

First-Year Research in Earth Sciences: Dunes

FYRES: Dunes Research Report: Duimstra, Peter, Christopher H. Anderson, Katherine C. Benedict, Haleigh I. Bos, Kees VanDerAa, Lesley Vargas, and April Volzer. 2019. "Considering Management for a Blowout in Kitchel-Lindquist-Hartgers Dunes Preserve." FYRES: Dunes Research Report #35. Grand Rapids (MI): Department of Geology, Geography and Environmental Studies, Calvin College. 16 p.

Abstract: Active dunes can cause property damage if they move onto developed property. The south blowout in Kitchel-Lindquist-Hartger Dunes Preserve is suspected of posing a threat to two developments: an outdoor classroom in the preserve and the nearby North Shore Marina. To advise the management planning, we studied the current state of the blowout, including the dune features, the activity level, and current management. We inventoried dune features, gathering data about vegetation coverage and areas of bare sand. We surveyed topography to analyze the shape and structure of the dune. We used erosion pins on the windward and leeward slopes of the blowout to measure patterns of surface change. The dune is a 14-meter high trough blowout with a main axis that lines up with the outdoor classroom. Results from the erosion pin data show that the dune is active on both the windward and leeward slopes. Early-succession species on the slipface indicate more stability than the bare sand areas in the bowl of the blowout. A sand fence is doing some stabilizing of the middle windward slope, as demonstrated by the presence of beach grass near the fence. More sand fences, or the implementation of other barriers such as woody debris, could significantly stabilize the dune and would decrease the likelihood of any future threats to the nearby developments.