

## **The Multiple Factors Contributing to Delta Decline**

By Dan Keppen

Executive Director

Family Farm Alliance

Klamath Falls, Oregon

Last year's package of Bay-Delta legislation (SBx7-1) directed the State Water Resources Control Board (SWRCB) to establish the water flows believed to be necessary under different conditions for maintaining a healthy Sacramento-San Joaquin Delta ecosystem. In order to inform planning decisions for the estuary, the SWRCB is scheduled to conduct hearings on this issue from March 22-24.

Agricultural water districts and others served by the State Water Project and Central Valley Project (CVP) have submitted extensive materials to the SWRCB emphasizing that any water flow recommendations must take into account the full story of the crisis in the Delta, which has been shaped by a lack of food supplies for native fish, predation by non-native species and environmental degradation due to wastewater discharges and pesticides.

Despite 15 years of narrow regulatory focus on state and federal water diversions out of the Delta, the relationship between Delta outflow and fish abundance remains unproven and undefined. For example, in litigation my organization filed against the U.S. Fish and Wildlife Service, we argued there is no relationship between Delta outflow and abundance of Delta smelt. Other research indicates that flow may in fact be masking other important factors, such as contamination and predation, which are limiting fish abundances and are unrelated to flow.

Predation of juvenile salmon by other fish species is huge. Nine-out-of-ten juvenile salmon are being killed by predators before ever reaching the Delta. There is an estimated nearly one million striped bass in the Delta and the watershed and catch of large-mouth bass has quadrupled since the 1980s. Both are non-native fish that prey on young salmon. Research last year estimated that striped bass consumed 21 to 42 percent of endangered winter- and spring-run juvenile salmon, respectively. Other studies show the water projects – which have been the sole focus of federal fisheries agencies and some environmental activists - took less than 3 percent.

Pollution and invasive species need to be aggressively dealt with in Bay-Delta, and the role of increased flows in addressing these stressors is questionable:

- The Delta's production of key food sources such as phytoplankton is among the lowest of all estuaries in the world, and the food that is being produced is of low value to the native fish. Studies have shown that elevated ammonia levels from wastewater plant discharges can inhibit the production of a key food source, diatoms. Ammonia levels inhibiting food development are now almost always exceeded in the Delta.

- Invasive species now comprise the majority of biomass in the Delta. Flows are not a proven effective control against non-native invasive species like Asian clams.

After reviewing the thorough submittal prepared by the water contractors (over 90 plus pages), it is easy to understand why water users dependent on diversions out of the Bay-Delta (including growers in the San Joaquin Valley) have called the National Academy of Sciences in for some unbiased review of the federal biological opinions that have shut down local economies south of the Delta.

Clearly, flow is only one driver of ecosystem health, and the narrow focus that has been placed on flows can actually mask other stressors that need to be addressed. Key existing outflow requirements imposed by federal fisheries agencies are, at best, hypotheses. A preferable approach would build a new framework largely around narrative criteria that would examine the relative importance of all stressors. Such an approach would provide great value to Delta planning efforts.