

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Whalley, Kyle, Chris Maike, Gideon Berghuis, Luke Cousino, John Elenbaas, James Karsten, Jessica Trojanowski (2012). “Interactions Between Dune Activity and Oriental Bittersweet on Castle Park Dune, Michigan.” FYRES: Dunes Research Report #3. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 17 p.

Abstract: The dunes along Lake Michigan are interesting sites for studying the interactions between invasive species and topography. This study explores the relationships between dune characteristics and the invasive species Oriental bittersweet on a 50-meter tall dune in Castle Park Preserve near Holland, Michigan. During the fall of 2011, the researchers investigated dune topography, activity, surface conditions and the locations of invasive species. Erosion pins and sand traps were utilized in the study to identify areas of dune activity, a total station was used to survey dune topography, and Trimble GPS units were used to map Oriental bittersweet. The Castle Park Dune is an active blowout with sand moving over the crest of the dune. More than 279 Oriental bittersweet plants were recorded, with most of them concentrated within 3 main areas on the leeward slope of the dune. The lee slope receives inputs of sand but is currently stabilized by the Oriental bittersweet. Management efforts to remove the Oriental bittersweet are underway, but our analysis of dune activity suggests the dune slope may become unstable without the plants. Dune managers could plant an appropriate native species in the place of the invasive species.