

Improving Adaptive Management in the Delta – A Review by the Delta Independent Science Board

Summary: Drs. John Wiens, Jay Lund, and Vince Resh, Delta Independent Science Board members, will brief the Council about the Board's recently completed review report, *Improving Adaptive Management in the Sacramento-San Joaquin Delta*.

Background

The Delta Independent Science Board (Delta ISB) was established by the Delta Reform Act of 2009 to provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Delta through periodic reviews of each of those programs. The Act also states that the Delta ISB "shall submit to the Council a report on the results of each review, including recommendations for any changes in the programs reviewed by the board" (Water Code §85280(a)). The Delta ISB is structuring its reviews by themes.

The theme for this review is how adaptive management is perceived and used in the Delta and how it might be applied more efficiently and effectively. The report identifies impediments to adaptive management and makes recommendations for incorporating adaptive approaches to improve management of the Delta and its resources.

As part of the review process, the Delta ISB based its assessment of adaptive management on a review of pertinent scientific and management literature, responses from a questionnaire used to develop a quantitative understanding of how adaptive management is used in the Delta, in-person interviews conducted with 12 individuals from State and federal agencies, consultants and special interests directly involved in managing the Delta and its resources, and presentations delivered to the Delta ISB about how adaptive management is currently being practiced in the Bay-Delta region. This multi-pronged approach was used because so little is documented about how adaptive management is actually conducted in the Delta. Moreover, the Board felt that evaluating impressions and perceptions of adaptive management by the professionals tasked with management in the Delta might reveal needs and solutions to adaptive-management implementation and challenges.

A subset of Delta ISB members participated in the literature reviews, interviews, and wrote the first drafts of the report. These drafts were revised in response to comments received by individual Delta ISB members and from a four-week public comment period that yielded five sets of comments. The final review report was completed in January 2016.

Recommendations

The report offers several recommendations to overcome the challenges of adaptive management and move it from a topic of conversation to a common and useful aspect of management programs and actions for the Delta.

1. **Convene a workshop or review panel to determine how to coordinate and assist adaptive management in the Delta.** The Delta Stewardship Council should assemble an appropriate mix of experts, agency leaders, resource managers, practitioners, scientists, stakeholders, and regulators to consider the composition and roles of a coordinating team that will advance adaptive management in the Delta and implement the recommendations of this report.
2. **Support adaptive management with funding that is dependable and flexible.** Adaptive management in the Delta will not become a reality unless the paucity and unpredictability of funding for the process are remedied. Radically different and more effective ways to fund adaptive management are needed.
3. **Design and support monitoring.** Design monitoring protocols to fit the needs of management. Set the timing of measurements to correspond with the dynamics of important ecosystem processes. Monitoring should be conducted in coordination with a data-management system to make the information readily accessible for analysis and sharing.
4. **Integrate science and regulations to enhance flexibility.** Rigid regulations and permitting requirements inhibit the flexibility required to change directions quickly when it becomes apparent that management outcomes are not as planned. Regulatory and permitting agencies should develop innovative ways to incorporate flexibility into regulations and permits.
5. **Develop a framework for setting decision points or thresholds that will trigger a management response.** The most vexing issue in adaptive management is determining when conditions should trigger a formal re-evaluation or change in practices. To counter reluctance to change which may delay adaptive responses (especially if the system is changing slowly), such decision points should be included in adaptive-management plans at the outset.
6. **Use restoration sites to test adaptive-management and monitoring protocols.** Adaptive management should be part of habitat-restoration projects envisioned in California EcoRestore, so that these projects can act as learning laboratories for improving adaptive management.
7. **Capitalize on unplanned experiments.** Unexpected events (e.g., extreme droughts, large floods, levee breaks) or necessarily quick management decisions (e.g., construction of salinity barriers, cold-water releases from dams) provide opportunities to learn and test adaptive management. Capitalizing on these opportunities requires having contingency plans, monitoring protocols, and

modeling capability in place and identifying funds and staff that can be shifted to respond.

8. Recognize when and where adaptive management is not appropriate.

Adaptive management is not a panacea to be used in all situations. Sometimes, adaptive management may be inappropriate or need to be greatly streamlined. In other situations, sufficient support from federal, State, and local agencies may be lacking. In these circumstances, attempts to implement adaptive management may not be effective, and substantial changes in expectations and a refocusing of adaptive management attention and even legislation may be needed.

Decisions about whether or how to use adaptive management should be made thoughtfully, after careful consideration of the alternatives.

Next Steps

In its report, the Delta ISB recognizes that adaptive management should not end with this report and envisions continuing the Board's involvement in several follow-up activities:

1. Work with the Delta Stewardship Council and others as they deliberate how best to implement Recommendation 1.
2. Meet with the individuals and programs who provided the material for our review to discuss our findings, how to address the impediments, and how to progress from words and plans to adaptive actions. These discussions will provide additional input to the deliberations of Recommendation 1.
3. Present and discuss these findings and recommendations to multiple audiences (e.g., Bay-Delta Science Conference, a perspective paper in *San Francisco Estuary and Watershed Science*).
4. Assist the Delta Science Program, the Delta Conservancy, the Collaborative Adaptive Management Team, the Public Policy Institute of California, and others in organizing an Adaptive Management Forum, including local and invited experts and multi-perspective panels, to focus on the science that is needed to do adaptive management in a system as complex as the Delta. Individuals involved in other large projects, such as the Everglades or Glen Canyon Dam, will be included.
5. Work with the Delta Science Program to track progress on the implementation of adaptive management and the recommendations presented in this report.
6. The most compelling way to counter perceptions that adaptive management is too expensive or does not yield real benefits may be to document costs and benefits of programs where the process has been applied. An economic analysis of the return-on-investment of adaptive management, coordinated through the Delta Science Program, should be considered.

Agenda Item: 12
Meeting Date: February 25, 2016
Page 4

List of Attachments

Attachment 1: *Improving Adaptive Management in the Sacramento-San Joaquin Delta*

Contact:

Dr. John Wiens
Delta Independent Science Board

Phone: (916) 445-5511