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## **Challenges for the Delta Scientific Adhocracy**

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### **Introduction**

The Sacramento-San Joaquin Delta remains the most difficult and complex water management issue in the long history of water conflicts in California. Ultimately, the solution to the problems of the Delta must be resolved based upon science. The 2009 legislation package, summarized by Tina Leahy for this session, requires that a Delta Science Program coordinate scientific activity to support decision-making in the Delta. The legislation also calls for a Delta Independent Science Board that will provide periodic reviews of all scientific activity in the Delta, including reviews of some key documents to be produced by the Bay Delta Conservation Plan.

The Delta Science Program and the Independent Science Board have their work cut out for them, for many reasons. At the top of the list of challenges is their own legislative mandate to coordinate and oversee scientific activities in the Delta. By my own count, there are close to 100 entities that are currently supporting and/or conducting scientific activities that directly affect the Delta. Federal, state, and local agency scientists, engineers and technicians are matched in number by an army of consultants, NGO scientists, and university researchers. I cannot (nor can anyone else) tell you how many scientists and engineers are currently working on the problems of the Delta, but it is likely to be the largest collection of its kind, commensurate with the complexity and importance of the problems. I also cannot tell you whether there is anyone in charge or even if there is anyone providing genuine scientific leadership. The legislation package provides little help here. This large, complex public-private scientific enterprise is loosely organized, with no one in charge. It is, by all measures, a *scientific adhocracy*.

As the past chair of the CALFED Independent Science Board, this is my personal list of significant challenges that the new Delta Science Program and the Delta Independent Science Board will have to address as they grapple with the Delta scientific adhocracy.

## **Getting the Agencies to Paddle Together**

It is not news to anyone that the most difficult task awaiting the Delta Science Program involves finding ways to improve the efficiency and effectiveness of agency science to support decision-making in the Delta. The 1994 Bay-Delta Accord and the 2000 CALFED Record of Decision both made it clear that this was a high priority for the state and federal agencies. The problem, however, is that all of these agencies have different, occasionally conflicting priorities; none are willing to fully give up control of significant resources and personnel to meet broader objectives. In lieu of this, there is coordination and negotiation. For those familiar with Delta science this translates to endless meetings and a mixed record of success. Indeed, the recent National Research Council (NRC) review of the Biological Opinions governing State Water Project and Central Valley Project operations was highly critical of these efforts, noting that “coordination does not equal integration<sup>1</sup>.” The Delta Science Program, supported only by state law and lacking any prescribed authority, will need to come up with clever approaches to this problem, perhaps with the help of the Delta Stewardship Council.

## **Resource Boom and Bust**

The second most obvious challenge for the Delta Science Program and the scientific adhococracy is finding ways to fund scientific activity. This mundane topic appears to have been dodged in the 2009 legislative package and left to the Stewardship Council. The historic pattern of boom and bust cycles, supported principally by borrowing money through general obligation bonds, or through narrowly-targeted state and federal appropriations (see below), is perhaps the worst possible approach to funding science. Science, including data collection, analysis, hypothesis testing, experimentation, and reporting, operates most effectively with modest, predictable investments over long periods of time. Rapid infusions of money produce rampant inefficiencies in the adhococracy, although the consulting firms and universities have shown a remarkable capacity for absorbing the money. Rapid declines in funding cause the scientific infrastructure to atrophy while the capacity generated during the boom either disappears or diverts to other problems and issues. Smoothing this out, even with less total resources, is necessary to improving Delta science to support decisionmaking.

## **Crisis Science**

It is of no surprise to anyone that during a crisis, the public demands action by their elected representatives and the agencies that work for them. During these crises, there is tremendous pressure to *do something* in order to at least generate the appearance that the problems are being addressed. This often translates into abrupt changes in priorities and budgets, with lasting impacts on the scientific

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<sup>1</sup> Available at <http://www8.nationalacademies.org/cp/projectview.aspx?key=49175>

infrastructure. There has been a great deal of crisis science in the Delta over the past few years. The crash of pelagic fishes and efforts to build a peripheral canal/tunnel is driving most of this today, but one major flood, or one earthquake, another drought, or one new idea can incite the legislature to herd the scientific community in unproductive ways<sup>2</sup>. The Delta Science Program and its Independent Science Board will have to find ways to help steer a middle course, being responsive to information needs, while supporting stability in scientific programs.

### **Sound Science**

A close colleague of mine has often cynically observed that when a politician calls for sound science, he or she really is looking for science that sounds good. And if it doesn't sound good, well, they ask for new studies until it does. For example, this year several powerful politicians decided they did not like the sound of the science used to inform the Biological Opinions governing Delta exports. As noted above, they called in the National Research Council in the hopes of getting a different answer. They didn't get it from the NRC, but federal district Judge Oliver Wanger gave them an answer that sounded good enough. These kinds of efforts to change the sound of science to meet political objectives are likely to increase, given current political tensions and weaknesses in the adhococracy. The Delta Science Program, and the Independent Science Board in particular, can play a major role in reducing the effectiveness of this approach by maintaining objectivity and independence, and, perhaps most importantly, having the willingness to engage in some of the messier problems of the Delta.

### **Combat Science**

The Delta has been embroiled in combat science for decades. Combat science usually involves the selective use of facts or analyses to advance the political or legal position of one group and/or to disadvantage the position of another. It is a necessary and unavoidable element of water management debates and will continue into the indefinite future. But combat science is not science, because the goal is principally to win, not to advance understanding through the objective collection of facts and the testing of hypotheses. The key challenge for the Delta Science Program and the Independent Science Board is to reduce both the amount of combat science and its role in decision-making. This will be a tall order. In the past year, the funding, sophistication and effectiveness of combat science has steadily increased. Indeed, the state and federal water contractors have decided to form their own science program to compete within the scientific adhococracy. Their first efforts indicate intent to wage combat science with great enthusiasm.

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<sup>2</sup> An example of this is the effort to place operable gates in the Delta. First proposed in 2008 by Metropolitan Water District, the Two Gates Project, which has yet to be fully vetted by the scientific community, was embraced by San Joaquin Valley politicians and, eventually, the state legislature as a way to increase exports from the Delta without harming Delta smelt. It is an early action in SB 1 and is the subject of Assembly Joint Resolution 38. The science support for this project is lagging far behind the political support, leading to appropriate, but politically unpalatable delays in its implementation.

## Science by Powerpoint

Science and the political processes that rely upon it operate at different time scales. Traditional approaches to developing scientific information involve slow, methodical collection of information, analysis of that information, writing it up for peer-review, revisions after review, and eventual publication. The demands of decision-making, particularly within the highly charged, rapidly changing environment of the Delta, ask science to skip the intermediate steps and provide quick answers based on professional judgment. In this environment, Powerpoint presentations have supplanted the peer-reviewed publication as representing the best available science. Today, an e-mailed Powerpoint presentation can be the basis of decisions that will have profound economic and environmental consequences. To the credit of the now defunct CALFED Science Program, the culture of Delta science has been changing, with an increasing emphasis on transparency and peer-review. The newly-constituted Delta Science Program and Independent Science Board will need to continue this effort to avoid the use of Powerpoint to “hypnotize chickens” in the Delta<sup>3</sup>.

## Blog Science

During the past year, as a consequence of the drought emergency and the multiple planning processes that are underway, Delta blogs have blossomed on the internet. Some are quite useful, like *Aquaforia* by the Water Education Foundation<sup>4</sup> that summarizes news and even other blogs. Most blogs are just places for people to express opinions, often with a complete mangling of the facts. These rarely have much impact and are not cited by mainstream media. However, some blogs, particularly those emanating from academic or research institutions, do have impact. Of particular concern are those blogs that claim to provide analysis of scientific or economic issues. These analyses are rarely if ever peer-reviewed or even presented in some forum that allows evaluation of the methods and data used. These have the capacity to affect decision-making under the illusion that they are actually based on science or rigorous economic modeling. Yet they are just blogs and nothing more. In reality, there is little that the Delta Science Program and the Independent Science Board can do about this problem other than remain an objective and trusted source of information and analysis and to continue to promote peer-review.

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<sup>3</sup> One of General Stanly McChristal's aides in Iraq noted in a recent New York Times article that the military uses Powerpoint to bore the press into submission. In this case, the aide referred to it as “hypnotizing chickens”. The same process is in full bloom today in the Delta, but we are hypnotized by the results and, worse yet, some are making decisions based on them.

<sup>4</sup> <http://aquaforia.com/>

## **Summary**

The drought emergency of 2007-2009, the implementation of the 2009 Delta legislation package, the on-going negotiations over the Bay Delta Conservation Plan, the schizophrenic court rulings over the Biological Opinions that govern export operations: all have led to a period of great uncertainty in the Delta scientific adhococracy. For the federal and state agencies working on the problems of the Delta, this has been a time of retrenchment, reorganization and adaptation to changing political and fiscal conditions. This has inadvertently created the opportunity for all types of alternative science—crisis science, sound science, combat science, powerpoint science, blog-science—to flourish. The challenge for the new Delta Science Program and the Independent Science Board is to help slow the proliferation of these alternative forms of science. At the same time, they will have to work closely with the Delta Stewardship Council to find ways to integrate, rather than merely coordinate agency activity, and to modulate the boom-bust cycles of funding. This is a daunting task, but given the new Delta legislation, it is, in my view, achievable.