

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Strydhorst, Natasha, Samuel Franklin, Lemuel Ong and Aaron Pemberton (2015). “Characteristics of a Natural Vegetation Population on a Lake Michigan Fore-dune.” FYRES: Dunes Research Report #13. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 21 p.

Abstract: Although Lake Michigan’s coastal foredunes are predominantly vegetated with *Ammophila breviligulata* (American beachgrass), the natural characteristics of this species have not been documented. This study identified and analyzed the characteristics and environmental conditions of *A. breviligulata* populations in P.J. Hoffmaster State Park, Michigan. We analyzed three areas of vegetation growth on the foredunes: one with human influences (in the form of unmanaged trails), one with a steep scarp, created by wave erosion, and a control area with a slumped scarp and no significant human influence. In each area, we measured the height and density of *A. breviligulata*, recorded the presence of unmanaged trails and measured scarp characteristics. The greatest density of *A. breviligulata* was observed in the site of human disturbance, while the greatest height was recorded in the control site. Scarping affects the vegetation near the scarp, but does not influence the vegetation beyond the fore-dune crest. Unmanaged trails negatively influence the density of vegetation only near the trails. Understanding *A. breviligulata*’s natural characteristics could provide a model for assessing the success of vegetation plantings — a common technique for moderating sand movement in managed sites.