



Memorandum

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Subject: Additional Response of the Independent Expert Review Panel

Please find attached an additional response from the Expert Review Panel.

**ADDITIONAL RESPONSE OF THE INDEPENDENT EXPERT REVIEW
PANEL**

TO PRQ 7B

October 23, 2009

PRQ 7B reads: Based on the best commercial and scientific data, are there better indices available than those used by the FWS in the EA for predicting future smelt abundance (e.g., food, temperature, turbidity, etc.) than fall X2?

This question was derived from the FFA's Correction Request 8 (p. 16-18). The Correction Request focuses, in part, on the importance of food abundance and smelt abundance.

The Panel was not asked to develop methods to "forecast" future delta smelt abundance and it would have been unreasonable to make such a request given the small number of days that the Panel members met. The smelt population is obviously influenced by multiple stressors, but the Panel was not presented with any quantitative population-dynamics model that could be used to assess the relative importance of these stressors on aspects of the smelt population's life history. Further, it seemed unreasonable to propose new indices that could potentially compete with X2. Based on best available scientific data, fall X2 provides a robust index of the physical habitat availability of smelt and likely influences biotic components (as discussed in the Panel's report). The Panel made a very strong statement in support of X2 as a means of keeping track of shifts in basic habitat (*sensu* space in the upper estuary) for delta smelt. This species requires a narrow range of salinity, and the application of X2 makes a great deal of sense for tracking physical habitat and the likely general position of the center of the population. The other variables suggested (food, temperature, turbidity, etc.) are largely metrics of habitat quality, and as such are likely to express considerable within-habitat spatial and temporal heterogeneity.

If the question is more general and is asking the Panel to identify an important stressor that should be weighted highly in models that predict future smelt abundance, then the Panel thinks the best available scientific data strongly suggest that food limitation is a chronic and worsening stressor to the smelt population. Specifically, the best available commercial and scientific data show that smelt habitat quality depends on availability of suitable densities of edible zooplankton. Currently, *Pseudodiaptomus forbesi* availability appears to be an especially important food resource.

As stated previously, the Panel acknowledged (as has everyone else) that multiple factors affect the delta smelt population. The question was whether there are better indices than fall X2 in predicting future smelt abundance. X2 provides a means of tracking the estuarine location of critical physical habitat with respect to the species' narrow salinity requirements, not future smelt abundance. The Panel was not presented with a specific set of competing indices for the purpose

of predicting future abundance of delta smelt, much less the information needed to rank the value of any index intended for that purpose. The FFA's Correction Request 8 references Manly (2008) as including factors that would improve the smelt abundance analysis. There was no citation in the FFA's Correction Request to Manly (2008), nor was this reference cited by the USFWS in the BO. The Panel report states this fact.