**Review and Recommendations of Bifenthrin Mixtures in the Sacramento – San Joaquin Delta for a Changing Future**. E. Martinez, California Sea Grant, University of California San Diego, La Jolla, CA, T. Lee, Delta Science Program, Delta Stewardship Council, Sacramento, CA, R. Klopfenstein, Delta Science Program, Delta Stewardship Council, Sacramento, CA

The Sacramento – San Joaquin Delta supports hundreds of plant and animal species and supplies water to farmlands and to millions of California residents throughout the state, making it one of California’s most valuable water systems. Its use by and location near urban and agricultural areas makes it vulnerable to contamination. Evidence has revealed that organisms that live within the Delta have suffered negative effects (e.g., stunted embryonic and larval development, population decrease, and organism die-offs) of anthropogenic stressors and contamination. Contamination in the form of nutrients (N and P), synthetic inorganic and organic pesticides/herbicides, and heavy metals have all been detected in the Delta. Evidence has also shown the synergistic and/or additive effect between different types of contaminants, which in some cases, increases toxicity within several vulnerable species (e.g., Delta Smelt and Chinook Salmon). We performed a literature review and inquired with experts to identify contaminants of major concern and the gaps in research and management. Bifenthrin, a synthetic pyrethroid heavily used in urban and agricultural areas for pest management, was identified to have a significant risk to sensitive species. Bifenthrin on its own has been linked to negative health effects of several organisms, however, the effects of bifenthrin mixed with other contaminants increase toxicity. We have identified gaps in research and management and developed recommendations to address those gaps which include a comprehensive monitoring and assessment program, develop better linkages between water quality regulatory compliance and research, adaptive management, and assess data use in management decisions.