

First-Year Research in Earth Sciences: Dunes

Conference Presentation: Kramp, J., A. Deeren, R. Diepstra, Z.D. Lindemulder, A. Paintin, and A. Vredevoogd. 2023. “The Effectiveness of Sand Fences on West Michigan Beaches.” North-Central Section Meeting of the Geological Society of America. Grand Valley State University, Grand Rapids, Michigan, 4-5 May 2023; poster.

Abstract: Sand fences are a widely used tool to keep wind-blown sand out of unwanted locations, but previous studies raise questions about the most effective sand fence configurations. Our project investigated whether different sand fence configurations and other beach variables affect sand fence effectiveness on four west Michigan beaches. We recorded fence configurations and characteristics with GPS mapping, a damage rating scale, and direct measurements. We measured sand deposition relative to fences with deposit height measurements and erosion pins. We compared fence configurations with deposition patterns and other variables to identify where sand fences were trapping the most sand. Results show that fence characteristics were mostly the same across the sites, but differences in configurations included how many lines of sand fences were set up at each site and the spacing between fences. The amount of deposition at each site varied. Fences that were installed earlier in the season had larger deposits downwind from them, while the fences closest to the lake showed the most deposition at most sites. These results showed us that 2 or more parallel rows of fencing closer to the shoreline was the most effective strategy, along with installing the fences early enough in the season. These results provide guidance for property managers whose goal is to keep sand contained on the beaches.