

December 1, 2011

To: Richard Norgaard, Chair
Delta Independent Science Board

From: Leo Winternitz,
The Nature Conservancy

Subject: Response to Questions from the ISB

Below are questions the Delta Independent Science Board would like each organization to address in brief opening remarks (5 minutes each), followed by a more detailed open discussion. The questions are intentionally broad, so the Delta ISB does not expect answers to all of them during the meeting. Instead, the Delta ISB would appreciate hearing about examples (successful or not) and what lessons were learned. Please feel free to focus on the questions most directly applicable to the organization and constituents you represent. If time doesn't allow you to answer fully, please submit written comments (address below).

1. In what ways do you feel Delta science is a) meeting the challenges of water and environmental management in the Delta, and/or b) not meeting these challenges?

First, my definition of Delta Science: All knowledge we have accumulated to date from monitoring and research programs conducted by the private, state, federal, local and academic institutions regardless of their affiliations.

In many ways, Delta science is meeting the challenges to date. We have long term monitoring programs that assess important biological and physical parameters, we basically understand the fundamental concepts of how our system works; we have developed some predictive capacity of biological and physical parameters.

But in other areas, basic information is sorely lacking. There is controversy over the importance of X2 on populations of fish and other aquatic organisms. The courts are making the decisions on this now. We still do not have a sufficient understanding of the effects of particular contaminants in the estuary – either directly on the species or indirectly on their food supply. There is still uncertainty about the value of tidal marshes in the estuary – about whether and to what extent and how they could contribute to the food web, or to specific species directly – even as we prepare to embark on a multi-million dollar tidal marsh restoration project. There are questions on entrainment of fish at the fish facilities. Does entrainment at the fish facilities directly impact fish populations of specific species? In court, one side argues yes and the other, no. In BDCP, reducing entrainment is viewed as a conservation measure to help recover fish populations. The question is relevant because a new system is being planned to reduce entrainment and there is still major controversy about entrainment's relevance. And of course there will always be the perennial question – how much flow does the estuary need to sustain the populations of aquatic organisms that we value?

I recognize none of these questions are easy to answer. If they were they would have been answered many years ago. But that does not make them less relevant. What we (practitioners in the Delta, managers and the general public) need to know is not a full and correct answer, but rather the certainty of what we know and what we do not know about these questions. We also need to know how we can move forward with ecological and infrastructure improvements to the system in the face of this uncertainty. And I believe that is where the Delta Science Board can make a big difference.

What we need, I believe, is an ISB or panel established by the ISB who have no vested positions in this estuary, who are thoughtful and reputable, who would delve into supporting information, listen to arguments of respective scientists and other knowledgeable people then issue an opinion on the relative strengths of the arguments, describing the advantages or disadvantages of proceeding one way over another. They would describe the known's and unknowns of the particular subject they were working on, and bracket those subjects with certainty or uncertainty bars.

For example, let's take tidal marsh. There are some within the scientific community who say it is critically important to the recovery of species. There are others who question its value towards recovery primarily because of the lack of direct evidence of its value in this estuary. This question has been given considerable thought, through the DRERIP process for example. But for someone like me, it would be very valuable if the Delta Independent Science Board addressed this question directly through a synthesis of available information and summarize what we know and do not know with certainty brackets, providing guidance to restoration specialists and scientists on the kind of monitoring and research that should be conducted to address the unknowns and make more certain the knowns. This same kind of process could be used for other critically important questions that define how we manage or should manage the estuary. (Another example is the importance of impact of predation on salmon in the Delta).

2. What factors have led to science being effective in addressing today's critical issues, and what factors have led to it being ineffective?

A primary factor is the availability of resources. Without sufficient resources, it is difficult to do the work.

Lack of follow through on important processes is another important factor. For example, there has been a lack of follow through on efforts to establish ecological indicators for goals of the ERP. Everyone knows that quantitative performance indicators are needed, however they are yet to be established.

3. What are the emerging critical issues in the Delta that science will need to have addressed a decade from now?

One of the most critical issues is the value of wetlands restoration – and specifically tidal wetlands. Millions of dollars will be spent on restoring agricultural and other lands to tidal wetlands through the biological opinions, BDCP and other efforts. A basic question is what are our specific expectations from this restoration in the Delta and Suisun Marsh? Could wetlands

attract non-native species that prey on or out-compete native species, making these areas inhospitable to native species? In certain areas? Under what kind of conditions? I understand that in this estuary we have very little direct information on this subject.

I think science also needs to tell us how to create these (and other) habitats. The science of ecological restoration of the varied habitats in the delta needs to be advanced.

I think we also need to be able to better evaluate the ecological value of different future configurations of habitats for both terrestrial and aquatic spp.

There needs to be a more explicit incorporation of agriculture into our considerations of habitat. What habitat elements can ag provide and where are the opportunities for increased compatibility?

Another important question is the effect of a warmer climate and sea level rise on valued species that we are now trying to protect, such as the various races of salmon and steelhead. In essence, what should we be preparing for to help ensure their survival?

4. What should we be doing now and over the next few years to ensure these scientific issues are addressed?

Elevating the importance of science (monitoring and research) to that of a critical program level and providing the resources that go with that importance. Also – asking the kinds of questions you are asking today – but following up on the appropriate answers.

5. To what extent is poor or incomplete communication of science an issue in the Delta? How can and how should the communication of science be improved?

Communication of science is a critical issue in the Delta and elsewhere. Without it almost renders the science activities meaningless. Also see my answer to No. 1.

I think the calfed and state of estuary conferences have helped as has the journal SFEWS

6. Should separate and distinct roles be assigned to different sectors of the science community in the Delta (e.g., state agency scientists, academic scientists, NGO scientists, federal agency scientists, consulting firm scientists, water contractors, and municipal utility districts)? If so, what are these separate and distinct roles?

I do not think separate and distinct roles can be “assigned”. Different sectors have different interests and will use their resources to naturally pursue these interests. I do think the ISB should be taking a broad look at the science practiced in the Delta and help ensure that all the critical areas are being covered by some entity. The ISB should ensure that the science being practiced is implemented through the scientific method and that results are peer reviewed to the maximum extent possible. The ISB should also take on the responsibility of disseminating results or at least ensuring that results are widely disseminated.

7. The legislature mandates the Delta ISB to review and assess science programs related to the Delta, covering each science program at least every four years. The Delta ISB would appreciate your advice on how to define a science program and which of the programs merit different levels of reviews.

How to define a science program? This takes some thought. Science programs range from large, formal programs that are estuary wide and are mandated by a regulatory agency (the Interagency Ecological Program, for example) to smaller informal programs that conduct monitoring on private property to assess the effects of a restoration project (TNC's Oneto/Denier property, for example). Then there are up and coming programs that promise not only research and monitoring, but also the practice of adaptive management. The Bay Delta Conservation Plan is an example, the State and Federal Contractors Water Authority is another.

Perhaps the first thing to do is assemble a list of all science programs (large and small) conducted by all institutions (state, federal, local agency, university and private) covering aquatic and terrestrial habitats and from that list assess how best to organize and select, from established criteria the most appropriate ones for ISB review.

Thank you for the opportunity to submit these comments.

Please submit written comments to:

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Thank you.