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### Patterns in vegetation communities of estuarine wetlands in two California regions: Insights from a probabilistic survey

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#### ABSTRACT

Urban development in the California coastal zone has greatly impacted the ecological integrity of estuarine wetlands. Anthropogenic modifications to natural wetland structure and hydrology can have negative consequences for the composition of estuarine biotic communities. Monitoring wetlands at the ecoregion level is an important tool for understanding how wetland condition is changing over time and can be the basis for hypotheses about the causative factors influencing resource condition. It provides information for managers beyond the site scale and can better guide agency priorities for management and restoration region-wide. Our study was a component of the 2002 United States Environmental Protection Agency (USEPA) Environmental Monitoring and Assessment Program (EMAP) Western Pilot. We measured indicators of estuarine wetland plant community condition in two regions: southern California and the San Francisco (SF) Bay, with the goal of providing information of practical use to wetland managers. The regional surveys included a comprehensive assessment of the plant communities at probabilistically selected locations across the intertidal marsh plain. In addition, in southern California, an assessment of anthropogenic stressors was conducted determining the amount of tidal muting and by assessing the intensity of surrounding land use and human population density. Results indicate that the two regions differed substantially in terms of plant community composition and structure. Southern California wetlands supported a higher diversity of plant species, were more prone to invasion by exotic species, and exhibited less zonation of plant species within the intertidal zone than the SF Bay. There were negative effects of tidal muting on the marsh plant community within southern California, such as disappearance of certain native species and the propensity for invasive species to encroach the marsh plain. Conversely, indicators of anthropogenic stress in the surrounding landscape did not correlate with plant community structure. This paper evaluates the effectiveness of the indicators used in this study, explores the utility and drawbacks of the selected survey design, and discusses how results from such surveys may inform restoration and management actions in southern California estuarine wetlands.

#### Full Text

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