

RESEARCH

Challenges Facing the Sacramento–San Joaquin Delta: Complex, Chaotic, or Simply Cantankerous?

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ABSTRACT

Freshwater is a scarce and precious resource in California; its overall value is being made clear by the current severe drought. The Sacramento–San Joaquin Delta is a critical node in a complex water supply system that extends throughout much of the western U.S. wherein demand is exceeding supply. The Delta also underpins a major component of the U.S. economy, helps feed a substantial part of the country, is a unique and valuable ecological resource, and is a place with a rich cultural heritage. Sustaining the Delta is a problem that manifests itself in many dimensions including the physical structure of the Delta, the conflicting demands for water, changing water quality, rapidly evolving ecological character, and high institutional complexity. The problems of the California Delta are increasingly

complex, sometimes chaotic, and always contentious. There is general agreement that current management will sustain neither the Delta ecosystem nor high-quality water exports, as required under the Delta Reform Act, so there is a renewed urgency to address all dimensions of the problem aggressively. Sustainable management of the Delta ecosystem and California's highly variable water supply, in the face of global climate change, will require bold political decisions that include adjustments to the infrastructure but give equal emphasis to chronic overuse and misuse of water, promote enhanced efficiency of water use, and facilitate new initiatives for ecosystem recovery. This new approach will need to be underpinned by collaborative science that supports ongoing evaluation and re-adjustment of actions. Problems like the Delta are formally "wicked" problems that cannot be "solved" in the traditional sense, but they can be managed with appropriate knowledge and flexible institutions. Where possible, it is advisable to approach major actions incrementally, with an eye toward avoiding catastrophic unexpected outcomes. Collaborative analyses of risks and benefits that consider all dimensions of the problem are essential. Difficult as the problems are, California has the tools and the intellectual resources to manage the Delta problem and achieve the twin goals of a reliable water supply and an ecologically diverse Delta ecosystem.