

Figure 3
Mean Catch per Trawl of
Young and Adult Striped Bass

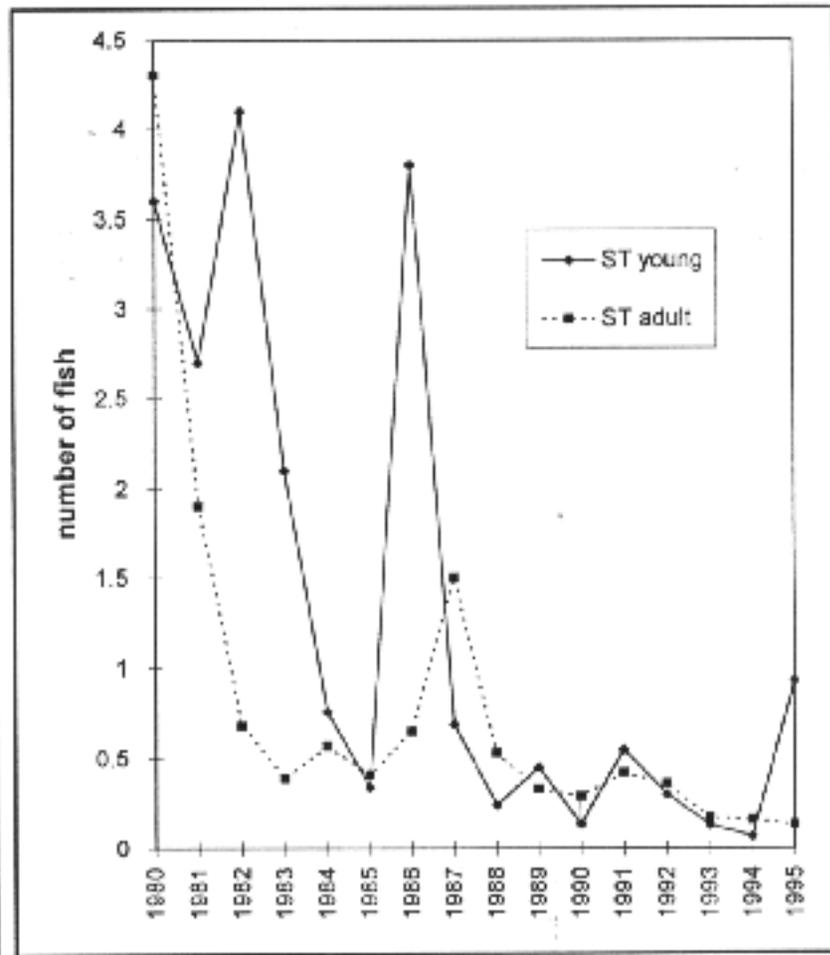


Figure 4
Mean Catch per Trawl of
Young and Adult Splittail

Delta Smelt

Dale Sweetnam, DFG

The summer tow-net and fall midwater trawl surveys provide abundance and distribution information on delta smelt. Although these surveys were designed primarily to monitor striped bass abundance and distribution, a secondary objective was to identify and measure all other fish species collected. Thus, these datasets provide the longest continuous records with which to evaluate fish population trends in the estuary, and they cover the entire geographical range of delta smelt. Recent net evaluations have shown that other gear types, such as a kodiak trawl (a net towed at the surface between two boats), are more effective at capturing delta smelt (see Autumn 1994 *Newsletter*). Because of delta smelt's listed status, however, sampling gear that captures large numbers of delta smelt can raise take concerns and will not necessarily depict long-term abundance trends because of the short record.

Abundance indices are used to follow population trends from year to year when population cannot be estimated. The delta smelt abundance index is based on systematic sampling from San Pablo Bay through the delta, using

the same sampling effort (same net, same techniques) each year. Thus, changes in the annual abundance index are assumed to reflect annual changes in the population. Changes in delta smelt abundance and distribution between 1994 and 1995, in which hydrological conditions changed dramatically, will be highlighted. Water years 1994 (critically dry) and 1995 (extremely wet) are considered stressor years for delta smelt, because abundance is not directly related to outflow as with other species with similar life histories. Abundance as measured by the fall midwater trawl does, however, show a relationship with the number of days that the X₂ isohaline is in Suisun Bay (see Winter 1994 *Newsletter*). Therefore, geographical distribution may play an important role in determining delta smelt population strength.

Delta smelt abundance indices from both the summer tow-net survey and the fall midwater trawl survey vary dramatically from year to year and do not necessarily track each other (Figures 1 and 2). Historically, the summer tow-net survey has been the first measure of post-larval delta smelt abundance and distribution, targeting