

Quarterly Monitoring of Marsh Dieback Sites in Coastal Georgia

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Study Initiated: November 2002 (study design), June 2003 (regular monitoring)

Anticipated Completion Date: *Ongoing*

Study Site Location(s): Georgia -- Chatham County (Isle of Hope, Ossabaw Island, Talahi Island), Glynn County (Hwy 17), Liberty County (Isle of Wight Rd, Melon Bluff Plantation), Bryan County (Jerico River), McIntosh County (Sapelo Island).

Keywords: Fauna, *Juncus*, Monitoring, Salinity, *Spartina*, Soil chemistry

Project Type: Descriptive

Project Outline

Specific Aims

- To make observations in healthy and dieback areas at several sites throughout Georgia over time.
- To determine if any measured parameters correlate to vegetative dieback, or are predictive of recovery.

Methodology

- Seven locations monitored quarterly (March, June, Sept, Dec)
- Site prep:
 - 6 transects per site (3 in a dieback area and 3 in an unaffected area.)
 - 3 (0.5 m x 0.5 m) quadrats located along each transect (marked with a depth-calibrated piece of PVC pipe.)
 - vinyl flags are used to mark the location of any distinct transition line between healthy and dieback areas
- Monitored Parameters
 - Vegetation
 - Stem count (by species, live vs. dead)
 - Height of 5 tallest *Spartina* or *Juncus* stems
 - Observations of leaf color, etc
 - Fauna
 - Count living mussels and snails (by type, size)
 - Count crab holes

- Record presence of dead snails, crabs, mussels
- Physical
 - Porewater pH, salinity, temperature, and when possible, Eh
 - Surface elevation (relative to initial conditions) recorded for each quad
 - Observations – sulfide smell, firmness of marsh surface, etc

Results to Date

An overview of conditions in the monitored sites is given (ranges listed are the low and high site averages, not individual quadrats).

- Vegetation (*Spartina*, only one monitored site with *Juncus*)
 - Stem counts (density per meter²)
 - Dieback areas: 4-89 live stems (av 47), 56-293 dead stems (av 230)
 - Healthy areas: 107-160 live stems (av 142), 89-226 dead stems (av 149)
 - Height (average of 5 tallest *Spartina* stems)
 - Dieback areas: 4-48 cm (av 20)
 - Healthy areas: 51-99 (av 67)
- Fauna
 - Snails (living periwinkles, density per meter²)
 - Dieback areas: 0-315 (av 79)
 - Healthy areas: 7-296 (av 121)
 - Mussels (living, density per meter²)
 - Dieback areas: 2-33 (av 16)
 - Healthy areas: 1-23 (av 10)
 - Crab holes (density per meter²)
 - Dieback areas: 11-174 (av 82)
 - Healthy areas: 28-114 (av 57)
 - Presence of dead fauna
 - Dieback areas: dead snails recorded in 12 quadrats; mussels, 23; crabs, 1
 - Healthy areas: dead snails recorded in 8 quadrats; mussels, 22; crabs, 3
- Physical
 - Porewater pH and salinity
 - Dieback areas: pH 6.6-7.4 (av 6.9), salinity 15-35 (av 25)
 - Healthy areas: pH 6.6-7.0 (av 6.7), salinity 18-38 (av 27)

To access the data (as Excel spreadsheets), please see --
http://www.marsci.uga.edu/coastalcouncil/marsh_data2.htm

Lessons Learned

Within a location, measured parameters do not correlate to areas suffering die-off and are also not predictive of recovery.

Publications, reports, or web-accessible materials

More information on the monitoring program is on the GCRC website:
http://www.marsci.uga.edu/coastalcouncil/marsh_monitoring.htm

Suggested citation: Georgia Coastal Research Council, 2004. Proceedings of the Marsh Dieback Workshop, held February 3-4, 2004, Savannah Georgia.