

## Delta Smelt Working Group Meeting Minutes

April 13, 2005

Participating: Bruce Herbold (USEPA), Gonzalo Castillo (USFWS), Ryan Olah (USFWS), Matt Nobriga (CDWR), Mike Dege (CDFG), Kevin Fleming (CDFG), Mike Chotkowski (USBR), Victoria Poage (USFWS)

Guests: Tracy Hinojosa (CDWR), Kevin Sun (CDWR) brought the latest PTM runs; B.J. Miller attended as a guest of DWR

### Agenda:

1. Update on delta smelt survey data
2. Review latest PTM runs and discuss potential spring fish actions
3. BJ Miller's latest work on delta smelt

### Recommendation for WOMT:

Concern for delta smelt is high in WY 2005 based upon the following considerations from the DSRAM:

- o Previous year's recovery index (R.I. = 25) is below the median value of 74
- o Duration of spawning period may be abbreviated
- o Survey sampling has collected low numbers of fish as compared to previous years
- o Larval smelt less than 20 mm in length may be present at or near the pumps without having been detected; early results from the 3<sup>rd</sup> 20-mm Survey collected only two fish, both in the central Delta

Based on review of the latest Particle Tracking Modeling indicating a significant difference in particle fate with and without a mid-April action, the Delta Smelt Working Group recommended a reduction in exports to 50% of the flow of the San Joaquin River at Vernalis, to begin as soon as possible and continue until the beginning of the VAMP experiment.

1. As discussed during Tuesday's DAT call, CDFG is currently engaged in the third 20-mm Survey of 2005. Two of the South Delta tows have been processed and two larvae, 12 and 13 millimeters, were counted. It is important to note that counts for all species were low. The pilot Larval Survey did not sample any delta smelt.

[Background: Presentations by Bennett, Fleming and Miller at the EWA Species Workshop in October included analysis of data indicating that early cohorts could potentially contribute significantly to the population, and suggesting that protective actions using EWA assets might best be done in the weeks prior to the VAMP, rather than post-VAMP, as has been done in the past. Concern for delta smelt, whose abundance indicators have been declining for several years, increased in November when CDFG announced that the 2004 Recovery Index was, at 25, the lowest on record. The Delta Smelt Working Group began discussion of criteria for implementing pre- or post-VAMP shouldered at their meeting on January 13, where it was agreed that

implementation of shoulders would follow the DSRAM process. At this meeting, the DSWG also discussed CDWR's management concern for the apparent low abundance of delta smelt and other species, despite recent conservation efforts. Matt Nobriga and Ted Sommer were asked by DWR to prepare a management brief outlining the problem, its possible causes, and recommendations for further study. The heightened level of concern also prompted a special meeting of the Estuarine Ecology Team (EET) and the organization of a special session at the IEP Workshop. The IEP management team formed the "G8" group to develop a plan for determining the cause of the decline in pelagic fish, implement the plan, analyze results, and decide on future research and monitoring needs and direction.

Salvage of pre-spawning adult delta smelt exceeded the concern level on January 24, prompting a meeting of the DSWG. Early returns from the Spring Kodiak Trawl survey indicated that pre-spawning adult delta smelt were moving into the Central Delta and the Cache Slough area. The DSWG recommended that WOMT implement an export reduction to a combined 1500 cfs for a period of seven days, unless salvage appeared to peak and decline during that time. (The reduction implemented was to a combined 3000 cfs, with ramping to baseline over the last three days.) The DSWG again discussed potential spring fish actions at their meeting on March 10, where they requested particle-tracking modeling (PTM) from CDWR to see what effect various operations scenarios in April might have on the distribution of larval smelt. The injection points selected for evaluation were in the Cache Slough area, plus Rio Vista on the Sacramento River because the latest Spring Kodiak survey indicated that most adult smelt were either in this part of the Delta or downstream in Suisun Bay/Montezuma Slough. Larval smelt produced in the downstream area would presumably not be affected by Delta pumping. The DSWG set a concern threshold at a 30% difference in particle fate between base case and action scenarios. Meanwhile, the Spring Kodiak survey consistently collected fewer adults in 2005 as compared to other years.

On March 23 the VAMP technical group decided to postpone the beginning of the VAMP experiment to May 1, to allow time for high spring flows on the San Joaquin River tributaries to stabilize

The DSWG reviewed the results of the PTM runs at their meeting on March 28, and as the particle fates did not meet the 30% concern threshold, The DSWG did not recommend an early spring action. However, the DSWG asked DWR for a second round of PTM, with injection points added in the Central Delta, using the updated hydrology and attempting to minimize the effect of agricultural diversions in the Cache Slough area. Although no adults had been collected in the Central Delta since Survey 1 of the Spring Kodiak Trawl in January, all three surveys (January, February and March) collected very low numbers compared to other years, indicating a very low number of potential spawners and increasing concern for maximizing the protection of juveniles. The first 20-mm Survey collected juveniles near the confluence, but not in the South Delta, not an unexpected result, as the earliest surveys rarely sample many juveniles anywhere. Juvenile delta smelt would be too small to be seen at the salvage facilities. The DSWG next met on April 13, to review the latest real-time monitoring data, survey data and PTM

runs. Survey 2 (3/28-4/2) of the 20-mm Survey collected smelt in the South Delta, but in very low numbers. The first tows of Survey 3 had collected only two smelt by the time of the DSWG meeting, both in the central Delta (a third juvenile was later caught in Montezuma Slough).]

2. Kevin Sun ran six PTM scenarios for the April 13 meeting at the request of the DSWG:

- San Joaquin River at 7000 cfs with
  - Baseline (full exports)
  - 3000 cfs combined exports beginning 4/16
  - 1500 cfs combined exports beginning 4/16
- San Joaquin River at 10,000 cfs with
  - Baseline (full exports)
  - 5000 cfs combined exports beginning 4/16
  - Baseline exports until 4/30 and 5000 cfs combined exports beginning 5/1

The DSWG used a criterion of 30% difference in entrainment at South Delta stations, to evaluate particle fate:

Export Level	SJR = 7,000	SJR = 10,000
	Percent of particles entrained by the Projects	
Baseline	> 30%	> 30%
1500 cfs combined	0	
3000 cfs combined	0	
5000 cfs on April 16		0
5000 cfs on May 1		> 30%

Review of the PTM results revealed that most of the expected entrainment of particles at the SWP and CVP (incidental take) with baseline pumping would occur during the April 16-April 30 period. Particle entrainment from central Delta injection points dropped from >30% to zero with 5000 cfs exports and 10,000 cfs SJR at Vernalis flow or with 3000 cfs exports and 7000 cfs flow. In each case, entrainment was reduced when the combined level of exports was approximately 50% of SJR flow. Because of the high level of concern for delta smelt, the DSWG recommended a reduction in combined exports to 50% of the San Joaquin River flow at Vernalis, to begin as soon as possible and continue until the beginning of the VAMP experiment. This recommended action is intended to minimize entrainment and otherwise reduce the effect of export pumping on delta smelt prior to the beginning of the VAMP period. No June curtailment was recommended, however, the group recognized that incidental take levels may drive June curtailments.

Following up on an action item from March 28, Gonzalo Castillo presented the result of plotting the relationship of the Summer Tow Net index to the Fall Mid-Water Trawl index. Although there is a relationship ( $r^2 = 0.35$ ), its usefulness as a predictor is limited by its large confidence intervals.

Matt Nobriga predicted via e-mail that the Summer Tow-Net Index for delta smelt would be between 1.17 and 2.25, from a regression of the FMWT index on the number of days that X2 was expected to be located in Suisun Bay.

Bruce Herbold noted that the write-up of the changes in study plans in response to the declines in Bay/Delta pelagic species was expected to be completed tomorrow afternoon and ready for review by early next week. Chuck Armor will distribute the document to most of the DSWG; Herbold strongly urged those who receive the document to provide review and comment.

3. B.J. Miller presented the results of recent work he has done relating the occurrence of juvenile delta smelt to known food sources and providing recommendations for using larval abundance and distribution quantitatively, to determine an appropriate level of Project exports. B.J.'s work was distributed via the DAT reflector. In July of most years, peak co-occurrence of smelt and their food occurs in the lower Sacramento River. Since larval smelt would be expected to be in that area at that time, the implication is that if the *Pseudodiaptomus* bloom is poor, smelt production also tends to be poor. The results also provide insight into the design of potential lab studies involving delta smelt feeding and bioenergetics. B.J. has developed an export management protocol using historical 20-mm Survey data to limit larval entrainment based on the selection of a target entrainment percentage and the relationship of entrainment to exports. The DSWG needed more time to review the data, but may wish to designate a subgroup in the future to investigate the potential to incorporate this type of protocol into the DSRAM.

Submitted,  
VLP