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Genetic Diversity and Clonal Structure of *Spartina alterniflora* in a Virginia Marsh

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Abstract

We asked how genetic diversity of *Spartina alterniflora* (Smooth Cordgrass) partitions across multiple spatial scales in mid-Atlantic salt marshes. We analyzed samples from 5 Virginia marshes, spanning ~ 35 km of coastline, using microsatellite markers to examine genetic diversity and genotype clustering. In a single marsh, nested spatial analysis of the genotypes allowed indirect evaluation of colonization dynamics. Samples collected ≥ 10 m apart had clonal and allelic diversity levels similar to those of other geographic locations; however, genotypic richness and evenness of samples collected 0.2 and 1.0 m apart were reduced. Sampling scale had little effect on allelic diversity. Expected heterozygosity exceeded observed heterozygosity values at all sites and spatial scales, suggesting Smooth Cordgrass inbreeding is common in these marshes. We hypothesize that the observed spatial patterns indicate there is genetic dominance of a few, well-adapted clones balanced by sexual reproduction and recruitment, especially after disturbance, thereby creating genetically diverse and potentially resilient marshes.

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