

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Messina, Michael G., Nathaniel H. Bos, Ellis O. Chalfant, DeAnna Clum, and Carolyn Lindemulder (2016). “Dune Habitat Influences Threatened Thistle: *Cirsium pitcheri* at Rosy Mound Natural Area.” FYRES: Dunes Research Report #21. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 24 p.

Abstract: Understanding the interaction between a plant and its surrounding environment is an important step towards evaluating the health of a population, particularly when a species is threatened or endangered. This study examined how habitat influences the health and distribution of *Cirsium pitcheri*, a state and federally threatened plant, at Rosy Mound Natural Area on Lake Michigan’s eastern shore. In fall of 2015, we used GPS units to map 147 individual plants, collecting data on leaf length, number of leaves, and plant health. We sampled dune surface characteristics such as sand movement, plant density, and percent ground cover. Using the GPS units, we mapped various types of plant communities and dune features throughout the study area. *C. pitcheri* grew most abundantly in areas of sparse grasses, dune blowouts and slipfaces, hummocky dunes, and moderate disturbance. A small number of thistles were growing near a small stand of evergreen trees in an area with no obvious sand movement. The healthiest and most mature individuals tended to grow in sandy spots with little ground cover. Understanding how the local environment influences the growth of *C. pitcheri* could lead to improved management plans for Great Lakes parks to implement.