In/Ex Situ Exposure Systems For Toxicity Testing With Invertebrates And Fish

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Pros and Cons of In/Ex Situ Systems

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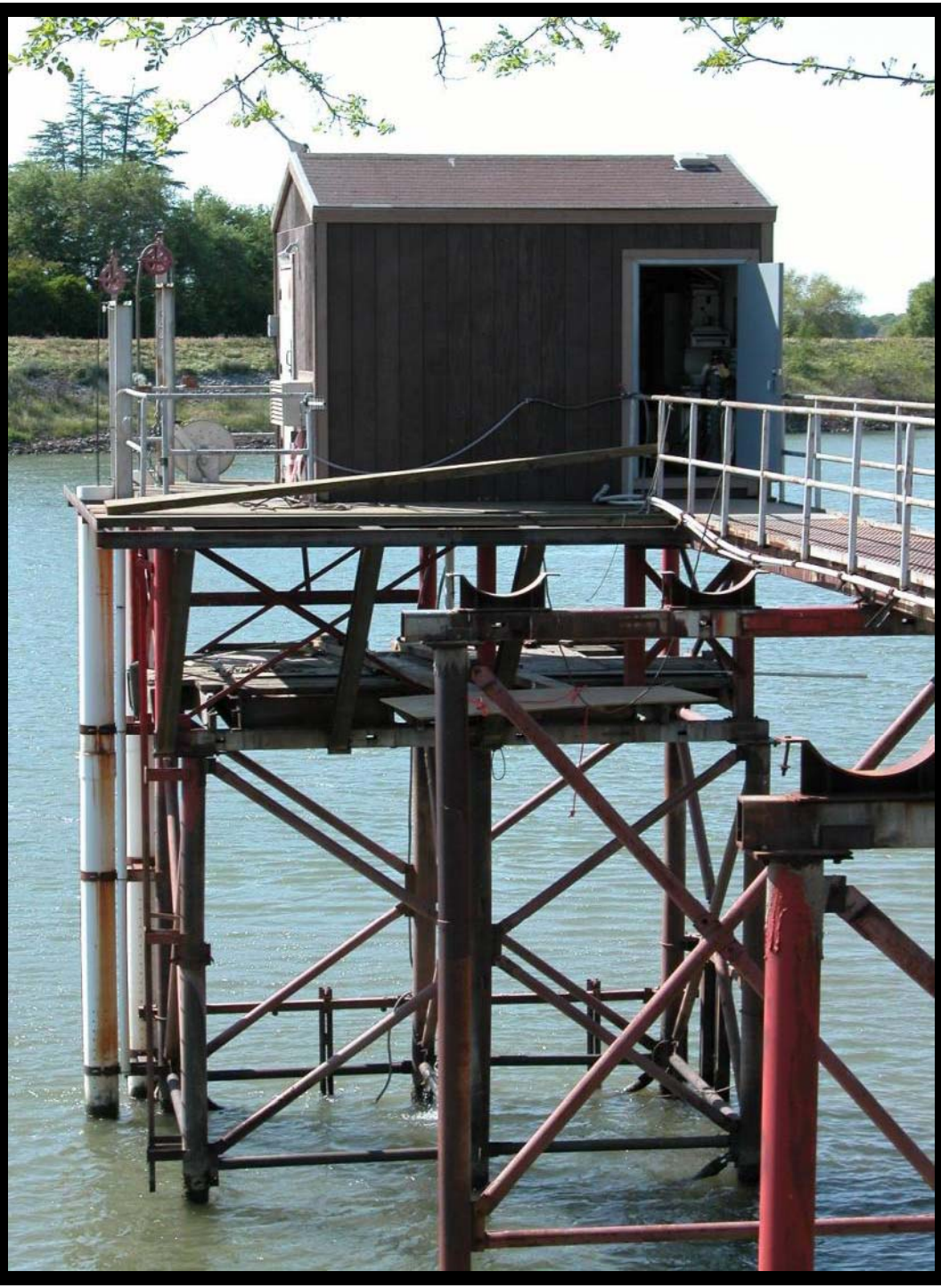
- More realistic exposure conditions (duration and concentration of chem. pulse)
- Ability to “capture” short pulses of toxicants
- Results integrate effects of natural parameters (T) on toxicity of contaminants
- Simultaneous exposure of multiple species possible

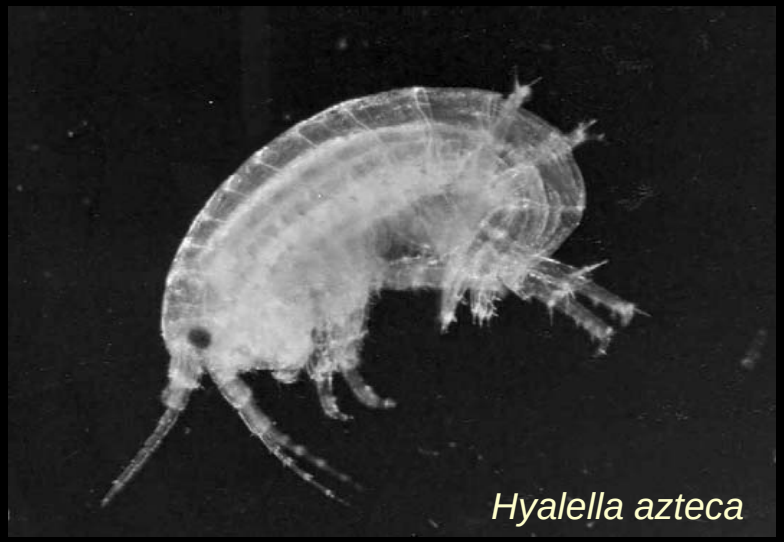
- Assumption that field organisms are stationary (ok for some)
- Little or no control over natural parameters (T, TSS, food) potentially influencing toxicity endpoints
- High cost due to shelter needed to protect device & many man-hours to maintain (especially fish)

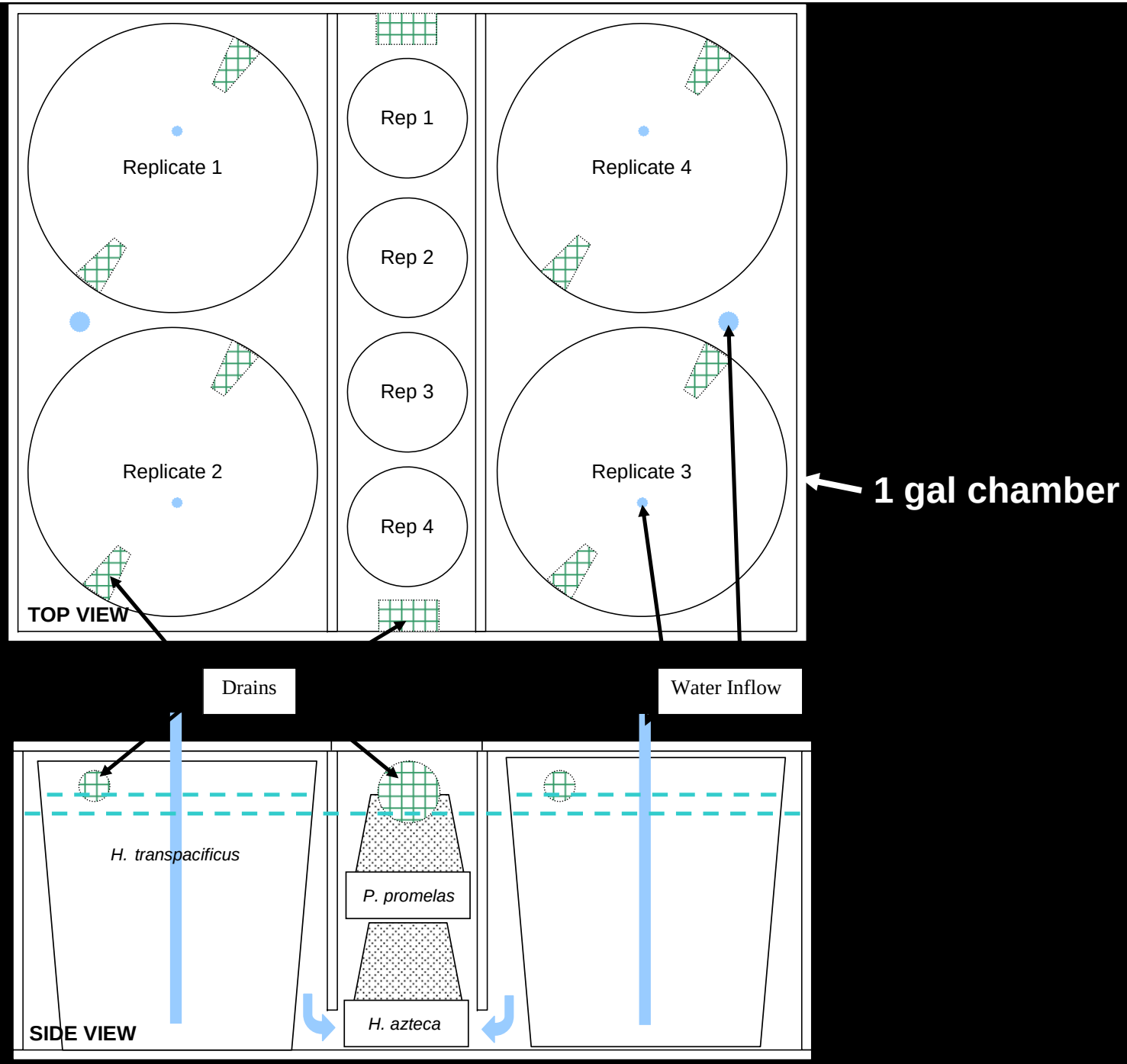
DWR Water Quality Monitoring Stations:

Sacramento River near Hood
&
Rough and Ready Island



Test Organisms



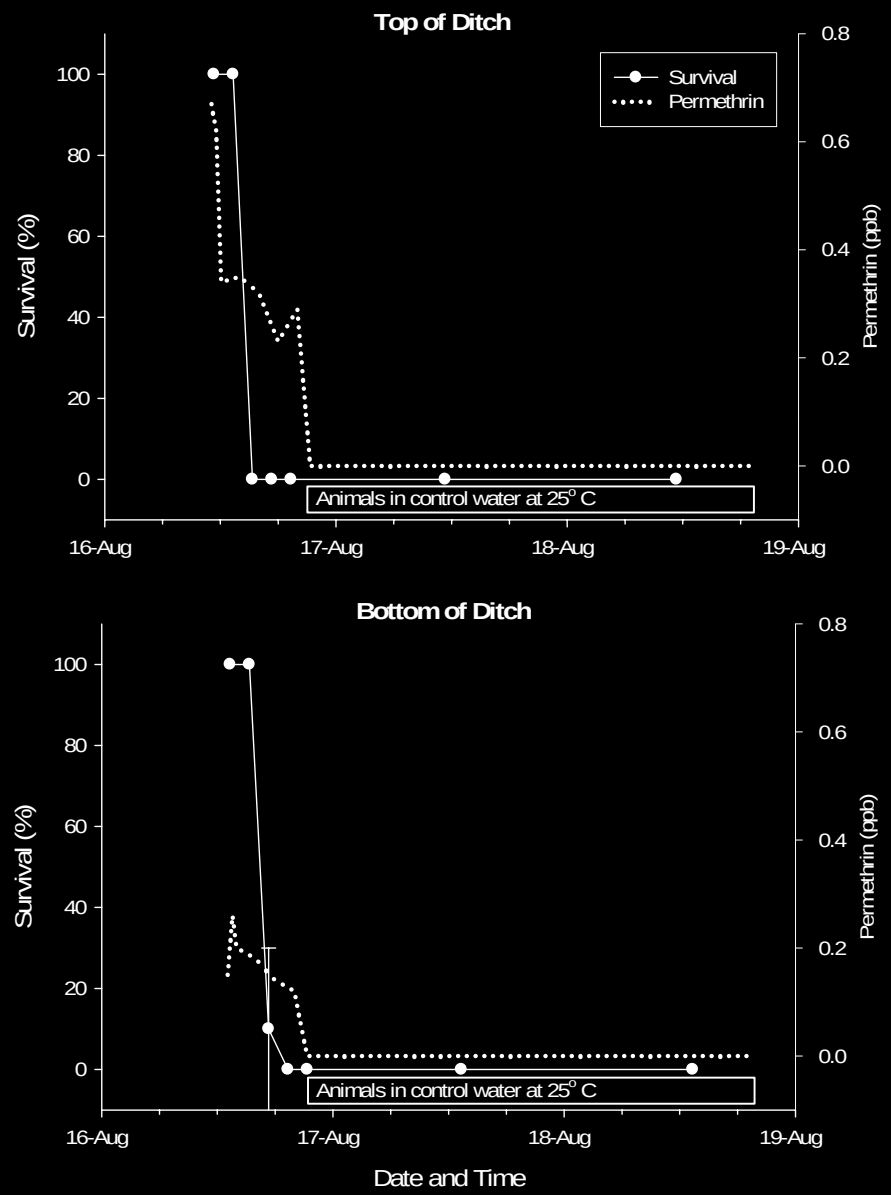

Replicate 1
Rep 1
Replicate 4
Rep 2
Rep 3
Replicate 2
Replicate 3
Rep 4
TOP VIEW
1 gal chamber
Drains
Water Inflow
H. transpacificus
P. promelas
H. azteca
SIDE VIEW

Monitoring of Toxicity in Agricultural Drainage Ditches

Pump with Float Switch

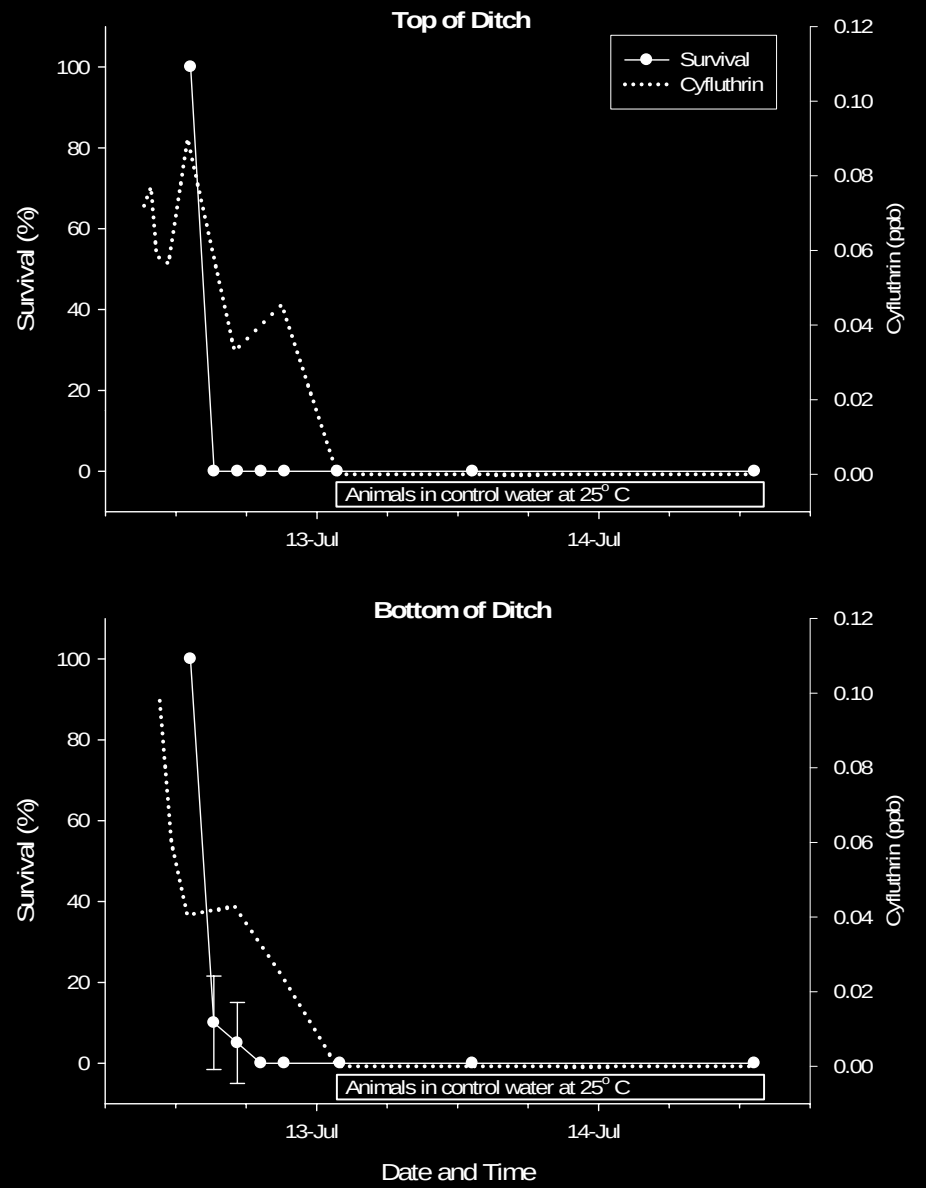
TOXICITY OF IRRIGATION RUNOFF TO *H. AZTECA*

H. azteca: Site 3, Deployment 1



Permethrin

H. azteca: Site 4, Deployment 1



Cyfluthrin

Conclusions

- Systems worked well for RB trout, FHM, *H. azteca*
- Temperature is the major driver for species selection
- Testing multiple species is more cost-effective
- Design can be adapted to specific applications
- Solar panels could supply energy in remote locations

Thanks!

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&

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