepwater Shipping Channel (8.5 mm), a very beat up fish; 22 in Suisun Bay (9.1-27.4 mm)
 2. 5/5 – 8 in Suisun Bay (18.1-25.8 mm)
- Note: the daily and weekly EDSM reports are found on the USFWS Lodi website: https://www.fws.gov/lodi/juvenile_fish_monitoring_program/jfmp_index.htm.

B. Salvage Monitoring:

- For 5/4 - 5/10:
1. No Delta Smelt were salvaged or detected in larval sampling at either facility.
 2. For Longfin Smelt:
 1. CVP: n = 12 salvaged, season total = 1,318.
 2. SWP: n = 246 salvaged, season total = 1,352.
 3. Total season salvage is n = 2,670.
 4. No LFS were detected in larval sampling for either facility.
 3. No major operational problems at either facility.

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 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 5/11/2020 was 3.2 FNU. The weather forecast does predict precipitation events in the next seven days and the predicted West and northwest winds are not expected to raise turbidity past 12 NTU.

Discussion:

i. Discussion:

1. Is there an update on when DWR will release its memo describing the switch from NTU to FNU?
 - a. Not yet. I requested DWR management to let me forward it you.
2. Should all the stations in the Delta that are listed as NTU actually be listed as FNU? Or are some actually NTU?
 - a. Any station using YSI equipment is in reality FNU. But there could be non-DWR stations using other equipment actually measuring in NTU.
 - b. Do you want feedback if we see things still posted in NTU?
 - i. Believe the process is still ongoing: DWR stations should be all updated but not sure about what other agencies' processes are to switch over.

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:* Larval Delta Smelt have been detected in the Lower Sacramento River and Deepwater Ship Channel. The Lower Sacramento River and 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 implies 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, and 20mm Surveys 3 & 4 sampled 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 positive between 1,000 and 2,500 cfs and OMR Index Values are predicted to be between -500 to -1,500 cfs. Installation of the South delta temporary barriers (agricultural barriers) will make the index values more negative for the same level of exports. The preliminary injunction ruling limits exports to a 2 to 1 ratio for San Joaquin exports which should create more positive flow conditions in the zone of entrainment until May 31st.

Discussion:

1. This response is pretty good, especially as we are going to lower exports due to the injunction; this will make flows more positive in the zone of entrainment.
2. Please adjust the maximum OMR ranges referred to in the response according to the new parameters that exports are being controlled under. Also, it has been three weeks since the last detection of Delta Smelt in the system, so these numbers are quite outdated, but it is all we have, so the larval detection in April should be left in.
 - c. Plan to make the OMR values match the Outlook, but first need to find out internally where those values will come from given the injunction.
3. Survey 5 20 mm is in progress. What do we know?
 - d. Survey 4 was completed but it only sampled the 12 South stations; there was 1 Longfin Smelt caught at the 12 stations. No Delta Smelt were caught.
 - e. On the 20-mm fish distribution map, white dot = no catch; red plus sign = no sample
4. Because samples have been limited due to COVID-19, would be more accurate to say that sample 2 was cancelled and EDSM does not sample in that strata.

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: Based on the life cycle model, low south Delta turbidity, and the limited observations of larval Delta Smelt, Reclamation identified an OMR more positive than -5,000 should be used for export management. Based on surveys, larval Delta Smelt have been observed in the TFCF, Lower Sacramento River, and Sacramento Deepwater Ship Channel, suggesting the spatial distribution of Delta Smelt extends into the entrainment zone of the CVP and SWP pumps, which extends into Franks Tract under the OMR conditions in the Operations Outlook. OMR levels are projected to be more positive than the levels identified in the LTO Action and USFWS BiOp. The SMT is unable to recommend an OMR level to manage the annual larval entrainment based on the longer two month time scale of the LCM projection as compared to the weekly operational needs assessed by the group.

Discussion:

1. Has there been any response to the Smelt Team's concerns about applying the LCM model to a timestep that is not recommended?
 - a. Can you put your concerns into an email? We have had difficulty fully articulating and getting traction with the group's concerns. We are still talking about it. An email would help us convey the concerns to management
 - b. Model looks at data averaged over two months. Modelers advised against using this as a real time operations model but we are still doing it. I will write this down.
 - c. Just need some help addressing the overarching thrust of the question. Don't need a detailed critique of the LCM or how it is being applied.
 - d. This Friday there will be another LCM workshop; I might be an opportunity to ask how we should be applying this.
 - e. Essentially, need to articulate that the weekly needs are more immediate than what the LCM produces information on.

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: Larval Delta Smelt in the south Delta are at high risk of entrainment into the water export facilities. The expected OMR Index values are -500 to -1,500 cfs for the next week. PTM results suggest the low export scenario (-1,000 cfs) results in <15%, and the high export scenario (-3,000) results in <22% of particles injected into the Central

Delta could arrive at the CVP and SWP after 21 days. 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

Discussion:

1. Particles injected at 809, 815 (i.e., the more downstream particle injections) are not in danger of being entrained, but any fish already in south delta are at risk.
2. These results are in agreement with last two PTM. Support previous statement about lack of field fish detection based on surveys do not mean fish are absent. Since last year, we have been seeing this intermittent detection pattern.
3. Anything south of Franks Tract is going to eventually be pulled into export facilities; anything above that should be ok. Also, add caveat that injunction will limit exports through the rest of May, given that San Joaquin flows are unlikely to increase much.
4. It would be useful to identify what export assumptions were in the PTM scenarios – which is closest to the current reality?
 - i. Closer to the low export scenario

7. Barker Slough Update

Period for Longfin Smelt in Barker Slough is over. Now only looking at Delta Smelt. Since 20mm survey didn't sample station 716 during survey 4, CDFW has been tracking EDSM catch and environmental parameters. Turbidity has increased recently and is at 10.49 FNU, but EDSM has not caught any Delta Smelt in the area recently. However, given how rare Delta Smelt detections are, it is hard to say how many are in the area. Have no recent information to base advice on.

8. Additional Considerations

- a. **TEMP IN THE SOUTH DELTA:** CDFW: Wonder if it is realistic to think smelt would continue to be in the South Delta given rising temperatures; I think season in which we would expect Delta Smelt to be in the entrainment zone is narrowing.
 - i. Concern about the 25°C temperature trigger for Delta Smelt protections. In some years, temperature trigger have been followed by lower temperatures days or weeks before the end of June trigger. More fish could potentially survive if protections were still in place.
 - ii. Reflecting on it, we may want to table that discussion until later because that would effectively mean the end of smelt protections. When it becomes relevant we may not have these calls.

- iii. Historical salvage of delta smelt was year round. Now they no longer appear after the first week of July (last 10-15 years). A lot of things can contribute to this disappearance. With climate change, we couldend protections earlier and earlier because of the temperature trigger, even if fish are still near the entrainment zone. Also, the temperature trigger was based on the Clifton Court station, not on stations that are more representative of the distribution of Delta Smelt. in the Delta In addition, there is more recent information on temperature tolerance.
- iv. My thinking was about the question, which referred to passive particles; sometimes as temperatures rise, the fish may not act as passive particles but seek lower temps. But those are great points.
- b. **RISK ASSESSMENT:** CDFW has developed a risk assessment based on ITP. Waiting for management blessing, then will circulate to the group; eventually will be integrated into OMR guidance document. Once we get it back from management, will ask for better direction when to implement; not sure on timing.

9. Next Meeting:

May 19, 2020 at 11:00am

Weekly Advice for Longfin Smelt

12 May 2020

Summary of Risk

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

South Delta Entrainment Risk: High

Advice: Substantial entrainment of Longfin Smelt larvae and juveniles has occurred at the south Delta export facilities. Because of this, the Smelt Monitoring Team has determined that juveniles and larvae within the south and central Delta are at a high risk of entrainment. However, the State Water Project and Central Valley Project exports are currently limited to maintain compliance with other regulations. As a result, OMR is projected to be between -1000 cfs and -2000 cfs, which is roughly equivalent to the most protective levels identified in the ITP. Therefore, advice for this week is not necessary.

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 30th 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 CoA 8.4.2.

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 (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). See attachment "2020_20mm_Sur4_SmeltCatch_042920.pdf"

Salvage: The rate of juvenile LFS salvage and frequency of larval detections have decreased at both facilities. As of May 11th, estimated juvenile Longfin Smelt salvage for WY 2020 was 1318 for CVP and 1352 for SWP. LFS 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	0	Y	8	52	Y
4/11/2020	0	0	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	W	0.0	1158.3	N
4/20/2020	0	42	W	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	W	16.0	1214.3	N
4/24/2020	28.0	94	W	12	1226.3	N
4/25/2020	94.0	188	W	8	1234.3	N
4/26/2020	218.0	406	W	12	1246.3	N

4/27/2020	230.0	636	W	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	1124.0	W	0	1306.3	N
5/5/2020	76.0	1200.0	N	0	1306.3	N
5/6/2020	76.0	1276.0	N	0	1306.3	N
5/7/2020	62.0	1338.0	N	0	1306.3	N
5/8/2020	12.0	1350.0	N	0	1306.3	N
5/9/2020	2.0	1352.0	N	4	1310.3	N
5/10/2020	0.0	1352.0	N	8	1318.3	N
5/11/2020	6.0	1358.0	W	4	1322.3	N

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

Current Conditions

As of May 11, 2020

Sacramento River flow at Freeport = 8260 cfs. San Joaquin River flow at Vernalis = 1730 cfs. X2 > 81 km. Qwest was approximately + 1500 cfs. Daily average OMR Index = -1200 cfs with a 14-day running average of -1300 cfs. Daily average water temperature at Clifton Court Forebay was 22.1°C.

Attachments

2020_20mm_Sur4_SmeltCatch_042920.pdf

Table 1. Delta Smelt and Longfin Smelt catch per station from 2020 20-mm Survey 4, which was in the field 4/27/2020 – 4/29/2020. Only the 12 priority stations in the south and central delta were sampled due to COVID 19. These data are preliminary and subject to change.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length
2020	4	809	29-Apr-20	3	No Smelt Catch				
2020	4	812*	29-Apr-20	3	No Smelt Catch				
2020	4	815	29-Apr-20	3	No Smelt Catch				
2020	4	901*	27-Apr-20	3	Longfin Smelt	1	22	22	22.00
2020	4	902	27-Apr-20	3	No Smelt Catch				
2020	4	908	28-Apr-20	3	No Smelt Catch				
2020	4	910	28-Apr-20	3	No Smelt Catch				
2020	4	912	28-Apr-20	3	No Smelt Catch				
2020	4	914	28-Apr-20	3	No Smelt Catch				
2020	4	915	27-Apr-20	3	No Smelt Catch				
2020	4	918	27-Apr-20	3	No Smelt Catch				
2020	4	919	29-Apr-20	3	No Smelt Catch				

Central & South Delta

Processing is complete through
 * Indicates reduced tow time