First-Year Research in Earth Sciences: Dunes

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Abstract: Recent studies call for more research on the impacts of beach wrack to assist dune managers, but there has been little research on how wrack affects aeolian processes on Great Lakes beach-dune systems. Our study investigated the characteristics of wrack on Lake Michigan beaches and the effects of wrack on aeolian activity. Our field sites were in Hoffmaster State Park and Rosy Mound Natural Area, both parks in west Michigan. We sampled wrack at set intervals by photo-documentation; GPS mapping the locations; and measuring size, material category, and distances from waterline and back of beach. For large woody debris, we also recorded all large woody debris found at one study area. At all sites, we documented effects of wrack on aeolian processes, including the presence and nature of shadow dunes. Results show that wrack was common in the study areas and was mostly comprised of natural materials. The wrack was more concentrated in a narrow zone on the upper beach closer to the dunes, consistent with a wrack line from a storm event. Woody debris was most often found upwards of 10 meters inland of the water line, where the formation of embryo dunes was common. Studying wrack offers the ability to better understand beach surfaces and how wind-blown sand is affected by obstacles.