Delta Independent Science Board and Delta Plan Interagency Implementation Committee

Science Needs Assessment Pre-Workshop Discussion Seminar Series (Part 4 of 4) A Summary

September 9, 2020

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Background

The Delta Plan Interagency Implementation Committee (DPIIC) and the Delta Independent Science Board (Delta ISB) are planning a Science Needs Assessment Workshop to explore the rapid environmental change facing the Delta relative to climate and other change impacts. The goal of the workshop is to develop a science needs assessment that will inform a long-range science strategy for the Delta. To help make progress with the science needs assessment, a four-part discussion seminar series was designed to generate dialogue around key questions that serve as the workshop's foundation.

The fourth part of this series occurred on September 9 and was facilitated by Dr. Mark Lubell, professor at University of California, Davis and director of the Center for Environmental Policy and Behavior. Amanda Bohl of DPIIC shared the origins and purpose of the science needs assessment followed by a summary of the three previous discussions in this series. She highlighted climate change impacts in the Delta, discussion points from Delta managers on what science they need so they can prepare for those impacts, and thoughts from Delta scientists about how science programs are preparing for future impacts. Three panelists: Ms. Darcy Austin, science director for the State Water Contractors, Dr. Carl Wilcox, Delta advisor for the California Department of Fish and Wildlife (CDFW), and Mr. Joaquin Esquivel, chair for the California State Water Resources Control Board, addressed the following questions to provide their experienced perspective on the changes needed on Delta science governance to prepare for rapid environmental change:

- How would you define science governance?
- What are the main challenges you see for science governance for the Delta science enterprise to address management needs in light of rapid environmental change?
- What are potential solutions to the challenges that you identify?

Panelists Discussion Summary

Joaquin Esquivel opened the panel discussion: Science governance is less about the decision-making structures around science, and more about the framework under which we collectively work within a science enterprise. If we look at the State Water Resources Control Board for example, the Board doesn't heavily fund science, but we are dependent on science synthesis and our decisions are influenced by scientific activities. Science itself is just a process where we can test hypotheses to help us approach difficult decisions throughout the Delta landscape. So, science governance is the science community participating in the science enterprise by monitoring, collecting data, testing hypotheses and then disseminating the information in an un-biased manner to engender trust within our science governance system.

Results from this system impact operations, regulations, and ultimately how we are going to adapt to the rapidly changing climate. We need the science enterprise to bring forward information for managers and decision-makers so everyone is operating with a common understanding of the landscape. The five members of the State Water Resources Control Board are very dependent on a reliable science governance system. Considering science governance in today's discussion reminds us that the science we do, not just in the Delta, but in the entire watershed is incredibly important.

The challenges facing science governance can at first seem nebulous, especially when we try to dig into issues deeper than the general need for collaboration. Of course, we need to collaborate, and we have done well to incorporate scientific work into the numerous agencies within the Delta. They are all contributing to expand our knowledge of the landscape. The challenge that lies beneath is growing our progression towards synthesizing information and storing information within accessible portals. This can be accomplished under the framework set up by The Open Water Data and Transparency Act. Knowing who has what data can strengthen collaboration across agencies and inform further discussions around science governance.

Darcy Austin began by briefly introducing the State Water Contractors, which is a non-profit association made of 27 water agencies who work to provide clean affordable drinking water to 27 million Californians and irrigation for 750,000 acres of California farmland. Our science program invests about $2.4 million annually to meet our commitment to science-based decision-making for Delta management.

Science governance in the Delta is a nexus of our people and our science practices. At this nexus lives our scientists, water managers, decision-makers, administrators of science, and stakeholders with our fundamental science practices, data analysis, reporting, synthesis, and communication. It also includes our organizations, culture,

the differences between or among the organizations, and finally funding sources, and funding allocation and how all that meets to support better decision-making and management in our system. Together all this levels up to what we call the Delta enterprise. Part of the culture of the enterprise includes how we work together and how we do not work together, and then what gets left behind when we don't work together and support common goals, which ultimately affects how we advance our understanding for the benefit of the Delta, its species, and water supply reliability.

Austin highlighted three challenges that Delta science governance faces. First, we work in silos and are balkanized in the system. The people who work in the Delta are passionate but identifying common goals and working outside our agency mandates will require a big leap of faith. Second, we don't necessarily agree on a set of common goals and objectives. In this regard, the Delta Science Plan and Science Action Agenda are critical guiding documents. Finally, funding availability is an ongoing challenge. Funding in the system mainly comes from state and federal water projects, Proposition 1, and funding that supports infrastructure for adapting to climate change.

Carl Wilcox described how science governance operates on multiple scales: some science is necessary to determine whether regulatory requirements are being met and if they are addressing the regulated problem. This type of science operates within discreet decision venues like the water boards, CDFW, or federal agencies and can be limited. The alternative broader context of science in the Delta includes understanding how systems ecologically and sociologically work. We have documents like the Delta Science Plan and Science Action Agenda and now this Science Needs Assessment that should call for the broader science that needs to be done.

Some important issues in the Delta are not directly funded and thus not thoroughly researched because they do not fall into current regulatory requirements. An example is contaminants in the Delta. Even Proposition 1 funded water quality studies have not prioritized studying contaminants because other priorities related to regulatory requirements are put first.

So, when we consider the issues of rapid environmental change, we must understand and define the relevant management questions, and critically, develop a set of common goals or a shared vision for the science we need. However, it is important to remember that creating shared objectives and goals is a difficult and long process. Currently, there is a lot of science being done in the system, and it is not easy to keep track of. We need to be clear about what our science programs are working on, whether that is topic specific or broad, so we know what work still needs to be done and what to include in our common goals. If we have an agreed-upon specific plan for implementing a science program in the Delta, we have greater

power to collect the information we need to make decisions overtime in an adaptive management framework.

A key step towards solving these issues is building up mechanisms for interagency coordination. Venues for coordination already exist in the form of engagement through the Delta Plan Interagency Implementation Committee. To advance the Delta science enterprise, coordination needs to remain a priority as we address broader funding needs and set management priorities.

Mentimeter Questions

There was a total of 63 participants during this seminar. Participants engaged with the discussion hosts and panelists by sharing the information and feedback presented below. Answers shown for questions 2 and 4 have been modified for brevity and repetition.

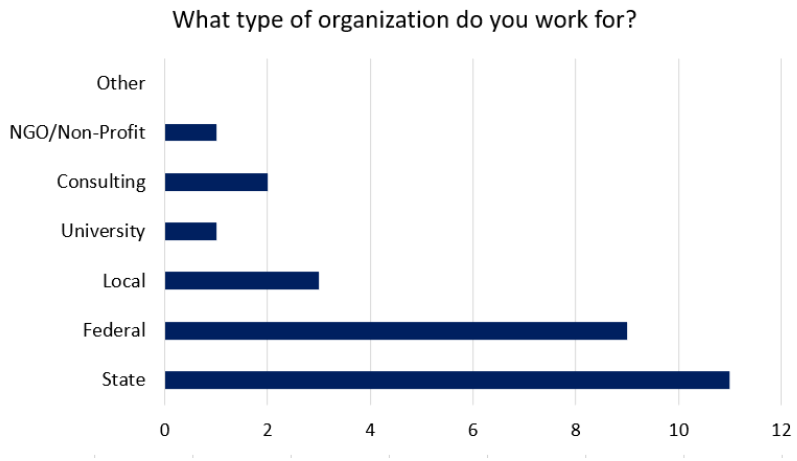

Figure 1. This question was used to learn the demographic of participants. Most participants were affiliated with state organizations. N = 25.

Participant responses to question 2 are below: Please define “science governance”. N = 23.

- Having a plan for data collection and interpretation
- Science informed government to regulate natural resources
- A way to solicit, organize, prioritize, and fund scientific research and monitoring
- Leadership and oversight of scientific questions and studies done without conflicts of interest
- Process for deciding the most effective science to pursue in addressing priority management questions
- Policy and procedure for data collection and peer review to ensure reproducibility and science quality
- Institutional structure

- How we are organized
- Structure, institutions, principles to conduct science
- A group of people that use science to inform policy decisions
- Those who may oversee what science is needed
- Establishing priorities, goals, and endpoints for science
- The organization of entities responsible for managing science
- An infrastructure intended to define objectives tasks and then address them
- Entities setting the direction for and facilitation of science, research, and monitoring
- Means by which decisions are made to disburse resources for the purpose of carrying out science
- Prioritization, goals, and objectives for knowledge supporting sustainable management resources
- A body of like-minded individuals who look for the integration of science across disciplines for a topic or for a geographic region
- Orchestrating people and organizations to deploy effective monitoring and research using available resources for continuing support and dialogue
- The rules, structures, and processes for deciding how science is collectively produced, shared, and integrated across a group or decision-making system
- Policies and protocols for effective oversight and direction of scientific research, reporting synthesis to advance understanding and support decision-making
- A process-based system through which managers and scientists can work together to produce scientific outputs that meet managers needs when making decisions

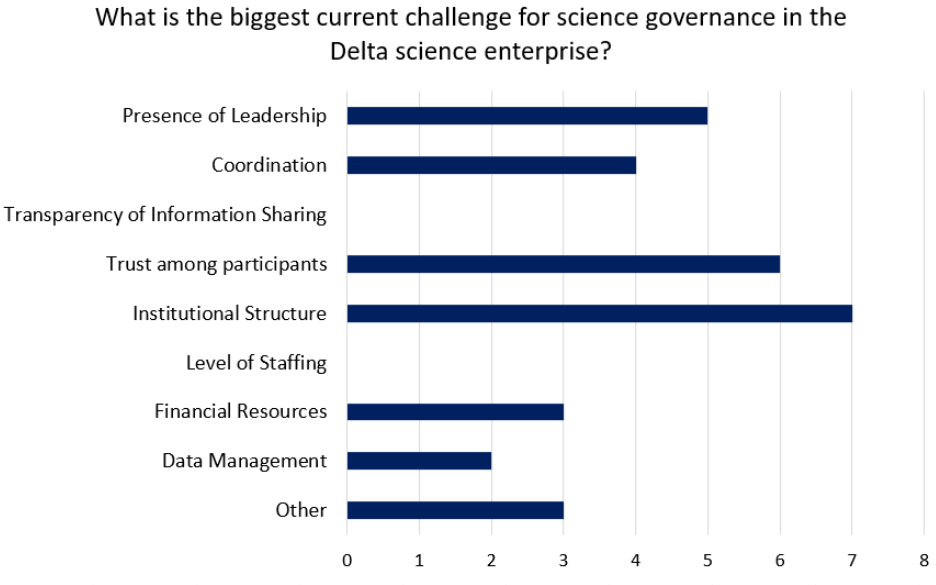

Figure 3. Participants chose what they believed was the biggest challenge for science governance in the Delta science enterprise. N = 30.

Participant responses to question 4 are below: How would you address the science governance challenge that you identified in question 3? N = 19.

- Presence of Leadership
  - Scientists not politicians provide leadership and direction
  - Marketing the need for science governance (in 2 pages or less) to current and newly appointed leaders to gain buy in
  - A leadership group of scientists that has control of funding to some extent
- Coordination
  - Science tracker to improve coordination along with topic specific science plans
  - Campaign for a combined state-federal estuary program to provide top-level leadership, state and federal funding, and a specific set of agreed management & science goals
  - Greater coordination may require legislation directing, consolidating, or creating agency(s)
- Trust among participants
  - Increased collaborative science studies among organizations
  - Engage staff in trust building and other types of training (e.g. interest-based negotiations)
  - Trust. This could be improved through improved leadership and improved institutional structures and procedures. The factors in the previous Mentimeter question are inter-related, as are the solutions
  - Interagency collaborative integrated modeling venue that supports “ground up” forms of communication
  - More focused discussion on governance issues at the highest levels
  - Acknowledgement that current governance is not effective so that we can get some buy in on how to move forward
- Institutional structure
  - Not sure there is a solution. Each agency has a set of goals it is obligated to address, and it is often difficult to align those
  - Leadership
  - Convene state-federal summit to propose and adopt collaborative science governance infrastructure for participating agencies and stakeholders
  - Greater commitment across agencies to the Delta Stewardship Council’s One Delta/One Science. Agencies need to commit their own resources to leverage across institutional silos
- Financial Resources
  - The California legislature needs to provide more funding to the Delta Stewardship Council for science
  - Specifically assign high level managers the task of securing additional funding for science efforts. Need for reliable funding to maintain knowledgeable and effective staff
- Data management

    - Follow institutional policy and procedure and plan for it in project budgets/proposals
- Other
    - Well defined processes with clear ground rules for civil discussion as well as clear charters and actionable outcomes

Discussion Seminar Q & A

Question 1: A lot of people mentioned leadership today, both our panelists and participants through Mentimeter, so what exactly is leadership in the Delta science enterprise and who provides it? Where does it come from in your opinion?

Austin: In the Delta, we operate in a decentralized system so leadership comes from many places including within agencies and through collaborative interagency teams. Leadership doesn't always come from the top, it can come from the bottom when folks, "agents of change", can focus the work towards important goals. Finding ways to collaborate outside of agency mandates or pushing towards a collective definition for adaptive management is work being done at the bottom, demonstrating that we are all leaders. Therefore, how can we continue that type of leadership?

Esquivel: We need to be mindful of developing leaders, and not only regarding current leaders for current problems, but leaders for years to come. There are bright people coming out of universities who have been exposed to discussions about the Delta for decades, and they will be the ones working 5, 10, 15 years in the future. They can help bring clarity to Delta issues, help continue our rigorous science processes and, help make science more accessible to the public. So, being mindful of the pipeline that produces leaders in our water and science spaces is important.

Wilcox: I've seen an influx of incredibly talented young scientists within mine and other agencies recently. They come with a great level of scientific thought and initiative, and their desire to collaborate is impressive. So, it is key to encourage their leadership development and create an environment where they have the capacity to exercise it.

Question 2: There were many comments about the need to incorporate scientists, as well as decision makers into the governance. It's often challenging for scientists to understand decision-makers and vice versa. How do we improve discussion across these groups, so that we move forward on this issue together?

Wilcox: Essentially, I'd say, keep it simple. The Delta is a messy place to work, so, inherently it is very difficult to synthesize results and produce a single answer for decision-makers. It could be helpful to release consistent and timely reports focused on valuable pieces of knowledge, including any current trends, from the science being done in the Delta. Short annual reports that give people an understanding of what happened in the past year in the context of what happened in the prior year.

Esquivel: We should consider how we explain scientific uncertainty and still move forward with decisions or actions rather than let that uncertainty hold us back or water down the actions. It is a matter of communicating uncertainty so that folks can reach a level of understanding where they feel comfortable taking actions even when uncertainty is there in the science.

Austin: The Delta Science Program does a good job with the State of Bay-Delta Science because it can communicate to multiple audiences. The report helps connect scientific literature to decision-makers through simple and clear communication.

Question 3: There is a need for scientists to understand management needs, and for managers to understand what science is capable of, what data we can collect, how expensive it is, and what effort is required. So, improving communication on that level would be great. However, I also wanted to point out that in some cases, it is difficult for managers and scientists to work together because of the desire to have scientists be objective, rigorous, and transparent. But, some of the best science comes out of scientists who are able to work directly with mangers and I think better science could be done if there was improved communication between scientists and managers. Can you share your opinions on this?

Wilcox: We look to engage as much as possible where there are opportunities to develop directed actions (e.g., Collaborative Science and Adaptive Management Program (CSAMP)). In science funding, we operate a competitive grant program for which the grant notice clearly identifies our priorities, which often link to the Science Action Agenda. Improved communication between managers and scientists can come from science planning that reflects the needs of both parties.

Esquivel: Communication between managers and scientists is critical because without it we run into misunderstandings that can sow distrust or lead to missed opportunities.

Austin: A lot of managers are scientists or have a science background, so maybe the divide is not as large as we think, but different agencies can handle the distinction differently which is where things get tricky. There is a natural bridge there and we may just need to explore nuances to find some better solutions.

Next Steps

The Science Needs Assessment Workshop will be on October 5 and 6.

Key Links

- Workshop and Virtual Discussion Series Flyer
- Science Needs Assessment Pre-Workshop Discussion Part 1 Recording
- Science Needs Assessment Pre-Workshop Discussion Part 2 Recording
- Science Needs Assessment Pre-Workshop Discussion Part 3 Recording
- Science Needs Assessment Pre-Workshop Discussion Part 4 Recording

- Briefing Paper for the 2020 Science Needs Assessment Workshop