

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Jacques, Issac J., McKinley C. Anderson, Amy E. Bristol, Janay Faulkner, and Joshua Polanski. 2017. "Evaluation of Stability and Restoration of a Michigan Coastal Dune." FYRES: Dunes Research Report #25. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 14 p.

Abstract: There have been a series of studies on the effectiveness of planting vegetation to stabilize dunes, but how well does this management technique restore the natural dune environment? On coastal dunes, *Ammophila breviligulata* is often planted as a management technique to slow dune advance. This study investigated the stability of North Beach dune, Michigan, and compared the natural and planted communities. Dune stability over ten years was evaluated by finding the yearly advance rates using monitoring posts and the change in vegetation cover using ground and aerial photographs. The vegetation was measured to compare height, health, and species diversity between the planted vegetation on the upper windward slope, and the natural vegetation at the lower windward slope. From 2006 to 2016, stability has been established, as indicated by the vegetation, which has covered most of the bare sand, and by advance rates that have slowed. The planted community remained a single species, while the natural community contained a greater number of species. The results indicate planting *Ammophila breviligulata* is successful in establishing stability, but rehabilitating plant communities requires more than ten years to restore species diversity.