



The Department of Fish and Game submits the following questions for consideration during the upcoming workshops regarding Phase II of the comprehensive review and update of the Bay Delta Plan. The Department has identified areas of information that are needed in order to establish water quality standards that are protective of fish and wildlife in the Delta.

Workshop 1 - Ecosystem Changes and the Low Salinity Zone

Fish population declines coupled with hydrologic and physical changes in the Delta suggest that current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish. In addition, increasing the acreage of inundated and tidally saturated habitat such as wetlands in the Delta is a goal of many Delta restoration plans. However, along with the benefits to beneficial uses from wetlands, there is also concern about impacts to biological species from methylmercury production from wetlands.

Question 1

Are the current standards protective? What information needs to be developed in order to know if the standards provide species protection?

Question 2

Are the metrics used in the current standard the most appropriate to reflect the functions and processes that support native Delta fish?

Question 3

How does the lower trophic level community in the Low Salinity Zone, in particular key fish food organisms, currently respond to flow and X2 position, and how has the response changed overtime? Also, what are the mechanisms underlying observed responses?

Question 4

Does the State Water Board plan to apply a specific water (or sediment or tissue) quality objective for methylmercury in Delta waters? If so, how would such an objective (or objectives) be related to Delta methylmercury Total Maximum Daily Load numbers (e.g., 0.066 ng/L in water; 0.24 mg/kg in large sport fish)?

Question 5

If methylmercury objectives are specifically adopted in the Bay Delta Plan, how might they translate numerically into permit (i.e., effluent) limitations for the discharge of methylmercury?

Question 6

If methylmercury objectives will be specifically identified and promulgated in the Bay-Delta Plan, how does the Water Board intend to balance mitigation needs for, as well as the many water quality and wildlife benefits resulting from, Delta (tidal) wetlands restoration projects against the desire for more stringent controls on methylmercury production and export to Delta waters?

Workshop 2 - Salmonids

The Department's 2010 report "Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta" provides biological goals for recovery and self-sustaining populations of certain at-risk species and establishing water flows through the Delta that will benefit particular species, community, or ecosystem functions.

Question 1

What triggers the outmigration of salmonids – a long duration of enhanced flows with a peak or sustained peak?

Question 2

It's important to understand fish entrainment in the south Delta. Where do fish go? What cues are they following, whether direction of flow or nonflow cues?

Question 3

What is the relationship of flow and loss of juvenile salmonids to predators? How does flow influence predation loss [and shifts in predator species prevalence or feeding modes](#)?

Question 4

Natural salmonid population viability requires the appropriate ecological conditions to be in place. How does seasonal, annual and interannual variations in flows, both in the watershed and in the Delta, effect ecological conditions?

Question 5

What is the current state-of-the science regarding long-term population viability effects of managing salmonid populations by maximizing short-term conditions? How does this relate to the differences between protecting threatened and endangered species and managing for ecological resilience?

Workshop 3 - Pelagic Organisms

DFG believes ample evidence exists that improved Delta outflows are critical to the survival of important Delta species. For many species that live in, or move through the Delta, abundance is related to the timing and quantity of Delta outflow, or the placement of X2. The Federal delta smelt biological opinion related to Central Valley Project and State Water Project (CVP/SWP) operations addresses Fall X2 conditions , while the

San Francisco Bay Delta Water Quality Control Plan does not. There is recent evidence that summer X2 is important in addition to fall X2.

Question 1

What mechanisms underly the well-established relationship between sturgeon reproductive success and winter-spring flow? More specifically, how do various lifestages respond to flow in individual months during the winter-spring period?

Question 2

What role does summer - fall X2 position play in Delta smelt production, and what are the mechanisms underlying the response to X2 position?

Question 3

How does OMR flow, in combination with other flow and non-flow factors, influence the proportion of the delta smelt population entrained at the CVP/SWP Delta export facilities, and what is the delta smelt response to various levels of proportional entrainment?

Question 4

Has, and if so how has, the longfin smelt population response to winter-spring Delta outflow and X2 position changed in recent decades, and what are the mechanisms underlying current and past responses? Also, what is the relative importance of flow in individual months during the winter-spring period?

Question 5

How do sediment flow and salinity standards under current regimes modify invasive clam establishment and/or alter POD species food availability?

Question 6

How do hydrodynamic and geophysical factors modify prey density for POD species?

Workshop 4 – Analytical Tools for Evaluating the Water Supply, Hydrodynamic and Hydropower Effects of the Bay-Delta Plan

Question 1

How can water temperature and turbidity be addressed in current modeling?