

*Understanding the effects of sand fence usage and the resulting landscape, landforms and vegetation patterns: A New Jersey example*

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Abstract: Sand fences are important human adjustments modifying the morphology of developed shores. The effects of sand fences on sediment transport and deposition in their initial stages have been well studied, but little is known about the effect of deteriorated sand fences that have become partially buried low scale barriers within the dune, potentially benefiting vegetation growth by protecting it from onshore stress. Data on vegetation, topography and fence characteristics were gathered at three dune sites in Ocean City, New Jersey on September 2007 and March 2008 to evaluate the effect of fences within the dune on vegetation distribution. Variables include: distance landward of dune toe, degree of sheltering from onshore stressors, net change in surface elevation (deposition or erosion), vegetation diversity and density, presence of remnant fence, and distance landward of fence. Results for the studied environment reveal that 1) vegetation diversity or density does not increase near remnant fences because most remnants are lower than average vegetation height and can not provide shelter; but 2) vegetation distribution is related to topographic variables, such as degree of sheltering, that are most likely the result of sand accretion caused by fence deployment. Fence deployment that prioritizes the creation of topographically diverse dunes within a restricted space may increase the diversity and density of the vegetation, and the resilience and value of developed dunes. Managers should consider the benefits of using sand fences on appropriately wide beaches to create a protective dune that is also diverse, functional and better able to adapt to change.