

# First-Year Research in Earth Sciences: Dunes

**Conference Presentation:** Prom, G., D. Anderson, S. Greene, J. Fridsma, S. Hoeksema, and C. Pickett. 2023. "Early Foredune Indicators During Falling Lake Michigan Levels." North-Central Section Meeting of the Geological Society of America. Grand Valley State University, Grand Rapids, Michigan, 4-5 May 2023; poster.

**Abstract:** After high lake levels peaking in 2020 eroded the foredune along most of the east coast of Lake Michigan, falling water levels created the conditions needed for foredune growth. This project investigates the patterns of emergent vegetation growth on predicted foredune locations at P.J. Hoffmaster State Park during autumn 2022. Sand movement data was obtained from erosion pins and sand traps installed throughout the study area. Vegetation location data was collected using a GPS during a field visit and analyzed with GIS. Vegetation characteristics measured include species, longest leaf length, number of shoots per plant, and longest rhizome length. Results show sand deposition throughout the study area but primarily downwind from existent vegetation. Our analysis shows that the vegetation is predominately a singular species, young, and has extensive rhizome networks. One section of the study area had higher amounts of sand deposition and a greater quantity of vegetation, suggesting a correlation between the two variables. These direct measurements of the earliest stages of foredune development provide a window into a part of the lake-level cycle that has not been well documented for Lake Michigan coastal dunes.