

Low levels of agreement among experts using best professional judgment to assess benthic condition in the San Francisco Estuary and Delta

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ABSTRACT

Benthic indices to support aquatic environmental condition assessments have been more effectively developed for higher than lower salinity habitats. Here we quantify agreement among benthic experts using best professional judgment to assess community condition of mesohaline and tidal freshwater samples from the San Francisco Estuary and Delta, and compare that to a previous study for San Francisco Estuary polyhaline samples. Benthic species abundance data from 20 sites in each habitat were provided to 7 tidal freshwater, and 8 mesohaline, experts who ranked the samples from best to worst condition and placed the samples into 4 condition categories. The average correlation among expert's condition rankings was only 0.38 and 0.29 in the mesohaline and tidal freshwater habitats, respectively, compared to 0.92 in the previous polyhaline study. Pair-wise agreement among expert condition categories averaged 41% and 39%, compared to 70% in the polyhaline. Based on post-exercise discussions among the experts, the differences in agreement among habitats appears related to the use of different indicator taxa and to disturbance regimes in the lower salinity habitats that select for higher proportions of tolerant taxa, confounding assessments at the current level of understanding of benthic response in these habitats. Regardless of the reason, the absence of a clear conceptual model and agreement among benthic ecologists about benthic condition makes index development more difficult in low salinity estuarine and tidal freshwater habitats.

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