

First-Year Research in Earth Sciences: Dunes

Conference Presentation: Faulkner, Janay, Peter Duimstra, Caleb Betten, Katelyn Deyoung, Andrew Hill, William Hofmann, Onyinyechi Iheme, Joshua Newhouse, Grace Prom, Taylor Smelker, Orion Wakeman. 2020. “The effects of sand fences on the biophysical environments of three Michigan dunes.” Annual Meeting of the Michigan Academy of Science, Arts, and Letters, Virtual Conference hosted by Lawrence Technological University (Southfield, MI), 26 September 2020; presentation.

Abstract: Sand fences in dune environments affect both the physical conditions for sand movement and the biological conditions for plant growth. These impacts have not been previously studied for a plant that needs a narrow range of conditions for growth: *Cirsium pitcheri* (Pitcher’s thistle). This study investigated the effects of sand fences on dune conditions and the presence of *C. pitcheri* at three Michigan dune sites: Kirk Park, Mt. Pisgah, and North Beach dune. Sand fence locations and characteristics were recorded, along with vegetation patterns near the fences. We surveyed each site for *C. pitcheri* and mapped each plant’s location. The fences showed signs of wear and there were unmanaged trails present where damage was greatest. Nearby vegetation included *Ammophila breviligulata* and other species. *C. pitcheri* was only present at North Beach dune with most of the plants located near the leeward side of a sand fence. Stabilization near sand fences was shown by deposition and vegetation growth, but sand fences seemed to concentrate human impacts at breaks in the fences. We concluded that sand fences may impact *C. pitcheri* presence, but additional studies comparing more dune habitats and factors near sand fences, such as invasives and human impacts, are needed.