Interagency Ecological Program for the Sacramento-San Joaquin Estuary. Newsletter. Volume 12, Number 3 :33-34.

Delta Smelt Concerns Result in Changes in SWP and CVP Operations

Matt Nobriga, Tanya Veldhuizen, and Zach Hymanson, DWR

State and federal export facility operations were modified in May and June in response to concerns over the distribution and high salvage of delta smelt at the SWP and CVP Delta pumping facilities. Since we have no direct measure of delta smelt losses at these facilities we use salvage of delta smelt as a surrogate for "take." 1999 was an above-normal (San Joaquin Basin) to wet (Sacramento Basin) water year (DWR 1999), but the distribution of young-of-year (YOY) delta smelt was more typical of a dry year hydrology with a greater proportion of the population remaining in the Delta through spring and early summer. It is uncertain why delta smelt remained in the Delta for so long this year, but water temperature may have been an important factor (Dale Sweetnam, personal communication).

Delta smelt spawn in areas of fresh water under tidal influence. In dryer years, spawning is often concentrated on the Sacramento River side of the Delta, especially in the Cache Slough area. In wetter years, spawning is widespread and can occur as far west as the Napa River, as it did this year. Similar to 1997, a large YOY delta smelt population in the central Delta resulted in higher take at the SWP and CVP facilities. The elevated take levels were surprising since this year's Delta hydrograph showed a similar pattern to 1996 (Figure 1). Delta exports were considerably higher in late May and June 1996 than they have been this year, yet delta smelt salvage in 1996 was less than half of the 1999 levels (Figure 2).

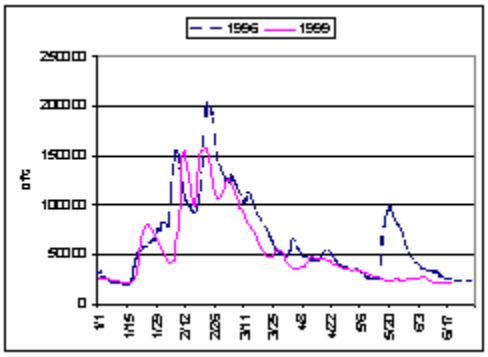

Figure 1. Delta inflow in 1996 and 1999

The US Fish and Wildlife Service biological opinion dealing with the effects of SWP and CVP operations on delta smelt uses two levels of combined SWP and CVP delta smelt salvage as triggers to initiate actions to reduce water project impacts on delta smelt. These thresholds include the following:

- The 14-day running average of combined delta smelt salvage, commonly referred to as the yellow light level.
- The cumulative total of combined salvage for each month, commonly referred to as the red light level.

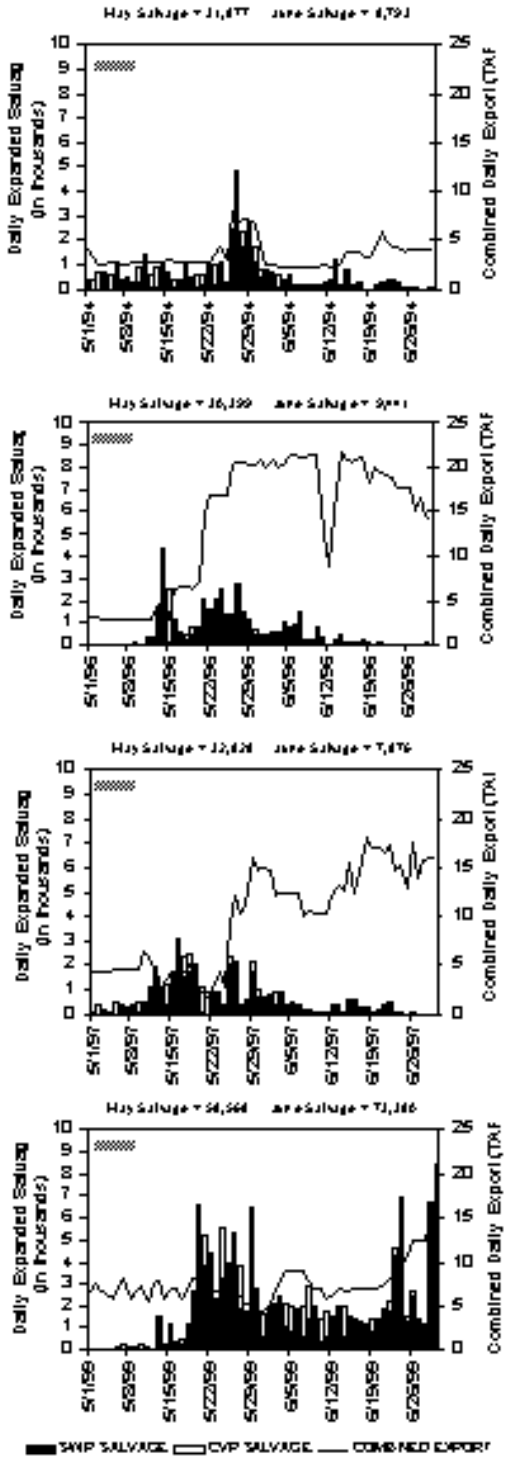

Figure 2. State and federal delta smelt salvage from May through June during the last four years that take exceeded a red light level. The daily red light level for any given month in 1994 was 400. For all subsequent years, the monthly red light level for May was 9,769 and for June was 10,709.

The red light level is based on historical salvage data and varies among months and among water year types. For example, in an above-normal water year (like 1999) the red light level ranges from 733 fish in December to 11,990 fish in October. Monthly red light levels for below-normal water years are generally higher than for above-normal water years.

In 1999, the combined CVP and SWP delta smelt salvage increased dramatically during May. Only delta smelt longer than 20 mm are considered to be "take" in the salvage operations. The yellow light level was exceeded by 18 May, and the red light level (9,769 delta smelt) was exceeded by 16 May. Combined salvage remained high throughout the month, and by the end of May total monthly salvage (58,568 delta smelt) exceeded the red light level six fold.

Take remained high in June as well. The June red light level (10,709 delta smelt) was exceeded by 6 June. By the end of June, combined monthly salvage (73,380 delta smelt) exceeded the red light level by nearly seven fold. During the past six years the projects have exceeded the red light level in May four times (see Figure 2), but this is the first year the projects have exceeded the red light level two months in a row. This year's June salvage is particularly anomalous since delta smelt have usually moved downstream by June. June salvage this year exceeded the previous high of 45,913 delta smelt salvaged in June 1981.

Maintaining low export levels has been the primary action for minimizing delta smelt take this year. Substantial export reductions have occurred. By the end of June, exports were more than 400,000 acre-feet lower than what would have occurred in the absence of delta smelt concerns. Export/Inflow (E/I) ratios have ranged from about 9% to 22% during May and most of June. The E/I ratio did not approach the 35% limit specified by the delta smelt biological opinion until June 28. Two south Delta temporary barriers have been operational (Middle River and Old River near Tracy). The Grant Line Canal barrier is in place, but it is being held open to reduce reverse flow in Old River.

References

[DWR] California Department of Water Resources. 1999. Bulletin 120: Water conditions in California. Report 4. May 1, 1999. Sacramento (CA): California Department of Water Resources.

Hymanson Z and D Sweetnam. 1997. Delta smelt concerns result in changes in SWP/CVP operations. IEP Newsletter 10:5-6.