

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Swineford, Jacob T., Grant Hoekwater, Issac J. Jacques, Manny L. Schrottenboer and Matt Wierenga (2015). “Long-term Effects of Planted *Ammophila breviligulata* on North Beach Dune.” FYRES: Dunes Research Report #16. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 17 p.

Abstract: *Ammophila breviligulata* is a beach grass commonly planted for dune management because of its burial tolerance and effectiveness in sand stabilization. The long term effect of planted beachgrass is not fully understood. This study investigated the vegetation health, distribution, and density of planted *A. breviligulata* in relation to the characteristics of a Lake Michigan coastal dune site. The study location is North Beach dune, which in 2004 was moving towards the only access road for many shoreline homes. To stabilize the dune, Ottawa County Park staff and volunteers have been planting *A. breviligulata* periodically over the past ten years. The investigation included comparing photographs from 2004 to 2014 and using GPS to map vegetated areas. The study area was divided into 9 sections and randomly-selected quadrats were used to measure plant health, maximum height, and density. Photographic comparisons show that the planted beach grass has spread across much of the windward slope of the dune. Grass near sand fences was taller and healthier than grasses in transition areas between bare sand and full vegetation. Areas with steeper slopes had generally taller, healthier plants than areas with gentle slopes. The results suggest that 5-10 years after being planted, *A. breviligulata* was moderately healthy and offering greater protection to the dune surface.