

# FACT SHEET

## Occurrence of Current-use Pesticides in Suisun Bay and Potential Effects on Phytoplankton, 2012 (14-16)

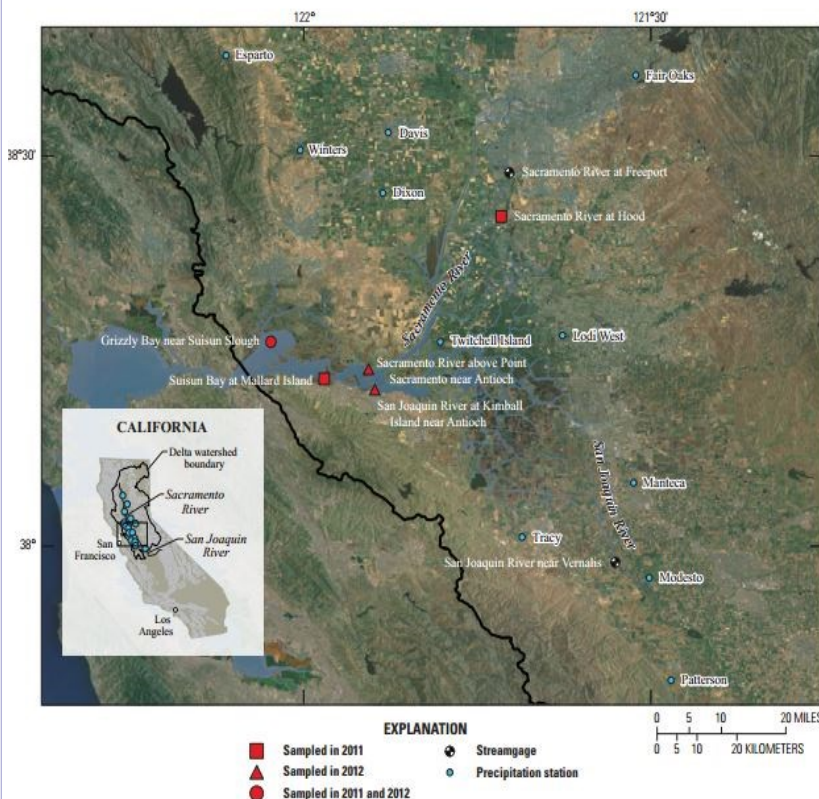
<b>Deliverables:</b> Quarterly reports and a USGS Data Series report	
<b>Status:</b> Data Series report was published August 23, 2013	
<b>Primary Investigator:</b> James Orlando	<b>Recipient Organization:</b> U.S. Geological Survey
<b>Project Cost:</b> \$290,000	<b>SFCWA Funding:</b> \$200,000
<b>Partners:</b> AQUA-Science, Michael L. Johnson IIc	

## Introduction

Suisun Bay is an area identified as critical habitat for the threatened Delta Smelt. Several important changes in the pelagic food web of this area have been documented over the last two decades indicating that food for Delta Smelt and other threatened fishes is in short supply. There is evidence that primary productivity is inhibited in Suisun Bay. Contaminants such as ammonium and current-use pesticides are possible sources of this inhibition.

## Objective

The objectives of this study are to characterize the mixtures of current-use pesticides present in Suisun Bay waters, determine their primary geographic sources, and assess the potential toxicity to phytoplankton in collaboration with toxicologists at AQUA-Science



Locations of sampling sites in the Sacramento-San Joaquin Delta and Grizzly Bay, California.

# Results

Two successful field seasons were conducted in spring 2011 and spring 2012 and detailed results of pesticide analyses were published online August 23, 2013 in a USGS Data Series report which is available at <http://pubs.usgs.gov/ds/779/pdf/ds779.pdf>. All data contained in this report are also publicly available from the USGS National Water Information System (NWIS) database at <http://waterdata.usgs.gov/ca/nwis>. Substantial numbers of laboratory and environmental samples were analyzed for pesticides in support of TIE development work. Final results from these laboratory experiments are pending.

## Conclusions

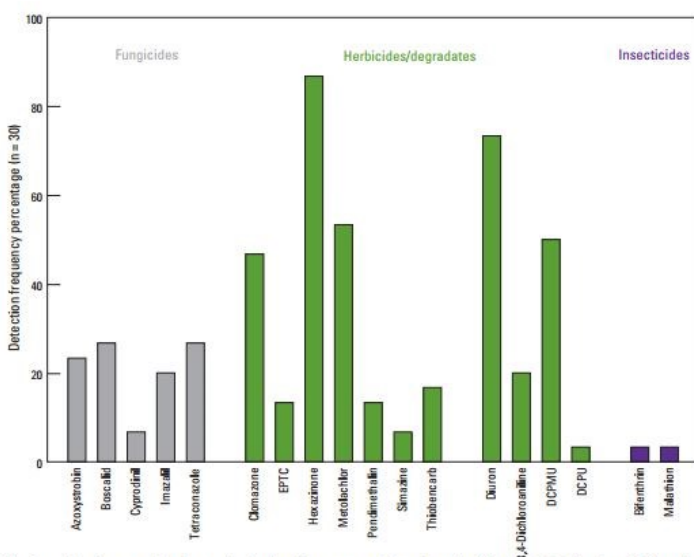
1. Complex mixtures of dissolved, current-use pesticides and their degradates are present in both Suisun and Grizzly bays during the spring months.
2. Pesticide concentrations varied in response to changing hydrologic conditions and rainfall.
3. Pesticide concentrations were generally below established water-quality benchmarks, however little is known about the toxicity of mixtures of the detected pesticides.

## Relevance

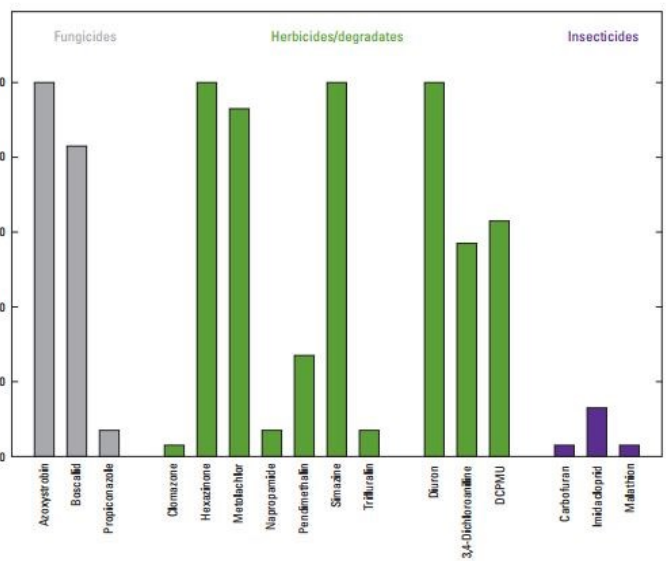
This project specifically addresses the question of whether phytoplankton primary productivity in Suisun Bay is being inhibited by the presence of current-use pesticides. The project also produced weekly data on the concentrations of over 90 current-use pesticides and pesticide degradates entering the Sacramento/San Joaquin Delta. Almost no data of this type are available for many of the compounds analyzed in the study.

## Next Steps

This project is set to end February 28, 2014. Additional collaborative work with AQUA-Science toxicologists to verify and publish the phytoplankton toxicity results would be a logical next step and would be of benefit to San Francisco Bay/Delta stakeholders.



Pesticide detection frequencies from sites in the Sacramento-San Joaquin Delta and Grizzly Bay, California, during spring 2011.



Pesticide detection frequencies from sites in the Sacramento-San Joaquin Delta and Grizzly Bay, California, during spring 2012.