

## **Tidal Channel Diatom Assemblages Reflect within Wetland Environmental Conditions and Land Use at Multiple Scales**

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We characterized regional patterns of the tidal channel benthic diatom community and examined the relative importance of local wetland and surrounding landscape level factors measured at multiple scales in structuring this assemblage. Surrounding land cover was characterized at the 100m, 250m, 1000m, and watershed buffer scales. Tidal channel benthic diatom communities were characterized by high species richness, abundance of rare species, and an abundance of species characterized as meso-eutraphentic and eutraphentic. The number of species per site ranged between 21 and 60 (mean  $\pm$  standard deviation:  $43.5 \pm 9.4$ ). Abundant and frequently occurring taxa included *Planothidium delicatulum*, *Navicula gregaria*, and *Amphora coffeaeformis*. The tidal channel benthic diatom community was most strongly correlated with variables related to human disturbance at all scales surrounding the wetland and not with any tidal channel water quality parameter, including salinity. Furthermore, developed and impervious surface land covers within the 100m and 250m buffers were more strongly correlated with the diatom assemblage than these covers at larger spatial scales. Species richness and Shannon diversity index were both negatively correlated with the amount of wetland and mudflat surrounding the sites. Of secondary importance in structuring the diatom assemblage were sediment nitrogen and phosphorus concentrations in wetlands immediately surrounding the tidal channels. The sensitivity of the tidal creek benthic diatom assemblage to both wetland and landscape level factors indicates that it might be a useful bioindicator of human disturbance to tidal wetland ecosystems.