

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Arevalo, Joseph, Taylor Emmons, Sarah Harefa, Ashley Van Wyk and Jacob Zondag (2013). “Effectiveness of Management Techniques at Mt. Pisgah.” FYRES: Dunes Research Report #6. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 32 p.

Abstract: Although many Great Lakes coastal dunes possess some level of management, few studies examine whether or not the techniques employed are successful. This project evaluates the effectiveness of management techniques implemented on a highly popular dune on Lake Michigan. Mt. Pisgah is a large parabolic dune in Holland, Michigan that local residents suspected was being degraded by overuse, prompting the application of management techniques such as planted vegetation, sand fences, stairs, and viewing platforms. This study’s methods included using sand traps and erosion pins to measure sand transport, mapping management techniques and human impacts, taking comparison pictures, and distributing a questionnaire on visitors’ perceptions of management. Despite the remnant of Hurricane Sandy occurring during the study, little sand movement was measured. Mapping and comparison pictures showed that planted vegetation has significantly decreased the amount of bare sand. The presence of litter and a network of unmanaged trails indicate that people are still going places they are not allowed. Nonetheless, questionnaire results showed a positive public reaction to dune management and a willingness to cooperate with guidelines posted on the dune. In general, the management techniques have lowered the possibility of unwanted erosion, increased control over access to the dune, and preserved many natural habitats and features. However, there is room for improvement in the control of litter and unmanaged trails.