

USE OF DEPARTMENT OF NATURAL RESOURCES MONITORING DATA FOR EVALUATING MARSH DIEBACK, RECOVERY, AND RESTORATION NEEDS

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Large expanses of Louisiana's dominant salt marsh grass, *Spartina alterniflora*, are dying. Since its initial discovery in 1999 and expansion in 2000, investigations have been conducted to document extent and degree of impact. The most noticeable discovery was the limited amount of data available to evaluate extent and causal factors. This is not unusual. Rarely are large-scale natural systems sufficiently monitored to address landscape-level changes.

Salt marsh diebacks have been documented in Louisiana since the 1970's. In all cases, data were collected only post-identification leading to speculation regarding causal factors. The magnitude of this event is unprecedented, both in terms of scale and impacts over a short time period, elevating the importance of understanding how these events develop. A comprehensive baseline data set is necessary to proactively address these reoccurring problems.

In coastal Louisiana, monitoring emergent marsh structure and function is conducted primarily by the Louisiana Department of Natural Resources and the National Wetlands Research Center under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). CWPPRA is monitoring 59 projects throughout the Louisiana coastal zone; however, most of these projects are spatially removed from the delineated dieback areas. An exception was the Lake Chapeau Dredge Material and Hydrologic Restoration (TE-26) project. Hourly data collected since 1997 on water levels and salinity, along with marsh elevations, provided initial assessments on changes in salinity and marsh flooding in an area exhibiting dieback. These data indicated salinity increases and extensive marsh drainage within the time period of noticeable dieback. Preliminary assessments of these data allowed scientists to focus research questions and define study sites, and provided additional data sets to complement research initiatives.

To address the aforementioned problem of comprehensive spatial and temporal data sets, a Coast-wide Reference Monitoring System (CRMS) measuring those suggested causal factors (vegetation, water level/duration and frequency of flooding, salinity, accretion, etc.) would provide baseline data as well as

an evaluation of recovery for salt marsh diebacks. Over time the data set will lend itself to analyses that evaluate trajectories through time at reference sites and to compare those trajectories with that of past and future dieback sites.