RECOVERY POTENTIAL OF *SPARTINA ALTERNIFLORA* IN DIEBACK AREAS: A GREENHOUSE PILOT STUDY

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Field observations in midsummer 2000 of *Spartina alterniflora* plants affected by the dieback phenomenon indicated that, in some areas, belowground tissues were affected as well as aboveground tissues. A pilot greenhouse study was conducted to ascertain if the potential ability of affected plants to resume growth (i.e., recover) under favorable environmental conditions varies with plant condition. Sections of marsh (30 cm diameter x 30 cm deep) were collected 1 August 2000 from the following five zones of qualitatively defined plant categories (types): healthy *S. alterniflora* (not affected by dieback), stressed *S. alterniflora* (browning and frayed culms), dead *S. alterniflora* (no live aboveground culms), dead *S. alterniflora* with *Batis maritima* stems, and dead *S. alterniflora* with a single *Avicennia germinans* stem. After a 2-week acclimation period the sods were placed within larger tubs. Water within the tub was maintained at the sod sediment surface, and water salinity was raised to 20 ppt. In the healthy, stressed, and dead sods, repeated measures were taken of total live and dead stem numbers and maximum live stem length. In *Avicennia* and *Batis* sods, overall plant height and number of lateral nodes were recorded over time.

During the 9-week study, dead *S. alterniflora* culms did not recover in the dead *Avicennia* or *Batis* sods. *Avicennia germinans* and *B. maritima* continued to increase in height and initiate new lateral nodes throughout the study. Comparisons between the healthy, stressed, and dead *S. alterniflora* sods indicated a significant difference between all types at all measurement times. Number of live stems and maximum stem length in healthy sods remained significantly greater

than that in stressed sods throughout the study. Although new stems were produced in stressed sods, the mean number of live stems did not significantly increase over time. These results indicate that sites within dieback areas with complete *S. alterniflora* aboveground and belowground tissue death may not recover naturally unless a new source of propagules (seeds, rhizome fragments) is introduced. In such areas, any secondary species such as *A. germinans* and *B. maritima* may have an important role in helping maintain marsh integrity until *S. alterniflora* can become reestablished.