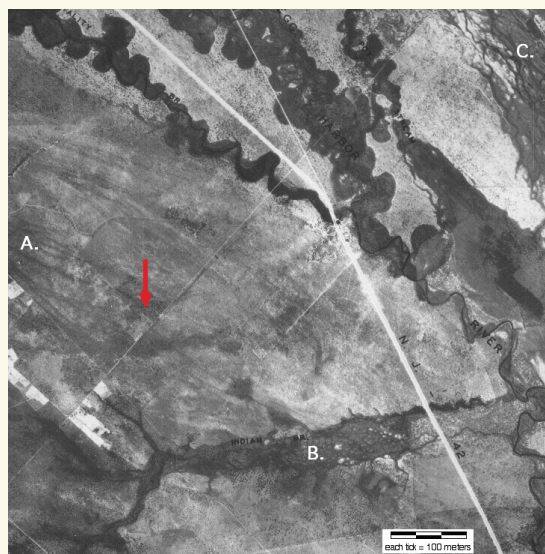
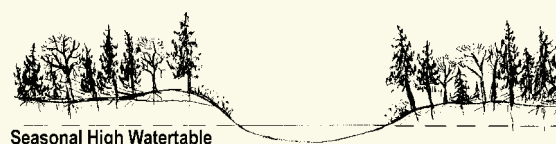


THE NEWTONVILLE DUNE FIELD

Expanding Our Appreciation and Understanding of Pinelands Natural History

■ MARK DEMITROFF

A Pinelands Commission staffer recently called my office with questions about a parcel in Buena Vista Township slated for development. I am a Pinelands geographer, and resident of the municipality being queried. My current research at the University of Delaware chronicles 200,000 years of local climate change, and how regional environmental dynamics relate to cultural ecology. The contact was serendipitous! The property in review was part of a special place, an intact relic of an unusual inland dune field. As with other unusual cold, non-glacial (*i.e.*, periglacial) landforms in the Pines, these sandy windblown deposits are likely to possess significant natural and cultural resources. However, I quickly learned that no regulatory mechanisms exist to protect upland geologic features, no matter how outstanding they may be! Nevertheless, a heightened appreciation for the natural history of the Newtonville dune field could provide the basis for its preservation.



Often, Pinelands dune features are dismissed as “fire shadows” on aerial photos. Lineations (A) on this 1931 aerial photo are hairpin parabolic dunes. Patterned ground (B) is present at Indian Branch, relics of ancient frost cracks related to frozen ground. The braided channels of Penny Pot Branch (C) were created when spring snowmelt flooded over frozen tundra. Some graves in an old “coloured” cemetery (arrow) display African burial customs.

When Jack McCormick authored *The Pine Barrens: A Preliminary Ecological Inventory* in 1967, he advocated numerous ecological research opportunities to the National Park Service. The report laid the groundwork for the Pinelands National Reserve, and became a rallying point for many ecological, botanical, and zoological investigations. However, one important directive had been overlooked. McCormick recognized the outstanding potential for geological study present in the Pines. He found the region’s Ice

In McCormick’s inventory, the “numerous saucer-shaped depressions scattered throughout the Pine Barrens” were perplexing features. These shallow (2-3 feet) intermittent pools or “spungs” are now interpreted as blowouts created by powerful winds flowing off the Laurentide ice sheet.

Age legacy particularly baffling. On page 83, McCormick acknowledged, “Some geologists claim to have found evidence of severe tundra-like conditions, but others claim the region was subjected to conditions only slightly cooler and wetter than at present.”

Recent work by the University of Delaware, the University of Ottawa, and the U.S. Geological Survey indicates that South Jersey’s Coastal Plain experienced multiple episodes of permafrost formation under cold and dry conditions during the Pleistocene. Strong winds flowed southwards from the continental ice margin across the sparsely vegetated, tundra-to-desert-like terrain of the Pine Barrens. Climatic conditions much different from those of the present reshaped the Pine Barrens’ landscape, and impacted the size and shapes of peculiar landforms found in the Pinelands today.

An outstanding example of this Ice Age inheritance was recently discovered in Newtonville, Atlantic County. A well-preserved late Pleistocene dune field exists along the southern banks of the Great Egg Harbor River. Rare hairpin parabolic dunes created a rugged landscape at this location. Their form is comet-like, with trailing arms that can stretch for a mile or more. Similar inland dunes are found in Saudi Arabia, northwest India, and northern Canada, and are associated with strong directional winds in sparsely vegetated terrain. Little is known about Ice Age dunes in the United States, although they have been intensively studied in Europe. In the Netherlands, Germany, and Poland, similar features are valued and preserved as parks and monuments for their cultural and environmental significance.

Witmer Stone noted this place as a “wild spot” in *The Plants of Southern New Jersey* (p. 799). Railroad era settlers avoided this desolate patch; their nineteenth century roads cut across the windblown sugar sands, soon crumbled and were quickly abandoned. Black colliers, making charcoal for Weymouth Furnace, were isolated in camps adjacent to this barren land. Blacks could not move to other sections of town until the mid-1920s. A fair-skinned woman of mixed race, Rose Washington, put an end to Newtonville’s

racial discrimination. Developers made no secret of selling certain properties only to whites. Pine Barrens villages without blacks were considered “white bread, mayonnaise.” Rose could pass as Caucasian, and purchased lots that were off-limits to blacks, and resold them to newcomers seeking a better life in pastoral solitude.

Today, development threatens this geological wonder. Unfortunately, Dune fields are afforded little protection under the Pinelands’ Comprehensive Management Plan (CMP). When the CMP was drafted to preserve and protect the significant and unique natural resources of the region, the planners completely overlooked geological phenomena. Three decades hence, Pinelands Commissioner staffers are fettered to rules that don’t necessarily address new insight. Geomorphology is an underutilized tool in land-preservation efforts, particularly in the USA. The 1972 at UNESCO’s *Convention on the Protection of the Cultural and Natural Heritage of the World* recognized geotopes, locations where natural geological or geomorphological features worthy of protection exist. Unlike biotopes, geotopes have not received the attention in the United States that they have in Europe. In Germany alone, seventy-six national geotopes have been recognized as worthy of protection for tourism and study.

My point is that geology can provide a basis for the conservation of preserves and heritage sites, as it has at the Ice Age Scientific Reserve in Wisconsin. Through better recognition, understanding, and appreciation of exceptional geologic sites in the Pinelands, we can help protect our collective heritage from exurban sprawl. Such sites are often intimately linked to the greater human ecology. Berger and Sinton in *Water, Earth, and Fire: Land Use and Environmental Planning in the New Jersey Pine Barrens* (1988: xviii) state, “The beauty and complexity of the Pine Barrens should awe the officials in charge of the region’s future.” That’s wishful thinking! In reality, it’s up to us to champion the natural drama that is the Pine Barrens. ■

This article is slightly modified from the original in Pinelands Watch Special Edition SE11, a Report by the Pinelands Preservation Alliance, May 2007.