20mm Survey Delta Smelt Index of Abundance

The 20mm index (Figure 1) is calculated each year once the accuracy of the database has been assured. It is calculated by summing the geometric means of delta smelt catch over a specific period of time for each year. At this time, there has been no formula established to calculate indices for any species other than delta smelt from 20mm survey data.



Figure 1. The 20mm survey delta smelt index over the period of record, 1995-2010.

The following is a summary of the methods used to calculate the index.

Surveys 1 though 9 are considered for the purpose of index calculation. The index is calculated using the data from only 4 of these surveys: the two before and the two after the point where the average length of delta smelt (less than 60mm in length) equals 20mm. From this subset of surveys, the delta smelt catch-per-unit-effort (CPUE) is calculated for each of the 41 "core" stations. One (1) is added to each CPUE value and then a log10 transformation is preformed. For example:

CPUE	3.45
CPUE+1	4.45
Log10Trans = log(4.45)/(log10)	0.65

These calculations are made for each station within a given survey. The average is taken of all the resulting "Log10Trans" values within a survey in order to obtain one value. The geometric mean is calculated on this average value, like so:

The 20mm delta smelt index is the summation of the 4 geometric means.