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## Water Exporters' Study No Smoking Gun

A May 2010 study primarily funded by Delta water exporters, including the State Water Contractors and San Luis & Delta-Mendota Water Authority, and written by Patricia Glibert of the University of Maryland Center for Environmental Science presents an incomplete analysis and evaluation of potential environmental impacts on the Delta ecosystem. The study will have the unfortunate effect of further diverting attention from the well documented impacts the decades of pumping water from the Delta have had on endangered native fish species.

The study uses only a fraction of available data and a methodology that cannot support its bold and erroneous conclusion that the Sacramento's wastewater is the culprit behind the declining fish populations in the Delta. It is no surprise that the study has been met with skepticism within the Delta science community.

As a public agency compliant with Clean Water Act permit mandates that are grounded in science, we expect that the study's shortcomings and failure to take a holistic approach to address the true primary contributors to the Delta's decline will fully come to light.

Days after the study's release Dr. Glibert was forced to resign her seat from a National Academy of Sciences panel charged with assessing Delta stressors because her work creates a conflict for her as a member of an independent panel currently studying all possible factors in the Delta fish decline.

### Delta science experts skeptical of results

- In the Stockton Record the Bay Institute's chief scientist and executive director Tina Swanson called Glibert's study "too simplistic" and that "this issue is far too complicated to expect...a smoking gun answer, which is exactly what the water users want." She went on to say she believes the ecosystem decline starts with massive changes in flows and diversions caused by the state and federal water projects, but there are other factors to consider too.
- In the Contra Costa Times Bill Bennett, an ecologist at UC Davis and a foremost expert on Delta smelt was quoted:  
*"It's really stretching it to say ammonium is the root cause of the Delta smelt decline. You can see a decline in the food and a decline in the fish, when something else could be causing the decline in both. I think she's taking things a little too far, a little premature."*
- In the same Contra Costa Times article Wim Kimmerer, an estuarine ecologist at the Romberg Tiburon Center at San Francisco State University, said:  
*"The statistical method she used exaggerates trends, and suppresses the very real effect of natural variability. The overall approach is also based mostly on correlation and ignores important influences that we have learned about through more detailed methods, such as the effects of clams and other introduced species on the food web of the estuary."*

### Narrow focus and incomplete analysis

- The study analyzes data from a limited number of sites in the Delta when there are at least 80 locations with nutrient data.

- The study focused on the role of nutrients as the cause of the Delta decline, but largely ignored other well documented possibilities.
- A panel of independent national experts convened by CalFED in March 2009 stated that a comprehensive integrated model must be developed to evaluate the various potential drivers affecting the Delta ecosystem, since no conclusion about ammonia's impact could be reached.
- Dr. Peter Moyle of UC Davis, a well respected expert on native fish in California, presented at the National Academies of Science's National Research Council meetings in January 2010 that the root cause of recent fish declines in Delta is water diversions, with secondary effects of invasive species, reduced food supplies, predation, water quality changes, and increased pollution also contributing to native fish declines. His simple equation captures the complexity in explaining the decline of native fishes: Past Physical Habitat Change + Diversions + Secondary Effects = Native Fish Declines.
- For 30 years scientists and regulatory agencies have documented the pumps' significant impacts on the Delta. The body of evidence conservatively estimates millions of fish have been lost to the pumps.
  - A 1996 study by the Department of Water Resources and Department of Fish and Game stated that from 1979 – 1993, 110 million fish were "salvaged" ahead of the pumps at the State Water Project. Best available information indicates that even more fish were lost in the past 20 years when the amount of water pumped out of the Delta nearly doubled.

### **Correlation does not equal causation**

- Glibert's study is based on reviewing trend curves for various parameters such as nutrient concentrations and populations of various species in the Delta to evaluate if the curves have similar shapes. Where the shapes are similar it is speculated that there is a relationship. However, correlation does not equal causation. Just because two curves have the same shape it does not mean that one caused the other. Both could be caused by something entirely different, or the relationship could be random chance.
- Using correlation analysis one can easily draw the conclusion that as water exports increase so do impacts on fish. The amount of water pumped from the South Delta doubled between 1991 and 2005, coinciding with the crash of sensitive Delta fish species.
- In March 2009, a panel of independent national experts convened by CalFED also determined potential drivers for water quality and the structure and function of the Bay-Delta ecosystem to include climate, water withdrawals, flow modifications, loadings of sediments, nutrients, and contaminants, light, and food web processes. These factors are interrelated in a complex web of physical, chemical, and biological processes that cannot be easily explained with correlation analysis.
- Reliance on correlation to identify causation leads to conclusions that sometimes are neither logical nor accurate. An overly simplified example of this is: if Ann and Sue A) are both girls; and B) both have red hair; then this correlation means we should conclude that all girls have red hair.

### **Other studies tell a very different story**

- In their April 2010 POD synthesis report UC Davis professor Mike Johnson and his team's review of the water chemistry data did not find sufficient data available to draw conclusions about the role of the contaminants in the POD.
  - When the results of the six comparisons for chemistry, toxicity and histological data were placed into a weight of evidence context and analyzed, the team concluded that contaminants are

unlikely to be a *major* cause of the POD, although they cannot be eliminated as a possible contributor.

- The team also found that upon capture Delta smelt have full stomachs and are not starving, suggesting that the food supply has not been reduced by exposure to contaminants and can support populations of POD species.

#### **SRCS D welcomes sound science**

- SRCS D has worked for years to be part of the process to find a Delta solution based on sound science and we will support whatever conclusion such science determines necessary.
- We are concerned that overly simplistic analyses like this study and political rhetoric are driving Delta policy decisions more than sound science is. Too much is at stake for the environment, California residents and our ratepayers to allow that to happen.

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