

First-Year Research in Earth Sciences: Dunes

Conference Presentation: Arevalo, Joseph, Taylor Emmons, Sarah Harefa, Ashley Van Wyk, Jacob Zondag (2013). "Evaluating the effectiveness of management techniques at Mt. Pisgah." North-Central Section of the Geological Society of America (Kalamazoo, MI), 2-3 May 2013.

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 locals 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, 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 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.