

Inundation effects on growth and decomposition of two tidal marsh plant species,
Spartina alterniflora and *Typha angustifolia*

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Tidal marshes of southern New England have exhibited substantial changes over the past century: multiple anthropogenic stressors, such as enhanced rates of sea level rise, hydrological modifications, the introduction of invasive species, and increased nutrient loading have resulted in negative impacts to tidal wetland integrity. In light of projected sea level increases, inundation effects on dominant species are of particular concern for scientists and managers hoping to promote marsh resilience. Here, we report on field experiments conducted at Narragansett Bay National Estuarine Research Reserve during the summer of 2011, where we examined the effects of inundation on above and below-ground growth and decomposition of *Spartina alterniflora* (low marsh dominant) and *Typha angustifolia* (marsh-upland ecotone species dominant) by growing plants in 'marsh organs' under four different inundation regimes. We monitored plant growth, soil respiration, pore-water salinity and sulfide concentrations over the course of the experiment, and measured soil shear strength, and above- and belowground biomass at the conclusion of the experiment in late fall. All factors measured responded to inundation, however rather than finding linear correlations between inundation and response variables, we found key inundation thresholds, such that significant differences were found for variables measured at elevations above and below the thresholds. This experiment provides fundamental information on the response of New England tidal marsh plants to increased inundation, and suggests that future response to increased inundation may be nonlinear in nature.