

## Effects of Endocrine Disrupting Chemicals on *Menidia beryllina*, a Resident Fish in the Sacramento-San Joaquin Delta

Bryan Cole, University of California, Davis, [bjcole@ucdavis.edu](mailto:bjcole@ucdavis.edu)

Susanne Brander, University of North Carolina, Wilmington, [snbrander@ucdavis.edu](mailto:snbrander@ucdavis.edu)

Richard Connon, University of California, Davis, [reconnon@ucdavis.edu](mailto:reconnon@ucdavis.edu)

Gary Cherr, University of California, Davis, [gncherr@ucdavis.edu](mailto:gncherr@ucdavis.edu)

A diverse and growing number of endocrine disrupting chemicals (EDCs) are known to be present in the waters of the Sacramento-San Joaquin (SSJ) Delta. These EDCs can come from natural sources or from a range of anthropogenic sources including agricultural and urban runoff, as well as in treated wastewater effluent. We have developed *Menidia beryllina*, the Inland Silverside, as a model resident species for studying effects of EDCs on fish, and ultimately on fish populations, in the SSJ Delta and other impacted waterways in the United States. Currently there is only a limited understanding of the impacts of exposure to combinations of EDCs, particularly when estrogenic and androgenic EDCs are mixed. As such this study focused on the biological response of *Menidia* to natural SSJ Delta waters throughout the seasons. We have quantified the expression of a suite of endocrine-related response genes and of choriogenin protein levels, using a *Menidia*-specific antibody to choriogenin, in wild populations around the Delta. Similar assays have also been performed on naïve juvenile fish exposed to SSJ Delta water in one-week long flow-through exposures at two sites spread throughout the seasons. These latter experiments will enable direct comparison of the endocrine response in exposed fish to that in controls which have only experienced EDC-free water. This study will provide time-integrated mechanistic data on the effects of EDCs on fish throughout the SSJ Delta, and should ultimately be able to inform the extent to which EDCs are responsible for the pelagic organism decline in the SSJ Delta.

**Keywords:** Endocrine disrupting chemicals, fish, SSJ Delta

Tuesday, October 16, 2012: Room 306, Organic Contaminants (II) – Order 10