

Smelt Monitoring Team
Tuesday, May 5, 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 -1,000 to -3,000 cfs 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

CDFW, 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: 200 cfs
Sacramento River	Shasta Storage: 3.67 MAF Current Release: 9,750 cfs Anticipated Weekly Range of Releases to Sacramento: 9,500 cfs to 10,000 cfs (As needed to support observed legal diversion demands on the Sacramento River in addition to Delta demands)
Feather River	Oroville Storage: 2.48 MAF Current Release: 1,550 cfs Anticipated Weekly Range of Releases to Feather: 1,550 cfs to 2,000 cfs (As needed to support Delta water quality obligations)

American River	Folsom Storage: 0.72 MAF Current Release: 1,250 cfs Anticipated Weekly Range of Releases to American: 1,000 to 1,500 cfs (Could have another “mini-pulse” flow, but concerns over stranding expressed)
Stanislaus River	New Melones Storage: 1.90 MAF Total Current Release to Stanislaus: 400 cfs Anticipated Weekly Range of Releases to Stanislaus: 400 cfs to 1,000 cfs (As needed to meet D-1641 flow requirements at Vernalis)
Delta	Freeport: 7,500 to 10,000 cfs Vernalis: 1,200 to 2,400 cfs Delta Outflow index: 7,100 to 8,500 cfs Combined Exports: 1,500 to 3,000 cfs JPP: 800 to 2,500cfs CC: 200 to 1,500 cfs Expected OMR Index Values: -1,000 to -3,000 cfs (Max allowable: -5,000 cfs) X2 position: 74 to 81 km QWEST: -500 cfs to +1,700 cfs DCC: Closed Tracy Pumping on May 4 th = 981 cfs

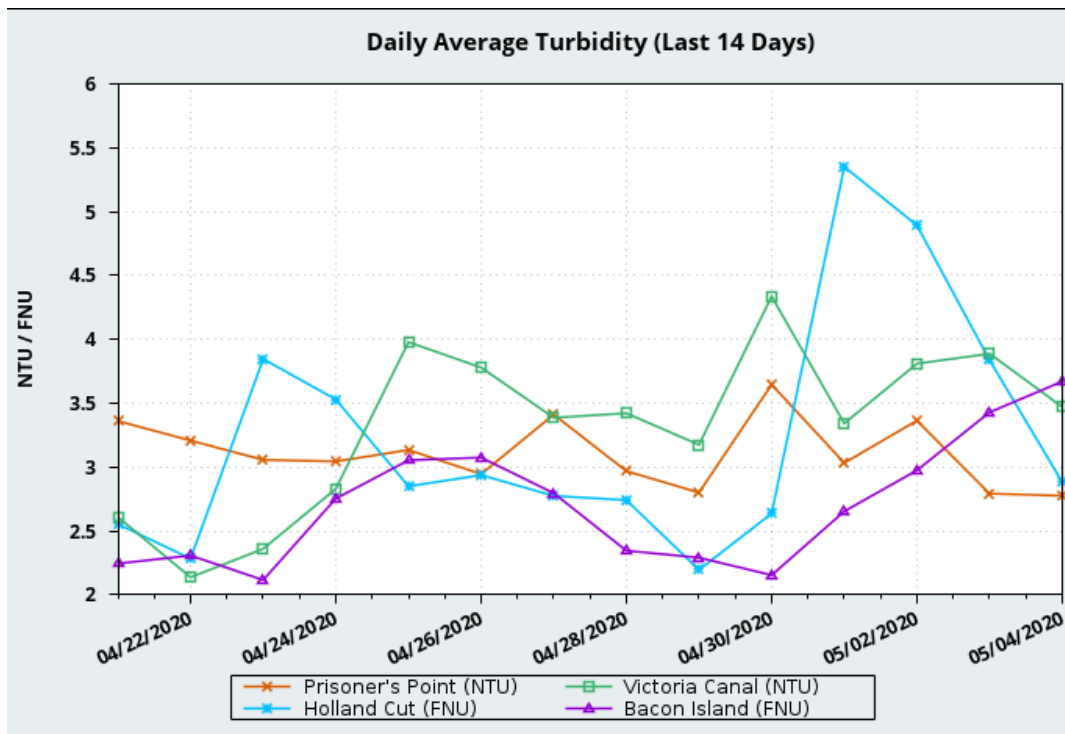
Discussion:

- i. USFWS: in outlook, QWEST was projected from -500 to 1700. Do we expect it to go more negative?
 - 1. Response (R): If exports rise, then it could get that low.
- ii. DWR: Controlling factor for the coming week: through May 8th, maintaining to 1:1 ratio and 100 percent at Vernalis together. Around May 8th, Bulletin 120 will be released, which could change the water year designation from from critical to dry, which would restrict SWP to 2:1 ratio rather than a 1:1. Regardless, do not expect it to change exports that much. On May 10th, condition requiring 100 percent at Vernalis will end. 1:1 or 2:1 ratio will control through the end of May for the SWP.
- iii. DWR: The SWP is also planning a Banks Pumping Plant outage later this month (May 17/18-22). May take in water to Clifton Court a couple of those days.
- iv. CDFW: outlook said OMR -1000 to -3000 cfs expected; do we expect it to become significantly more negative this week?

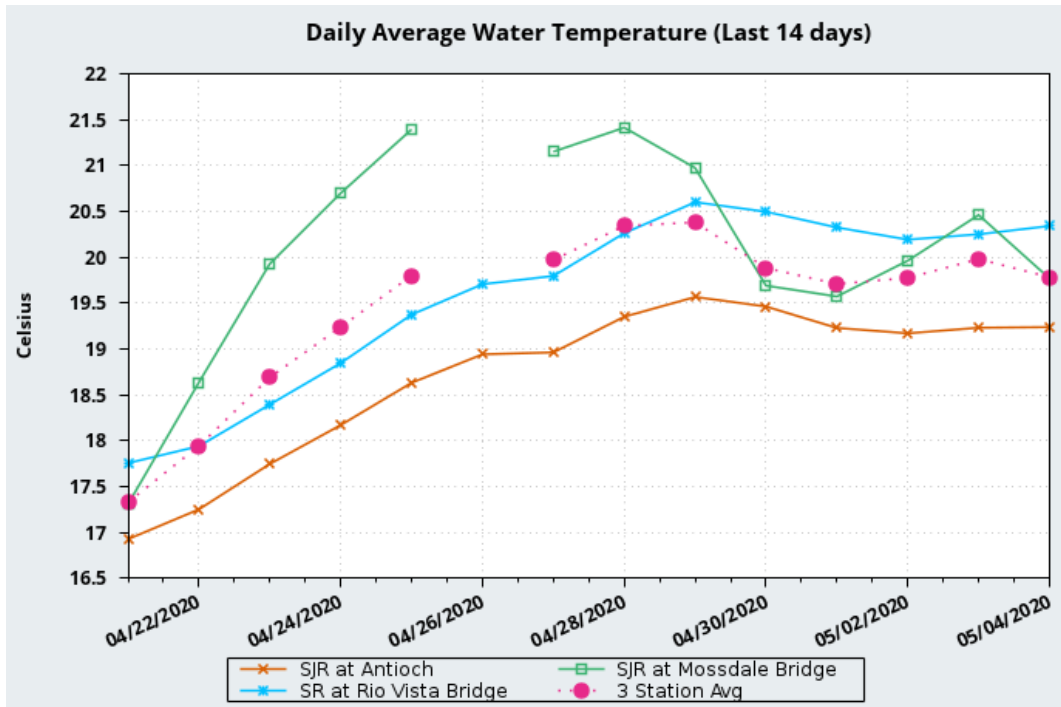
1. R: More likely to remain in the -1000 to -2000 cfs range; only if the federal facility utilizes their third unit could we end up in -3000 cfs range.
- v. NMFS: temporary agricultural barriers in the South Delta are in process of being constructed. Should be completed on May 11th. On May 12th, Grant Line will start to be constructed is expected to take 2 weeks. These installations could change the hydrodynamics in the South Delta, though probably not in ways crucial for Delta Smelt.

Review of Environmental Conditions:

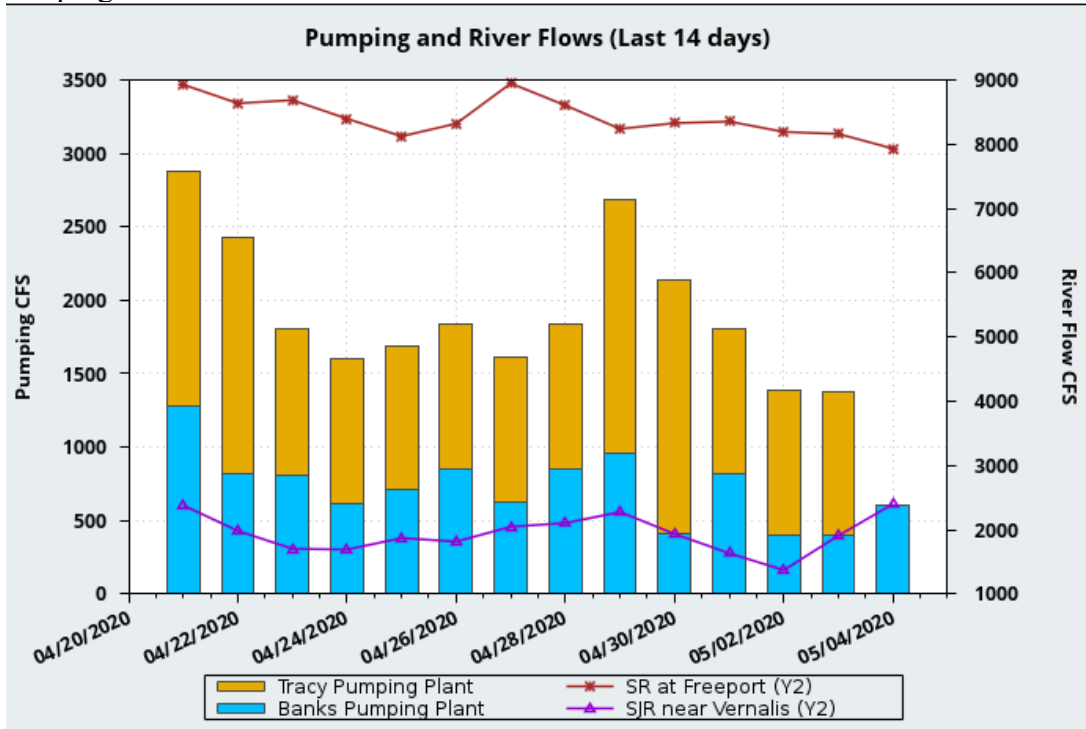
Turbidity:



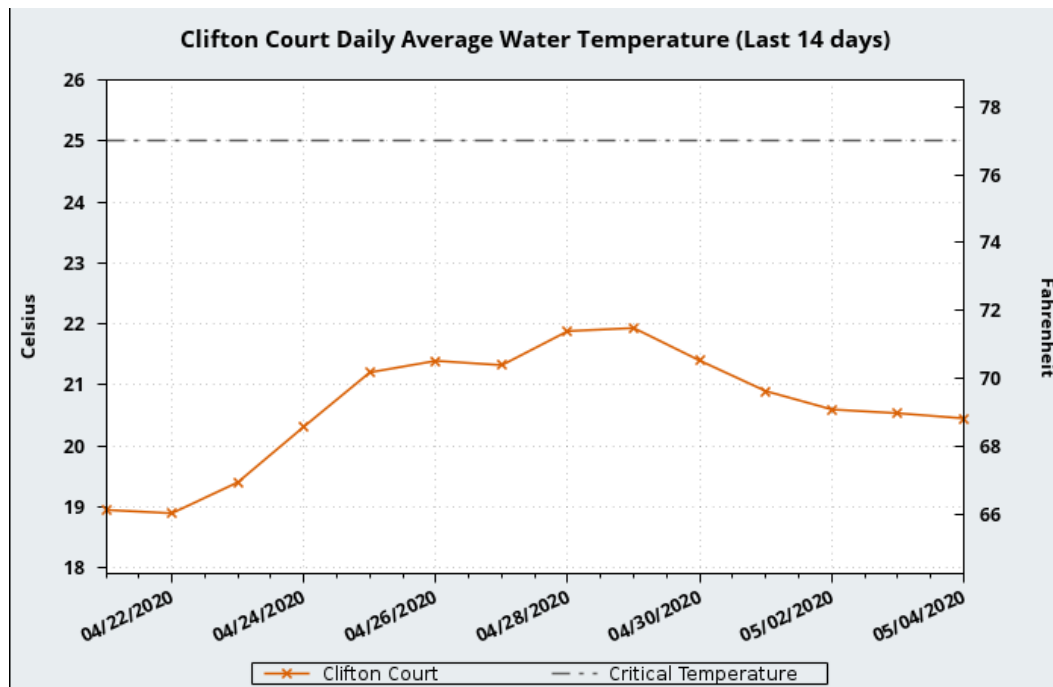
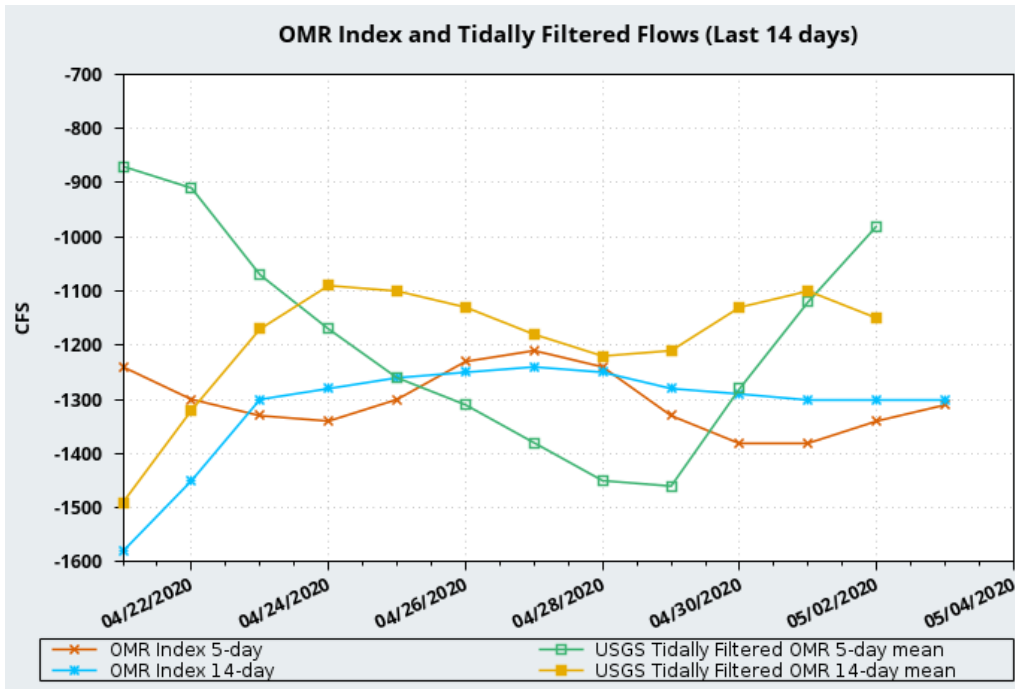
Temperature:



Pumping and Flows:



OMR Flows:



- As of May 4, the 3-station daily average temperature: 19.78°C
- Daily average turbidity at OBI on May 4 = 3.62 FNU; Current turbidity = 4.3 FNU
- Clifton Court daily average: 20.45°C; 68.81°F (0 days over 77°F, so offramp not triggered)

- Forecast for Antioch: mostly sunny to partly cloudy; no precipitation anticipated; wind gusts from W/NW and SW could gust as high as 23 mph

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:

- **20 mm survey 4-** completed- sampled at 12 South and Central Delta Stations.
 1. No Delta Smelt detected
 2. 1 (22mm) Longfin Smelt at station 901, no yolk sac
- **Survey 5** is in the field from May 11-15th (or 18th). Will sample 44 of 47 stations including representative stations from every Delta region; they are dropping three sites in the Northern Delta (sites #720, 724, 726) due to safety and logistics.
- **-EDSM Week 18:**
- Finished 5th week of larval sampling last week
- Published week 4 (April 20-24) larval sampling abundance report estimate on 5/1: 21,774
- Started week 6 –plan to sample Monday through Thursday this week
- Larval samples have been processed through last Monday; still processing samples collected Tuesday through Thursday; preliminary results from last week:
 1. No Delta Smelt yet
 2. Longfin Smelt:
 1. 4/28 – 14 in Suisun Marsh (16-26.2mm)
 2. 4/29—2 in Suisun Marsh (23.3 & 23.7 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:

- Delta Smelt: zero salvage and no larvae detected since 4/13.
- Longfin Smelt:
 1. 762 juvenile LFS salvaged since April 27 (702 at the state facility, 60 at the federal facility)
 2. Larvae detected at state facility 4/29, federal facility 4/28

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 5/4/2020 was 3.7 FNU. The weather forecast does not predict precipitation events in the next seven days

and the predicted West, West northwest, North northwest, and West southwest winds are not expected to raise turbidity past 12 NTU.

Discussion:

1. OBI should not be impacted, but with construction on Old and Middle Rivers, will likely see some localized turbidity. Noticed some turbidity spikes on different channels where they are working on the barriers. Also see spikes as we get into agriculture irrigation season with flows from individual fields. Also some good local breezes that could increase turbidity.
2. Relate to South Delta turbidity, there have been even higher levels at Clifton Court stations than were mentioned last week. It was 10 NTU for last week; currently 17.7 -- it jumped between 9am and 11am this morning and went as high as 19. This could lead to more salvage of fish; fish could also be less detected by predators.

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. Surveys in the South Delta have been limited due to COVID-19 and the size of recently hatched Delta Smelt may limit the ability of salvage to detect Delta Smelt. In the Operations Outlook, QWEST continues to be predicted to be negative to positive between -500 and 1,700 cfs and OMR Index Values are predicted to be between -1,000 to -3,000 cfs. Installation of the South Delta temporary barriers (agricultural barriers) will make the index values more negative for the same level of exports.

Discussion:

1. With the installation of ag barriers, may see an enhancement of negative OMR flows. The barriers exacerbate OMR negativity for the same export rate.

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.

Discussion:

1. The term “North Delta” should be removed from the sentence. Shifting to using the strata to describe where the fish are located; saying both the North Delta and the Sacramento River Shipping Channel is redundant.

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 -1,000 to -3,000 cfs for the next week. PTM results suggest the <5% particles injected into the Central Delta could arrive at the CVP and SWP after 21 days and 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. In contrast to salvage?, is it worth pointing out that only one field collected? larvae was collected last week in order to highlight how low the population is? We are barely seeing any larvae and detection continues to decline.
 1. we haven't seen any Delta Smelt in samples collected last week (Mon 28-30th) with the caveat that they are still being processed
 2. It is important to acknowledge there is no EDSM sampling in the South Delta.
 1. Yes, just because we are not seeing the fish in the 20 mm Survey in the south Delta does not mean they are not there. Continuing to salvage juvenile Longfin Smelt even when we are not detecting them at 20mm stations in the south Delta.

6. Barker Slough Update

The last full week of sampling only had 1 Delta Smelt detection; Barker Slough area is around 7 NTU turbidity so wouldn't expect Delta Smelt based on turbidity; as of yesterday daily pumping was at 90cfs but operations peaked at 100 cfs previously; the 20mm hasn't been sampling at 716. No advice warranted.

7. Additional Considerations

- Want to consider **proportional entrainment of delta smelt**: In feedback on questions 3 and 4 and talking with our managers, there are concerns with the data streams we are currently using for answering that question. Our management has put forward a collaborative approach including some items we're not as familiar with -- could potentially use PTM as way to inform questions 3 and 4. Would like to put out a proposal via email. Maybe table this for a discussion at a later date.

- We have an upcoming operational change, so we should probably do **PTM in advance of next week**. Need to decide on injection locations and scenarios.
 - o template set up for 3 injection locations and 2 scenarios; request that the group stay within those parameters. Once we're fully staffed, it won't be a big deal to do these runs.
 - Has PTM run been done in Deepwater Ship Channel? We've been detecting fish there. Would like to get something on the record.
 - too far outside entrainment zone; think you can get an idea via documentation by Wim Kimmerer and Nobriga
 - We know what we'll see – a flat line.
 - How about sites we used for the last PTM run (809, 815, 901)?
 - o yes, that would be a good reference to compare to last 2 runs; the most informative site is Franks Tract. For sites outside entrainment zone, additional documentation could be useful but good to do extra research first. Don't prioritize changes given that there appear to still be populations in South and Central Delta.
 - How hard is it to include the blocks where we track flows? Could we do False River?
 - o Those are referred to as flux locations. It can be done; it's just not in our current template. I'll do whatever is closest to False River that in the run.
 - What scenarios?
 - Suggestion: Basic forecast case that doesn't look at particular OMR level (after May 10, State will operate to 2:1 and Feds will be operating to something different, so it won't necessarily be OMR controlling)
 - Ag barriers are going in but DSM2 may not be able to represent them realistically; they be within the model assumptions but it will be binary

- DWR: asked by our legal team to consult with members of the group on the **change of turbidity units from NTUs to FNUs**: are you aware? Any concerns? Need more formal announcement?
 - Over past year, CDEC sensors have been switching from NTU to FNU; we received a technical note from the manufacturer of sensors that sensors actually report in FNU units, so different monitoring programs are rolling out a change of the units. There is no actual change in the measurements themselves-- they have always been recording in FNUs in historic measurements. A subset of stations switched over in Feb 2019 and rest in Feb 2020. Now all reporting in FNU for DWR.
 - Problem: some instruments used in field surveys (Hach sensors) actually measure in NTU; they track closely most of the time but some periods where they diverge slightly. R^2 is still over 0.9.
 - Wanted you to be aware of change and reason why. The memo is still draft but should be released relatively soon.
 - Given that we have some thresholds in the BiOp that say NTU, but we will be reporting in FNU, are there concerns?
 - we use the Hach turbidity meters for field surveys, which measure in NTU. Will there be a push for us to change equipment for consistency?
 - Probably need to have a conversation about that. It would not be appropriate to count those two types of turbidity data as the same/comparable. Each program will need to think about how their data is being used and be really clear in metadata.
 - If you do switch, make sure you have a long period where you are using both side by side so you have an overlap.
 - DWR can also provide some of that side by side data. Happy to help you navigate switching over.
 - will look into making those changes for next field season.
 - we have also been using the Hach sensors, so also reporting in NTU. We will also want to talk about updating.
 - we will have to pass this up to management given that BiOp is written in NTU and other surveys are reported that way; NTU criteria are driving our current understanding of the science; will need to confer with legal whether this is a change that should be memorialized in the BiOp; get back to the group.

- CDFW: asked by my management to **create standalone ITP (Longfinand Delta smelts) risk assessment document** that is in line with ITP, because we are managing to two different permits. Will replace Longfin advice. Unfortunately, it is another document to review. Basing it off the risk assessment that was developed for Salmon. Most of items are already covered in this agenda but some will need to be integrated; will circulate assessment document for comments on the 19th. Will get it dialed in and can integrate it

better next year; OMR guidance document has a footnote saying we will have to crack that document open again to integrate the ITP, and this will be part of that.

- USFWS: have notes been posted? What is the **status of the decision to include monitoring team members' names** in the notes or keep them out
 - o WOMT decided last week not to use names but they are having a follow up conversation; I have expressed our concerns about using names
 - Agree. to facilitate open discussion would prefer using participating agencies names,. Individuals names.)
 - would prefer to use agency rather than individual attribution

8. Next Meeting:

May 12, 2020 at 11:00am

Weekly Advice for Longfin Smelt

05 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 exports are currently limited due to Condition of Approval 8.17 (Export Curtailments for Spring Outflow). 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 will defer to the implementation of CoA 8.17.

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 4th, estimated juvenile Longfin Smelt salvage for WY 2020 was 1306 for CVP and 1124 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

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

Current Conditions

As of April 27, 2020

Sacramento River flow at Freeport = 8070 cfs. San Joaquin River flow at Vernalis = 2400 cfs. X2 = 74 km. Qwest was approximately + 1500 cfs. Daily average OMR Index = -1300 cfs with a 14-day running average of -1300 cfs. Daily average water temperature at Clifton Court Forebay was 20.45°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	906	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