

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Gerber, Kathryn E., Christina J. Bohnet, Lauren B. Ebels, and Madison B. Springer (2016). “Environmental Assessment of a *Cirsium pitcheri* Restored Population on the Coast of Lake Michigan.” FYRES: Dunes Research Report #19. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 15 p.

Abstract: Ecological restoration poses a greater challenge when rare plants depend on specific environmental conditions. Endemic to the Great Lakes region, *Cirsium pitcheri* is a federally-protected, monocarpic thistle species. As such, restoration efforts to maintain and re-establish populations may be essential to the survival of these native plants. This study compared the characteristics of *C. pitcheri* in a second-generation artificially-restored population and a natural population in order to assess management possibilities. During the fall of 2015, we mapped the two populations, recorded physical plant characteristics and measured surface characteristics of the surrounding environments. Plant height, width, health, sand slope angle, and sand pH were compared among both populations. Herbivory, animal impacts and proximate human activity were observed in each study area. The greater density of *C. pitcheri* was recorded in the artificially-restored population. This group also displayed a greater average plant height, health rating, and soil pH than the naturally-occurring population. Results suggest that well-selected environmental locations for *C. pitcheri* regeneration have the potential to be effective management strategies to restore populations and keep them healthy into future generations.