Investigation of Potential Causes of Salt Marsh Dieback in Georgia: a Transplant Study

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Study Initiated: May 2003   Anticipated Completion Date: November 2003

Study Site Location(s): Georgia -- Liberty County (Melon Bluff Plantation), McIntosh County (Sapelo Island).

Keywords: Juncus, Nutrients, Salinity, Spartina, Soil chemistry, Transplants

Project Type: Descriptive, Experimental

Project Outline

Specific Aims

- To determine if Spartina alterniflora and Juncus roemarianus survive when transplanted into dieback areas or recover when transplanted from live/dead transition zone to healthy areas.
- To determine if any measured parameters correlate to vegetative dieback.

Methodology

- Four sets of transplants in different types and locations of dieback (Melon Bluff – creekbank S. alterniflora, high marsh S. alterniflora, high marsh J. roemarianus; Sapelo Island – creekbank S. alterniflora).
- Site prep:
  - 12 replicate transplants (20 inch pots) per treatment
  - Treatments
    - Healthy plants to dead area
    - Healthy plants to healthy area (control)
    - Live plants from dead border to healthy area (Sapelo creek bank S. alterniflora and Melon Bluff high marsh S. alterniflora only)
    - Live plants from dead border to dead area (control) (Sapelo creek bank S. alterniflora and Melon Bluff high marsh S. alterniflora only)
- Monitored Parameters
  - Vegetation
    - Stem count (by species)
    - Stem height
    - CNS ratio
  - Physical
    - Porewater pH, salinity, NH₄ and Eh
    - Surface elevation
Results to Date

- All plants grew and survived
- Healthy plants survive in dieback areas and grow just as well as in reference sites
- There was no difference in porewater pH, salinity, or redox potential between dieback and reference sites
- High concentrations of porewater NH$_4^+$ were found in the dieback sites, likely due to decomposition of root and rhizome material.

Lessons Learned

Publications, reports, or web-accessible materials