

SMELT WORKING GROUP

Monday, March 10, 2008

WEEKLY ADVICE TO THE SERVICE FOR DELTA SMELT

Recommendation:

Maintain the 7-day average combined OMR flow more positive than -1,500 cfs.

Basis for recommendation:

The recommendation is based on a review of active risk factors.

1. Size of spawning population. The 2007 Fall Midwater Trawl (FMWT) index of 28 (the second lowest on record) continued a record of declining abundance indices that started in about 2000, with two of the last three years setting new record lows. The persistence of such extremely low FMWT indices remains a very high degree of concern for the work group.
2. Water temperatures. Water temperatures at all three stations of record have exceeded 12°C for nearly two weeks and are continuing to trend upward. Based upon temperatures and the presence of spent fish, the Working Group expects that peak spawning has started in the southern and central Delta and is underway in the north Delta, and that larval fish are either already at risk of entrainment or may become vulnerable this week.
3. Recent salvage. The Working Group finds that adult delta smelt salvage has been higher than we had expected this year given the low FMWT index. The adult concern level (formerly known as “yellow light”), was reached on February 22nd. Further, 56 adult delta smelt were collected at the fish salvage facilities at SWP and CVP between March 3 and 9 despite the decrease in exports to meet a 7-day average OMR flow of negative 3,000 cfs. The entrainment of a large number of adult smelt and continued salvage despite lowered OMR target flows creates substantial concern on the part of the Working Group. This also suggests that a sizeable number of delta smelt spawners may be present in the south and central Delta areas and are presently vulnerable to entrainment.
4. Spawning condition of salvaged adult delta smelt. The presence of a spent male delta smelt at the CVP/SWP salvage facilities on February 15, 2008, and a spent female on 2/17/08 indicates that at least some spawning started no later than mid-February. The delta smelt sampled at the fish salvage facilities between March 04 and March 9, 2008, included both spent (stage VI) and mature fish with highly developed eggs (Female Stage IV and Male Stage V) further indicating that spawning has started in earnest.
5. Adult distribution from Fish Surveys. The Bay Study Survey sampled one adult delta smelt in the San Joaquin River in addition to one in the Sacramento River. No additional Spring Kodiak Trawl (SKT) has been conducted since February 7, 2008. The third SKT survey started today,

March 10. The last SKT (02/04/08 to 02/07/08) data on distribution together with salvage of delta smelt at the CVP/SWP facilities at the time indicated that adult delta smelt have entered the central and south Delta. But the previous SKT survey no longer represents current conditions. However, salvage since March 3, 2008, and the Bay Delta survey do not support that adult delta smelt that had entered the San Joaquin River portion of the Delta have moved into other portions of the Delta since the completion of the second SKT survey. Further, data from previous year's surveys and studies do not suggest that mature delta smelt would move out of the San Joaquin River portion of the Delta once there.

6. Larval distribution from 20 mm Survey (20mm). Results of 20 mm Special Survey #11 (sampling conducted Mar 3 to Mar 7, 2008) revealed substantial numbers of longfin larvae in the lower Sacramento River and downstream, but no delta smelt larvae were captured at any station. In the special survey conducted last week, sampling effort at each station was half (1 tow instead of 2) of what it is in normal surveys.

7. Exposure Risk. As indicated above under #3, the SWG thinks it is possible that a significant fraction of this year's smelt population may be distributed in the central Delta where they are relatively more vulnerable to entrainment. Based upon PTM results, it is possible that substantially negative OMR flows over only a few days will result in high entrainment for delta smelt present in the San Joaquin River and Central Delta. Therefore the Working Group is concerned that entrainment of larval and juvenile delta smelt spawned in the central Delta may represent loss of a substantial percentage of this year's delta smelt production. The reasons for our concern are (1) the SKT is a poor tool for detecting very sparsely distributed fish, making inference about overall distribution risky; (2) nevertheless the SKT has detected at least one adult smelt in each of two central/eastern Delta locations; and (3) cumulative and continued adult salvage despite reduced exports indicates that a substantial number of delta smelt have entered the south and central Delta to spawn, increasing the risk of larval and juvenile entrainment.

8. Particle tracking results (Attachment 1). The Working Group believes the most efficient protective measure at this time is to minimize as far as possible or prevent entrainment of fish into the Old River and Middle River. Particle tracking modeling suggests that at negative 1,500 cfs OMR flows the 30-day entrainment risk would be essentially 0% for smelt larvae occurring at stations 809, 812 and 815, as well as locations in the Sacramento River.

Data Request for next week: Run PTM modeling runs for a 60-day time period (as well as the 31 day output) which includes the proposed VAMP flows starting on April 24

Add station 707 into the PTM modeling efforts

WEEKLY ADVICE FOR THE CALIFORNIA DEPARTMENT OF FISH AND GAME FOR LONGFIN SMELT

Background:

On February 29, 2008, the longfin smelt 2084 (emergency incidental take regulation) was filed with the Secretary of State and became law. The regulation contains triggers — based on the distributions of spent female and larval longfin smelt — that may require the SWP and CVP to make operational changes.

Trigger:

The longfin smelt trigger was tripped by the collection of a single larva at the Tracy Fish Collection Facility on March 6, 2008.

Recommendation:

Follow the Smelt Working Group's delta smelt recommendation to maintain the 7-day average combined OMR flow more positive than -1500 cfs.

Basis for recommendation:

Our concern level for longfin smelt is high based upon:

1) a record low 2007 longfin smelt Fall Midwater Trawl (FMWT) index (13) and a “low given the outflow conditions” FMWT index in 2006; and 2) probable February spawning in or near the south Delta based on the presence of a spent adult female in salvage (February 14, 2008, CVP) and subsequently by capture of a longfin smelt larvae (February 24, 2008, SWP); and combined longfin smelt salvage of 56 fish from 23 January through 2 March.

(2) a single longfin smelt larva was recently collected at the SWP (8 March) and longfin smelt adults continue to be captured in the south Delta: four at the SWP on 7 March.

Our concern is tempered by recent distribution information from the early-March 20mm Survey, wherein all longfin smelt larvae were collected in the Sacramento River or Suisun Bay, and by recent adult distribution information from Bay Study suggesting much of the current longfin smelt spawning might be taking place in the Sacramento River.

The Smelt Working Group longfin smelt recommendation is based on discussion of the preceding information and recent results of particle tracking modeling, which suggested that at negative 1,500 cfs OMR the 30-day entrainment risk would be essentially 0% for smelt larvae occurring at stations 809, 812 and 815, as well as locations in the Sacramento River.

Discussion:

1. Size of spawning population. The 2007 FMWT longfin smelt index of 13 was the lowest on record and except for an increase in 2006 continues a record of very low abundance indices that started in 2001. The persistence of such extremely low FMWT indices creates a very high degree of concern for the SWG.

2. Water temperatures. Water temperatures have been suitable for longfin smelt spawning since late November 2007 and larvae are present in the water column. Temperature has not been linked to the termination of longfin smelt spawning, but larvae collected by larvae surveys drop sharply in April based on historical sampling. This suggests that spawning typically declines in March when water temperatures normally are in the 15-20°C range.

3. Recent salvage. Modest to substantial adult longfin smelt salvage was expected this year given the low Delta outflow. At present, no level of concern based upon the relationship of historic adult salvage to the subsequent FMWT index has been defined for longfin smelt. Nonetheless, the SWG is concerned that the current salvage level (72 adults total for the winter) portends potential south Delta spawning and the subsequent salvage of larvae and juveniles. The limited number of longfin smelt larvae collected so far (2 in the new sampling program and one in a CVP special study) represent a much lower entrainment than expected given their surface orientation and negative OMR flows.

4. Adult distribution. Recent adult distribution information from Bay Study and UFWS trawling suggests that most longfin smelt were in the Sacramento River portion of the system: Bay Study collected longfin came from the Sacramento River (n=8) or Suisun Bay (n=4); Assuming these catches inform us of spawning regions, then most recent spawning has taken place outside the south Delta.

5. Larva and juvenile distribution. Based on partial reporting from the early-March 20mm survey, longfin smelt were primarily downstream of the Delta in Suisun Bay, and that those remaining within the Delta were in the Sacramento River channel or Cache Slough. Those larvae upstream of Three-Mile Slough remain potentially vulnerable to entrainment if exports are high enough to draw them into the central and south Delta. This appeared very unlikely based on PTM data for current conditions (see below).

6. Particle tracking results. PTM runs based on current hydrology indicated that particles in San Joaquin River stations 809, 812, and 815 were not likely to be entrained by south Delta pumping (i.e., zero percent entrained) during a 31-day time-step at the recommended negative 1500 OMR flows. Providing this level of protection will be very protective of longfin smelt larvae in the central and north Delta.