

**Abstract:**

**PLANT GROWTH UNDER SALINITY AND INUNDATION STRESS: IMPLICATIONS FOR SEA-LEVEL RISE EFFECTS ON TIDAL WETLAND FUNCTION**

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Climate change and sea-level rise (SLR) may increase salinity or inundation duration for tidal wetland organisms. To test the effects of these stressors on wetland productivity, we transplanted seedlings of seven common plant species to polyhaline, mesohaline and oligohaline tidal marshes on the Oregon coast. At each site, juvenile plants were grown at local mean higher high water (a typical mid-marsh elevation) and at 25 and 50 cm below MHHW to increase inundation. Plants were harvested after a short growing season to determine above- and below-ground biomass. Shoot and root production declined for all species with increasing inundation. Growth also varied by site, with the lowest rates in the most saline wetland. We combined water-level and salinity measurements at our sites to estimate a salinity exposure index for each treatment. Higher values of the index were correlated with lower productivity for all species and with declines in root versus shoot production. Species tolerances to inundation and salinity stress varied, but even species common to lower, more saline marshes declined in productivity. Our results suggest that relative SLR in Pacific Northwest tidal marshes may reduce above-ground production for consumers and possibly reduce wetland accretion potential because of reduced root growth.