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
- 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 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

Nursery seed, Oxic

Proportion Surviving

Day

0 uM
50 uM
250 uM
1000 uM

Nursery seed, Anoxic

Proportion Surviving

Day

0 uM
50 uM
250 uM
1000 uM

Grow-out seed, Oxic

Proportion Surviving

Day

0 uM
50 uM
250 uM
1000 uM

Grow-out seed, Anoxic

Proportion Surviving

Day

0 uM
50 uM
250 uM
1000 uM

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?