Cedar Key Aquaculture Workshop

Sulfide Concentrations in Sediments and Water: Influence on Hard Clams

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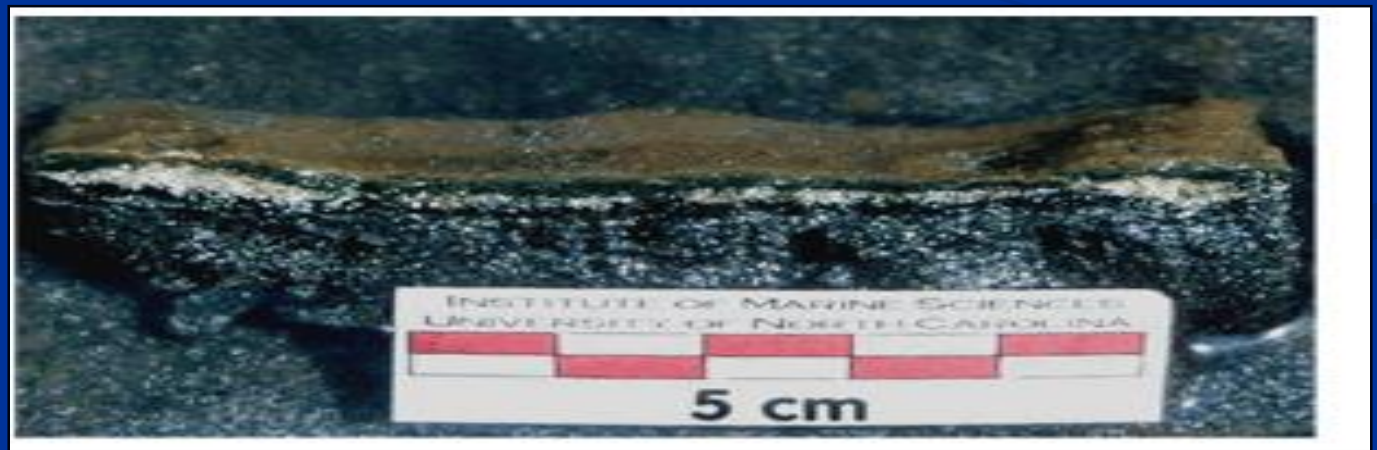
Why study sulfide?

- High primary productivity
- Decomposition of organic matter by bacteria uses up oxygen
- Anaerobic decomposition produces hydrogen sulfide
- Sulfide is a metabolic poison
- Known to decrease the growth and survival of many bivalve species

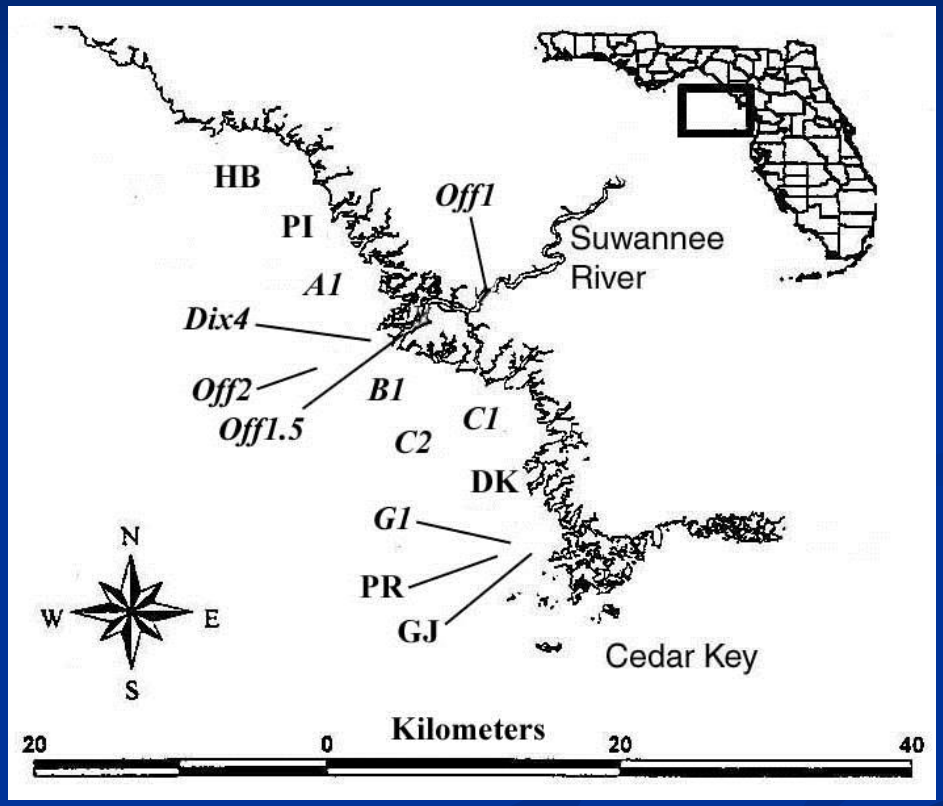


Objectives

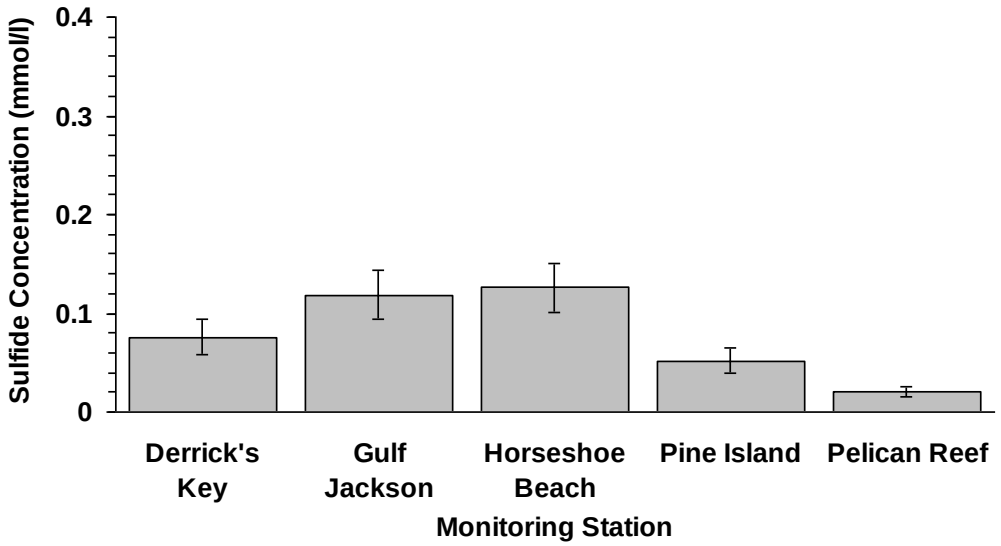
- Examine sediment sulfide levels in the Suwannee River Estuary
- Determine the effect of sulfide on hard clam survival

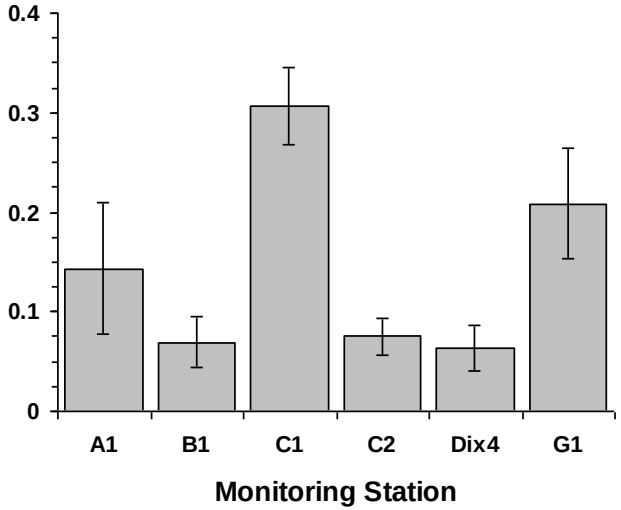
Methods

- Sediment porewater samples collected
  - Inside and outside leases
- Laboratory challenges
  - 2 sizes of clams
  - Hypoxia and sulfide



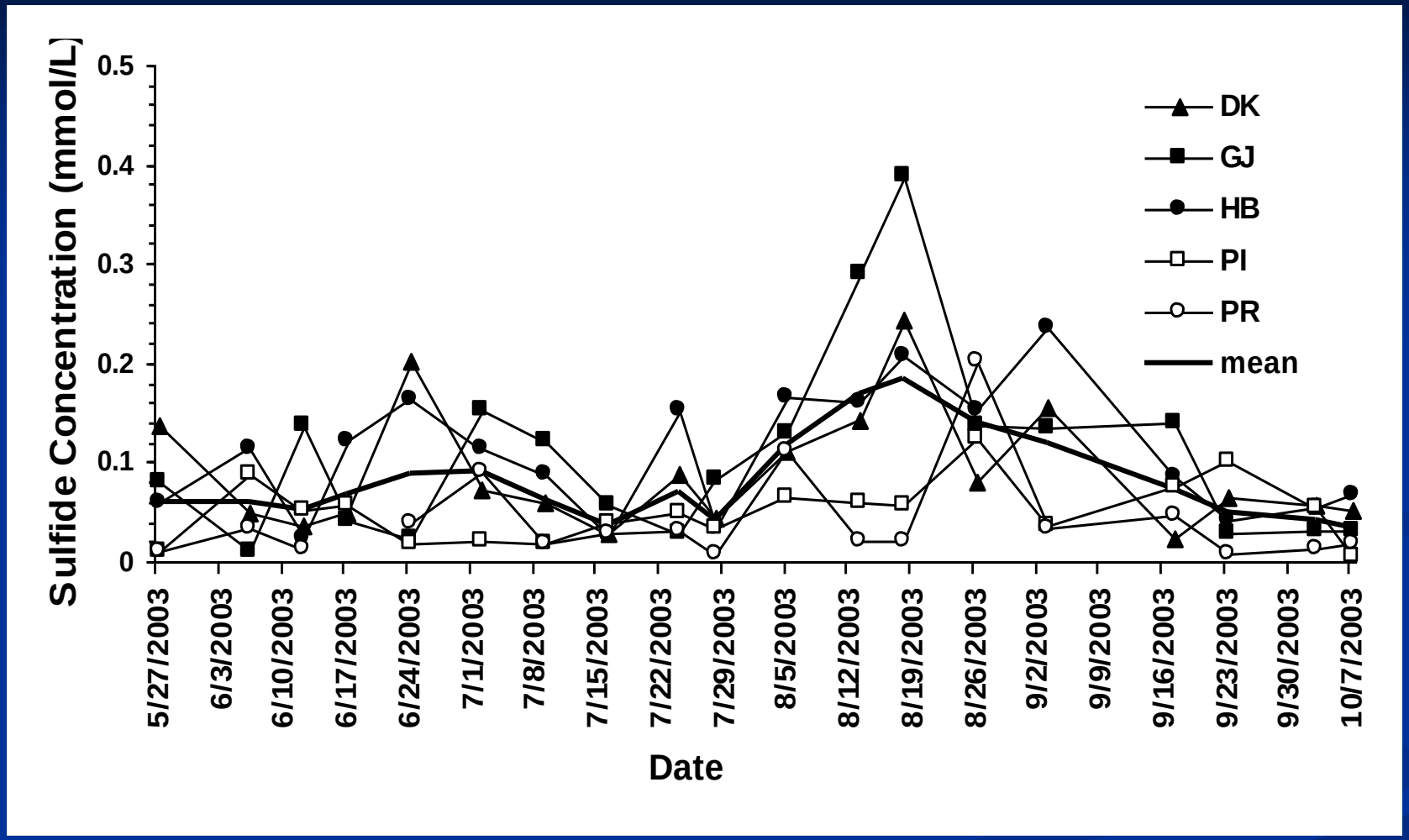
Sulfide – Field Data





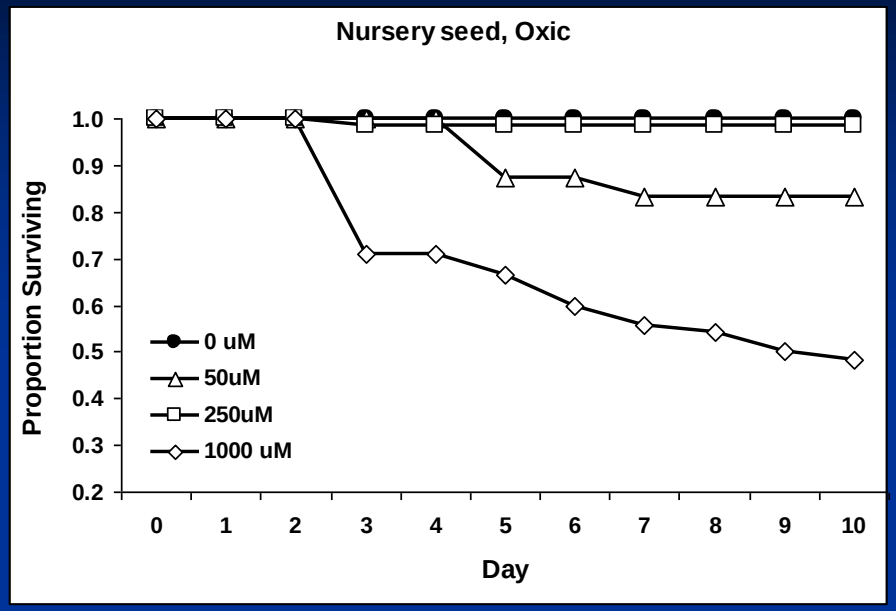
- All lease sites had sediment porewater sulfide
- Clam lease sites had mean sulfide levels of up to 110 µmol/L
- Non-lease sites had mean sulfide levels up to 300 µmol/L

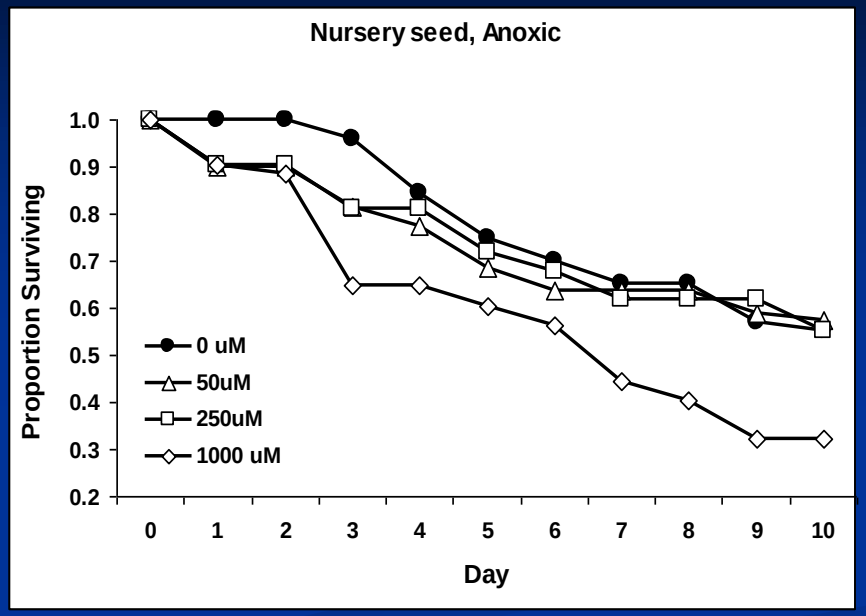
Sulfide – Field Data

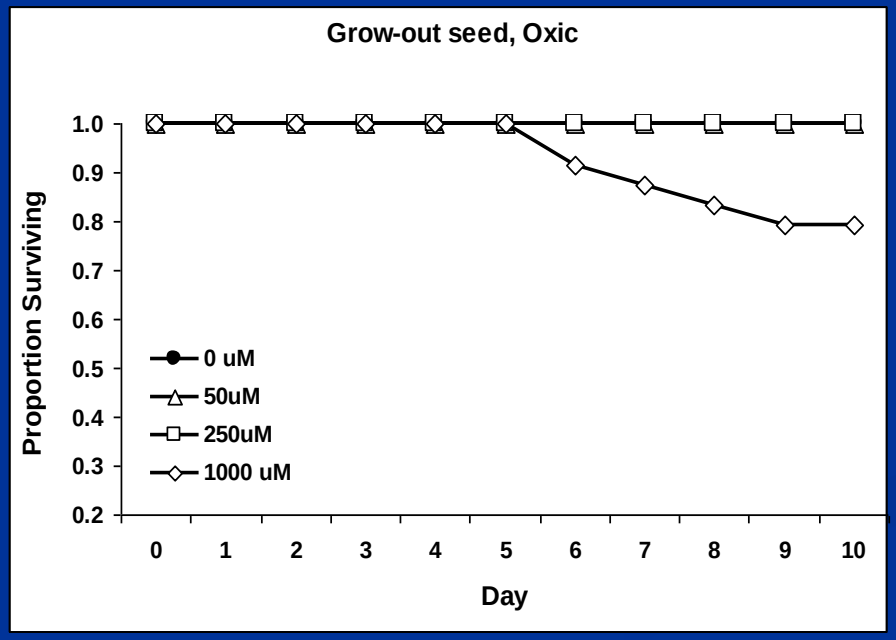


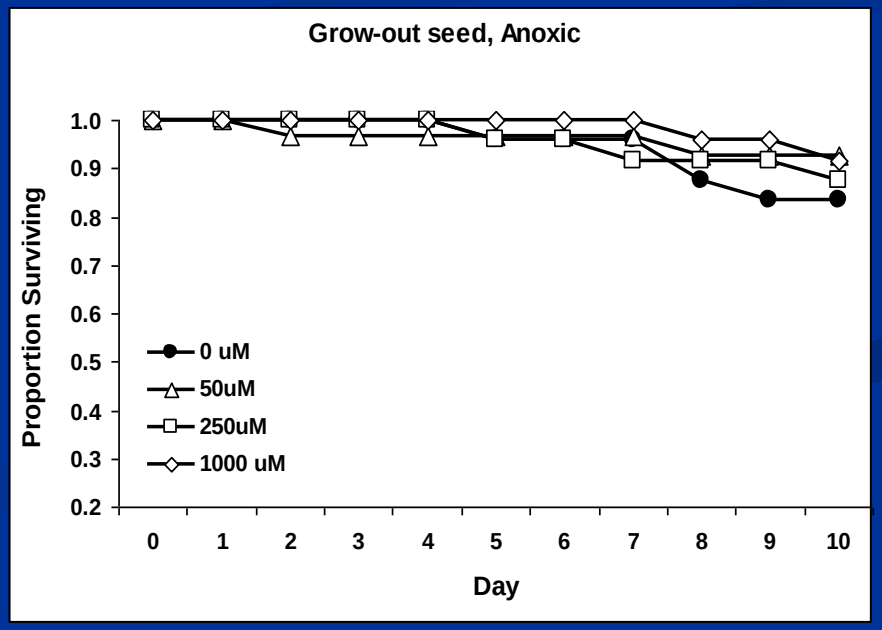
Sulfide levels greatest (up to 400 µmol/L) in August and September when temperatures high

Laboratory Challenges - Sulfide levels in sediments can affect survival of clams









Sulfide - Conclusions

- Sulfide occurs at lease sites
- Sulfide is greatest in August & September
- Seed clams vulnerable to sulfide toxicity in the lab
- More Questions
  - Does sulfide cause losses in the field?
  - Is sulfide present in the incurrent water?
  - Are larger clams more or less vulnerable?