

Assateague Island National Seashore North End Restoration Project Introduction

The North End of Assateague Island

The northern 10 kilometers of Assateague Island National Seashore (referred to as the North End of Assateague Island) is an extremely unique environment. Terminated to the north by the Ocean City Inlet, much of this area is composed of a beach and low berm on the ocean side of the island, with a low elevation, sparsely vegetated back barrier flat that leads into a salt marsh and coastal bay (**Figure 1**). It is prime habitat for state- and federally-listed endangered species, including the piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*). This area also protects the mainland directly to the west from storm events, and wave and tidal energy.

The fragile nature of the North End environment is thought to be primarily caused by an interruption in longshore sediment transport by the jetties built around the Ocean City Inlet in 1933 (Rosati and Ebersole 1996). Prior to 1933, Fenwick Island and Assateague Island were part of the same continuous barrier spit located off the coast of Delaware, Maryland and Virginia. In the 1920's, Ocean City, MD was already undergoing rapid development, while the area now known as Assateague Island remained in a mostly natural state. On August 23, 1933 a major hurricane came through the area, breaching the barrier spit at the Ocean City Inlet, and dividing the previously continuous peninsula into Fenwick Island to the north, and Assateague Island to the south (Bass 1998). Jetty construction began on each side of the newly formed inlet in September of 1933 and was designed to create a navigable waterway between coastal lagoon and ocean. The jetty construction was completed in 1935 with an initial channel depth of 3 meters and a width of 76 meters (Rosati and Ebersole 1996).

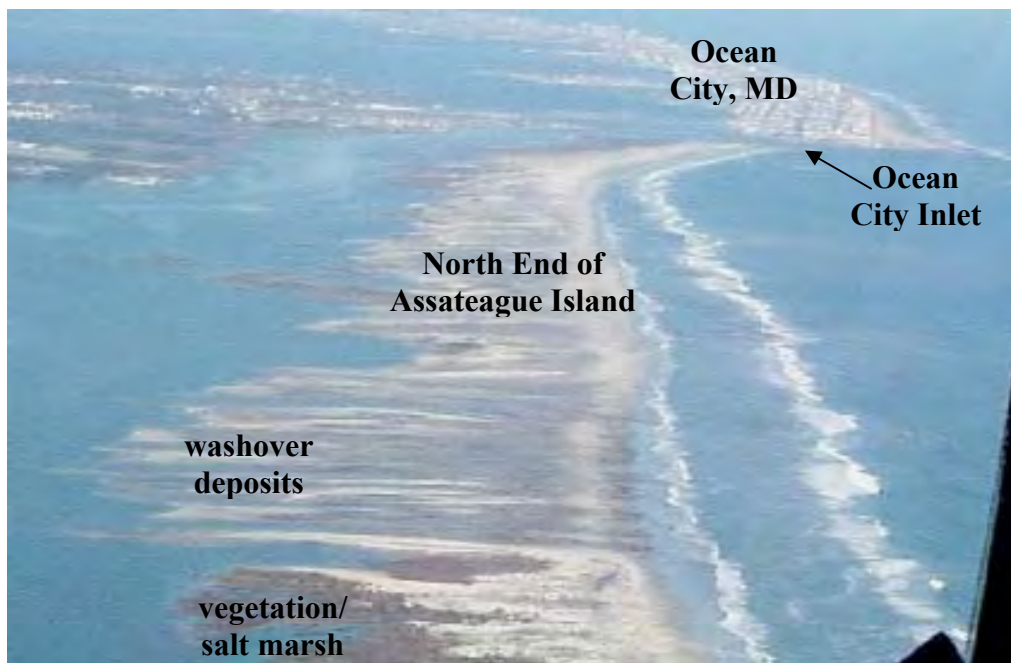


Figure 1. Oblique aerial photograph of northern Assateague Island.

Impact of the Ocean City, MD Jetties

Since the jetties were built, unnatural erosion and accelerated shoreline migration has been occurring on northern Assateague Island. Between the time of the 1933 hurricane and present, the ocean shoreline in this area has shifted westward more than 350 meters, resulting in whole scale geomorphologic, habitat, and biotic changes that would not have occurred under natural circumstances. Coastal geologists predicted that without mitigation the northern portion of the island would continue to destabilize and that a new inlet or inlets would be created by storm events in the near future. Such a scenario would have a significant impact on the values and purpose of Assateague Island National Seashore. A new inlet or inlets would also have serious implications for the adjacent mainland communities and region as whole, including increased rates of shore erosion, loss of estuarine habitats, and decreased flows through the existing Ocean City and Sinepuxent channels resulting in increased maintenance needs.

Development of a Restoration Plan

As a result of the continual acceleration of shoreline migration, a regional feasibility study was initiated in the mid-late 1990's, sponsored by the U.S. Army Corps of Engineers (COE) with Assateague Island National Seashore (ASIS) serving as an active partner. Other partners in this study included the National Park Service (NPS), the state of Maryland, Maryland Department of Natural Resources, Worcester County, Maryland, and the Town of Ocean City, Maryland. This report investigated the Assateague erosion problem and other priority issues in the Ocean City/Assateague Island vicinity. The study resulted in the development of a comprehensive restoration plan that focuses on restoring Assateague Island to as natural a condition as possible. This plan is referred to as the North End Restoration Project, and has met with widespread support by the study partners and local community. The first, or "short-term," phase of the restoration program was designed to provide a one-time infusion of sand to replace a portion of the sediment lost over the past 60 years due to the effects of the jetties. The second phase, the "long-term sand management" component, addresses the ongoing and future effects of the jetties by re-establishing a "natural" sediment supply for northern Assateague that reflects historic, pre-inlet rates.

1998 Storms

On January 28th and February 4th, 1998, prior to the start of the restoration plan, extra-tropical cyclones occurred over Assateague Island. During each storm, wave heights were recorded at 7 meters off the coast of Ocean City, MD, and one of the most severely impacted areas included the north end of Assateague Island ('1998 Assateague Island Northeasters Impact Studies' 1999). After 65 years of the Ocean City Inlet jetty system acting as a barrier to longshore transport, a major breach on the North End had become a distinct possibility. In an effort to prevent this breach from occurring, an 'emergency storm berm' was constructed along the most severely hit portion of the island (washover deposits area in **Figure 1**). The berm was to be put in at an elevation of ~10.8 ft (3.3 m) National Geodetic Vertical Datum (NGVD), and the source of the fill was Great Gull Bank, an offshore shoal, east of the Ocean City Inlet (Bass 1998) (**Figure 2**).

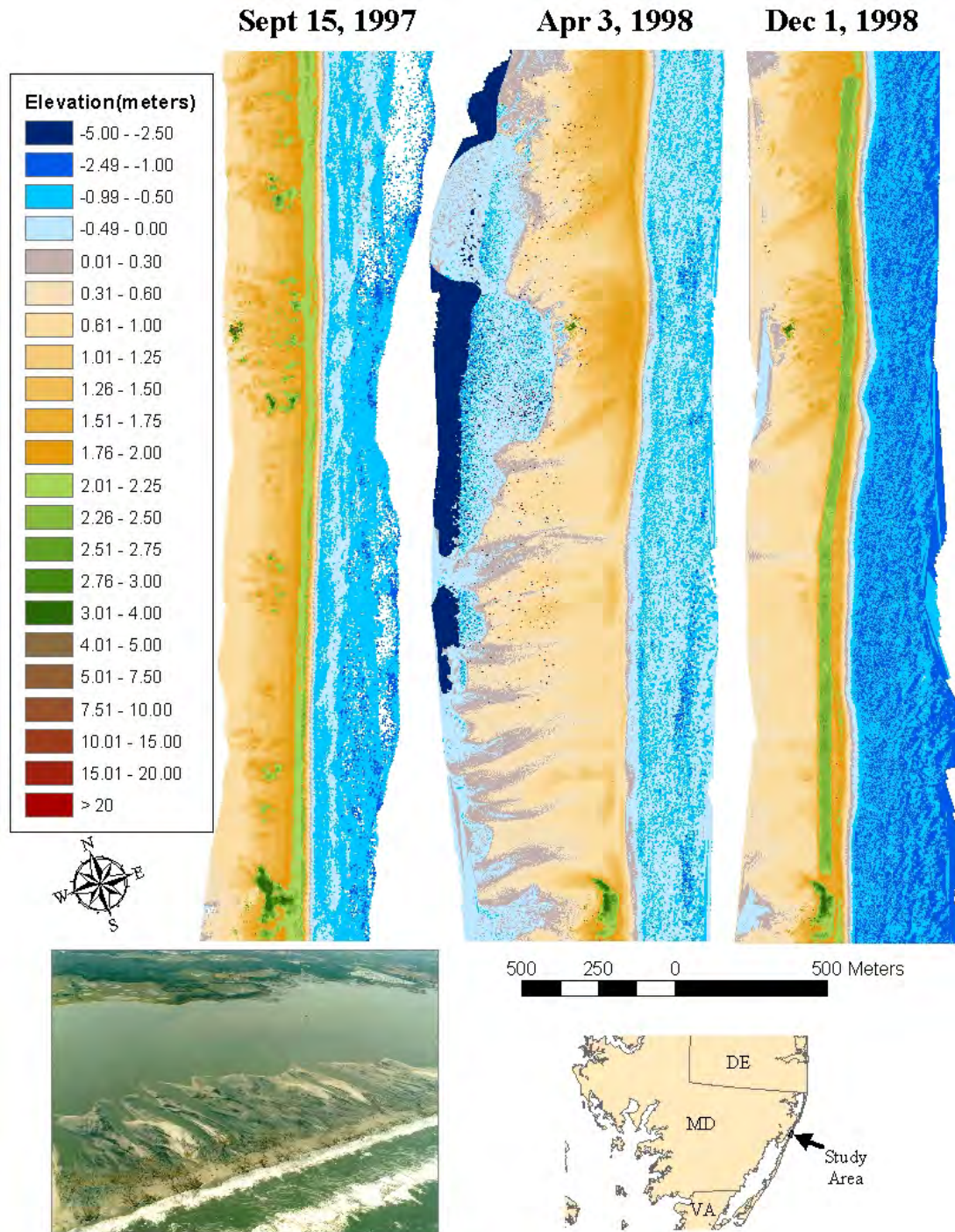


Figure 2. Lidar surveys and an oblique aerial photograph of the overwash area and emergency storm berm, located on northern ASIS. The September 15, 1997 survey is pre-storm; the Apr. 3, 1998 survey and the oblique photograph are post-storm and pre-berm; and the December 1, 1998 survey is post-berm construction. The stretch of dark green running parallel to the coastline in the December 1, 1998 survey is the emergency storm berm.

Implementation of the North End Restoration Project

The first stage of the North End Restoration Project was undergone in September, 2002 (**Figure 3**) as 1.4 million cubic meters (1.8 million cubic yards) of sand was placed seaward of the mean high waterline to minimize disturbance to upland habitats. The second stage of the beach replenishment project was then initiated in January of 2004, and continues with sediment dredged and placed in the nearshore of Assateague Island twice a year. Please see the 'Project Timeline' PDF for details on the dates, amount of sediment moved, and location of events. In an effort to monitor the effects of the North End Restoration Project, as well as the condition and surrounding effects of the emergency storm berm (which was rebuilt in 2002), ASIS and USACE researchers have been collecting a variety of ecological and geomorphological data in this area. This website is designed to provide locations and progress of these monitoring datasets, as well as general information, a timeline of activities, and a list of contacts pertaining to the ASIS North End Restoration Project.



Figure 3. The first stage of the North End Restoration Project took place during September, 2002 as sediment is deposited on the beach of northern Assateague Island through pipes and then spread out by bulldozers, extending the shoreline into the ocean.

References

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Rosati, J.D. and B.A. Ebersole. 1996. *Littoral impact of Ocean City Inlet, Maryland, USA*. Edge, Billy L. [ed.]. Coastal Engineering 1996: Proceedings of the 25th International Conference. 3: 2779-2792. American Society of Civil Engineers.

Figures, and a majority of the text for this section are taken from the following documents:

Rodriguez, A.H. 2004. Needs Assessment, Creation, and Utilization of the Coastal GeoToolbox. Masters Thesis. University of Rhode Island, Department of Natural Resources Science. 170 pp.

Zimmerman, Carl. 2004. "Executive Summary – North End Restoration". Assateague Island National Seashore, Resource Management Division.