



# COMMENTS TO SCIENCE EXPERT PANEL

SWRCB/SCCWRP STUDY ON THE *CERIODAPHNIA DUBIA* REPRODUCTION TEST

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**AGRICULTURAL STAKEHOLDER REPRESENTATIVE**



# MONITORING FOR AG IMPACTS



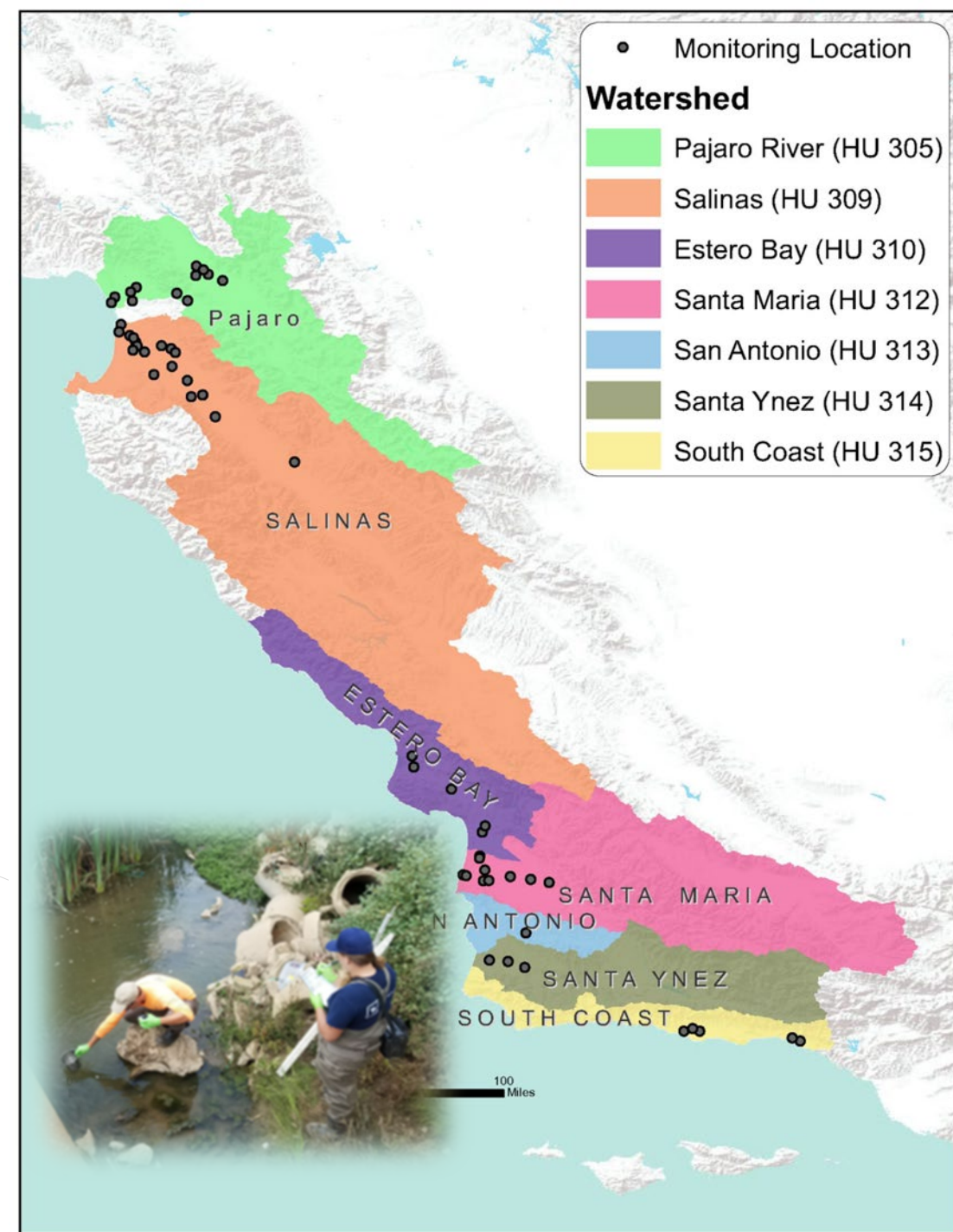
Eroded soils  
(e.g. Turbidity)



Fertilizers &  
soil amendments  
(e.g. Nitrate, Phosphate)

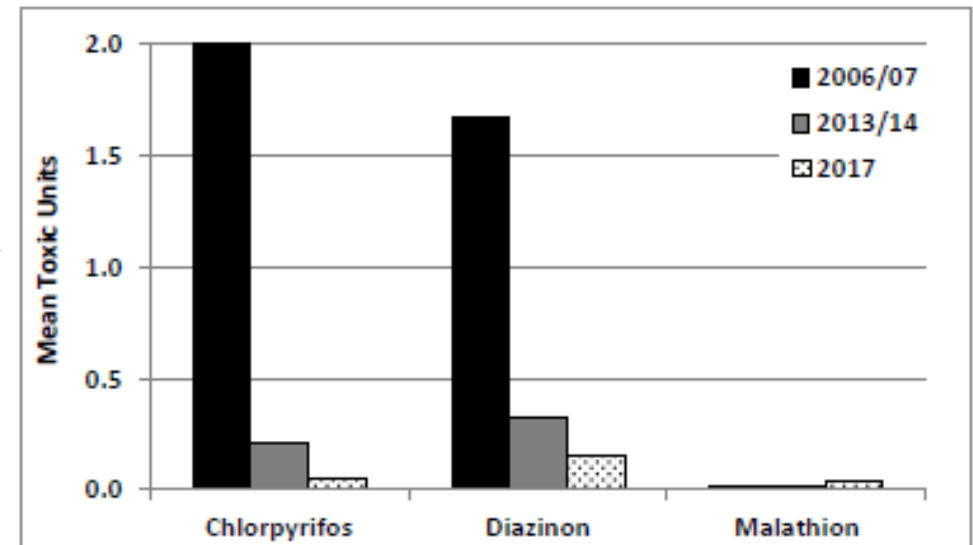
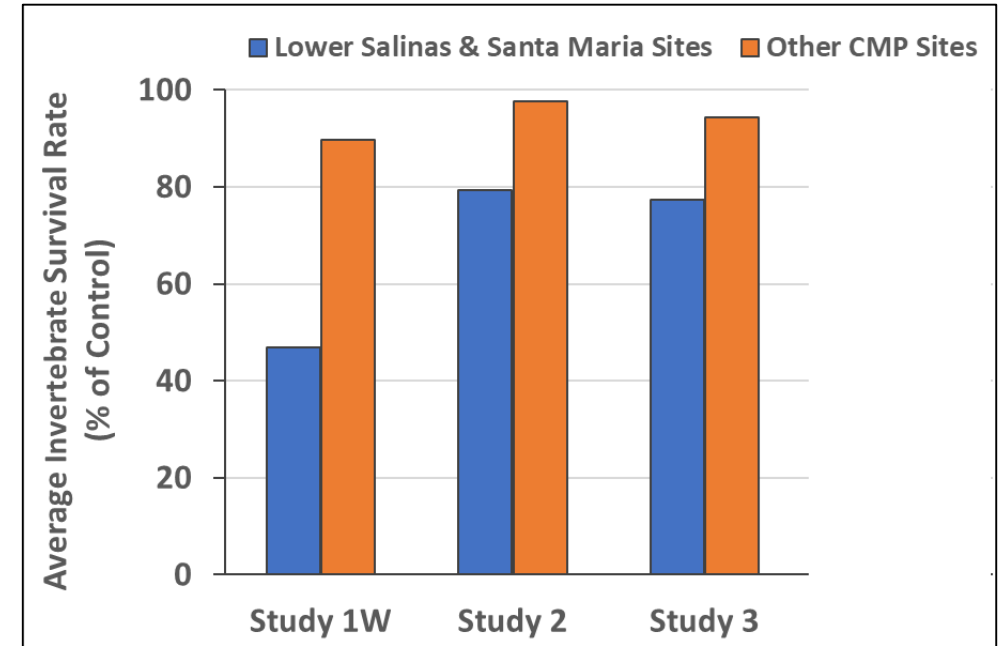
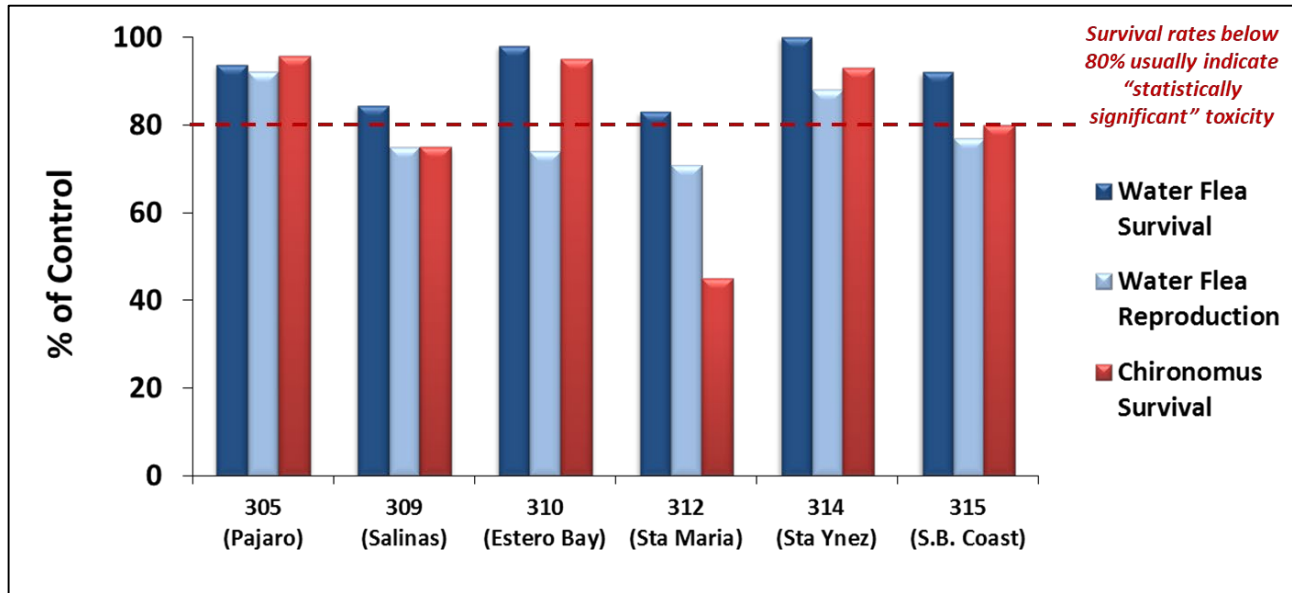


Pest control  
products  
(e.g. pyrethroids,  
aquatic toxicity)





# CHANGES OVER TIME IN TOXICITY & KEY TOXICANTS

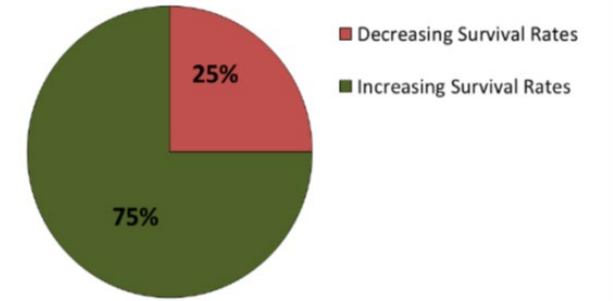




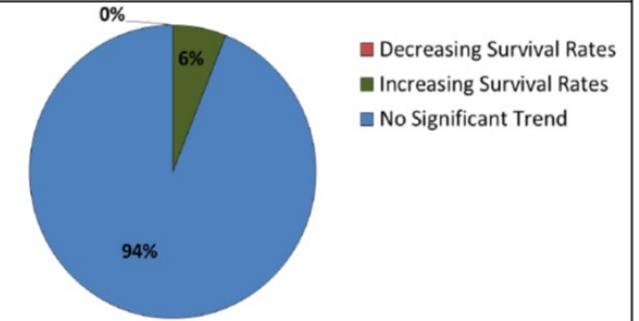
# TREND ANALYSIS

*Seasonal Mann-Kendall  
Test for Trends  
~50 sites over ~15 years;  
Quarterly samples*

**Patterns**  
(May or may not be  
biologically relevant)

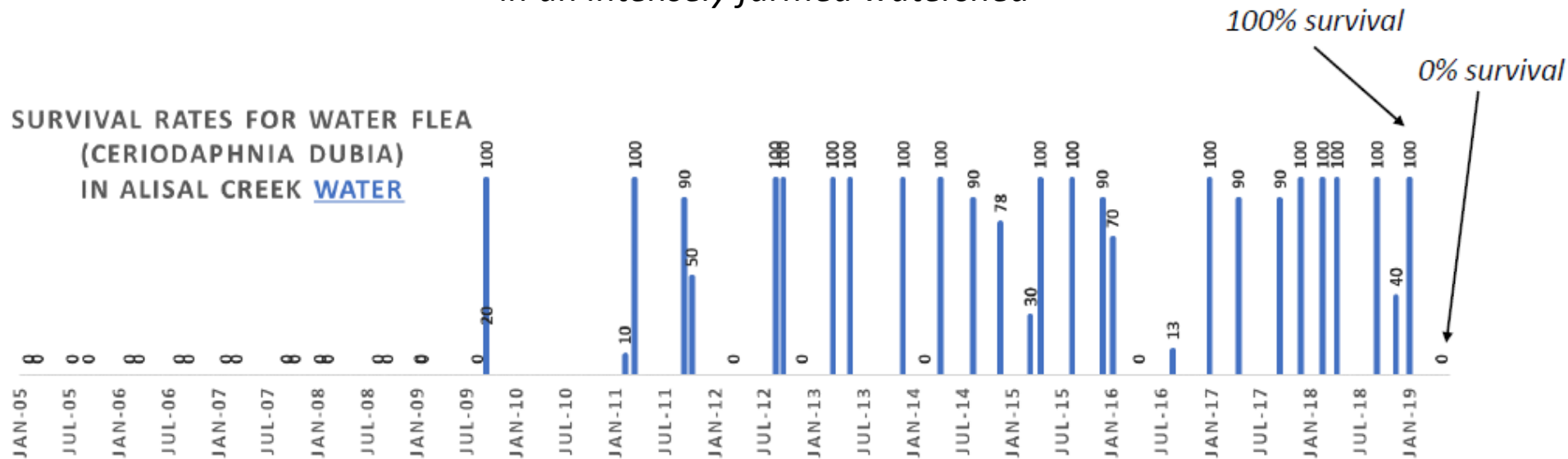


**Trends**  
(Statistical significance)



*Step Trend at a CMP site  
in an intensely farmed watershed*

SURVIVAL RATES FOR WATER FLEA  
(CERIODAPHNIA DUBIA)  
IN ALISAL CREEK WATER

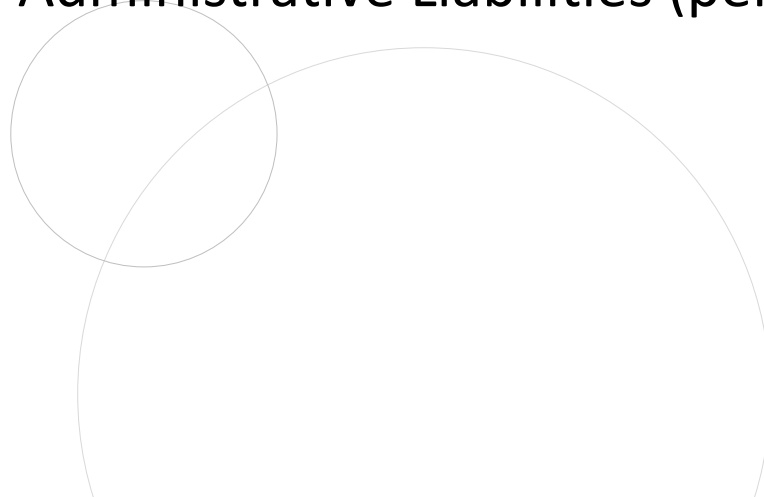




## C. DUBIA REPRODUCTION TEST IN REGULATION OF AGRICULTURE

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- Irrigated Lands Regulatory Program (ILRP) – In-Stream and Edge-of-Field Numeric Limit
- Total Maximum Daily Loads (TMDL) – Load Allocation (concentration-based)
- Basin Plan – Numeric interpretation of narrative objective
- Numeric Limits carry Civil and Administrative Liabilities (penalties) for exceedance

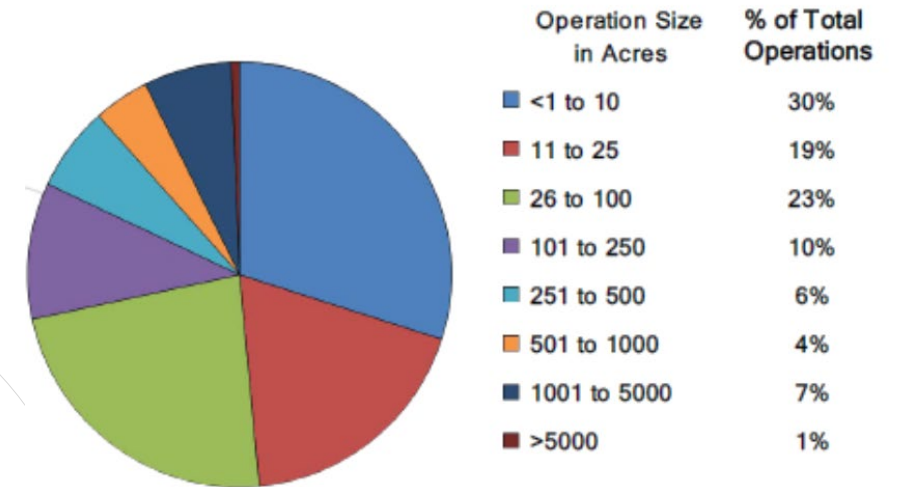
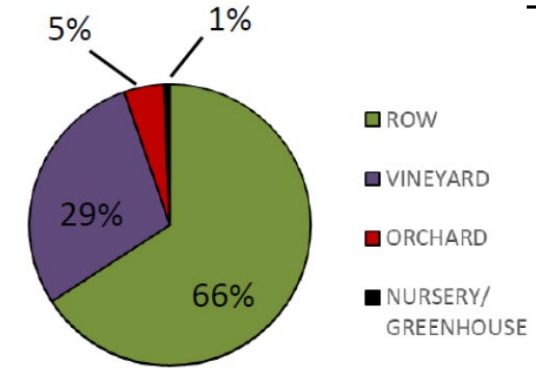




# GROWER PERSPECTIVE

- 30% of Central Coast growers operate less than 10 acres
- 75% operate less than 100 acres
- Owner/Operator business model (vs. Corporate)
  - “Profits” = Take-home pay
- Low profit margins
- High stakes
  - Multi-generation family-owned businesses
  - Transition from farm-worker to farm-owner
  - Capital-intensive

## Central Coast Ag Operations



# DATA (AND METHODS) NEED TO TRAVEL WITH APPROPRIATE DISCLOSURES

Table A-16. Measurement Quality Objectives – Field Measurements

Water Quality Parameter	Recommended Device	Units	Resolution	Reporting Limit	"Electronic Specs" Accuracy
Depth	Stadia Rod/Staff Gauge	m	0.01	0.02	n/a
Dissolved Oxygen	Polarographic or Luminescence Quenching	mg/L	0.1	0.2	± 0.2
pH	Electrode	None	0.1	n/a	± 0.2
Salinity	Refractometer or Conductivity Cell	‰	2	2	± 2
Specific Conductivity	Conductivity Cell	µS/cm	1	2	± 2
Temperature	Thermistor or Bulb	°C	0.1 or 0.5	n/a	± 0.1
Turbidity	Portable Turbidimeter or Optical Probe	NTU	1	5	± 1
Velocity	Flow Meter	ft/s	0.05	0.1	Follow manufacturer's instructions

Table A-14. Measurement Quality Objectives – Toxicity Testing

Negative Controls	Frequency of Analysis	Control Limits
Laboratory Control Water	Laboratory Control Water consistent with Section 7 of the appropriate EPA method must be tested with each analytical batch.	Laboratory Control Water must meet all test acceptability criteria (Please refer to Section 7 of the EPA manuals) for the species of interest.
Conductivity Control Water	A conductivity control must be tested with each analytical batch when the conductivity of any freshwater ambient sample approaches the species' tolerance for conductivity per method.	Follow EPA guidance on interpreting data.
Additional Control Water	Additional method blanks are required whenever manipulations are performed on one or more of the ambient samples within each analytical batch (e.g. pH adjustments, continuous aeration, etc.).	No statistical difference between the laboratory control water and each additional control water within an analytical batch.
Sediment Control	Sediment Control consistent with those described in Section 7 of the EPA manual must be tested with each analytical batch of sediment toxicity tests.	Sediment Control must meet all data acceptability criteria (Please refer to Section 7 of the EPA manuals) for the species of interest.
Positive Controls	Frequency of Analysis	Control Limits
Reference Toxicant Tests	Reference Toxicant Tests must be conducted monthly for species that are raised within a laboratory. Reference Toxicant Test must be conducted per analytical batch for species from commercial supplier settings. Reference Toxicant Tests must be conducted concurrently for test species or broodstocks that are field collected.	Last plotted data point must be within 2 SD of the cumulative mean (n=20). (Reference toxicant tests that fall outside of recommended control chart limits are evaluated to determine the validity of associated effluent and receiving water tests. An out of control reference toxicant test result does not necessarily invalidate associated test results. More frequent and/or concurrent reference toxicant testing may be advantageous if recent problems have been identified in testing.)
Field Quality Control	Frequency of Analysis	Control Limits
Field Splits	5% of all samples	According to method
Field Blanks	Per method or project requirements	No statistical difference between the laboratory control water (or sediment control) and the field blank within an analytical batch
Equipment Blanks	Per method or project requirements	No statistical difference between the Laboratory Control Water and the Equipment Blank within an analytical batch

Measurement quality objectives from the Central Coast CMP Quality Assurance Project Plan



**THANK YOU**