

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: McClellan, Jennifer, Asher Amundson, Keagan DeVries, Chynna Pomales-Stohr, and Garrett Rhoads. 2019. "Can *Cirsium Pitcheri* Patterns Be Used to Assess Blowout Activity?" FYRES: Dunes Research Report #33. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 18 p.

Abstract: *Cirsium pitcheri* is known for tolerating a narrow range of surface disturbance in dune environments. In Rosy Mound Natural Area, Michigan, the relationship between *C. pitcheri* and the spatial patterns of dune surface changes was investigated in a blowout. We recorded dune characteristics with GPS mapping and a straight-line survey. Sand transport was measured with erosion pins and sand traps. The locations of *C. pitcheri* were mapped and plant ages were documented by categories. The 29-meter-high blowout has a saucer shape with a steep windward slope. Most dune areas showed evidence of sand movement with the highest amounts occurring along the north arm and crest. More than 250 *C. pitcheri* are living on the dune, with the largest numbers found near the bottom of the blowout and on the south side of the blowout. A small number of *C. pitcheri* were found on the slipface. Roughly half of the *C. pitcheri* recorded are small juveniles, suggesting the population is increasing. The widespread presence of *Cirsium pitcheri* suggests that most areas of the blowout are experiencing moderate levels of sand transport, except for the upper windward slope and crest where sand transport amounts are too large for *C. pitcheri* to tolerate.