

# First-Year Research in Earth Sciences: Dunes

**Conference Presentation:** Hughey, Audrey, Jesse Dillon, Chace Scholten, Chloe Selles, Philip Simonton, and Arie Venema (2015). “Natural and anthropogenic impacts of *Cirsium pitcheri* at Rosy Mound Natural Area.” Annual Meeting of the Michigan Academy of Science, Arts, and Letters, Andrews University (Berrien Springs, MI), 13 March 2015; poster.

**Abstract:** Endemic to the Great Lakes dunes, *Cirsium pitcheri* is threatened at the state and federal level because of both natural and anthropogenic variables. This study examines these variables affecting *C. pitcheri* at Rosy Mound Natural Area on Lake Michigan’s eastern shore. In fall 2014, we analyzed *C. pitcheri* in three open dune study areas, collecting species and bare sand composition, and slope in each. Site A, with 2-7% slope, was closest to the shore and adjacent to a boardwalk. Site B, with 10-20% slope, was on a windward slope adjacent to an unmanaged trail. Site C, with 25-30% slope, was on a leeward slope with a trail-free buffer. For each plant, leaf length and GPS location was recorded. For a random selection of individuals, a point-quarter vegetation survey was used to identify the nearest species neighbor. Results show similar species and bare sand composition in all areas. Site A had the fewest *C. pitcheri* and smallest average leaf length. At sites B and C, plant locations showed clumping patterns influenced by the site topographies. These results suggest spatial distribution of *C. pitcheri* is directly affected by topography and indirectly affected by anthropogenic effects.