



UNIVERSITY OF NORTH CAROLINA

SEA GRANT COLLEGE
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It's falling into the ocean

In 1864 Fort Fisher stood staunchly on the lip of the Atlantic Ocean, manned by Confederates protecting the vital port of Wilmington. Its huge earthen mounds stretched a mile and a half along North Carolina's coast.

Today only a handful of earthen mounds remain of what was once considered the strongest fortification in the world. But it wasn't the Civil War that destroyed it. Since 1865, the main challenge to the fort has been the ever-creeping erosion of wind and waves. It's a battle which, without a lot of intervention, the fort is destined to lose.

Like much other construction on the coastline, Fort Fisher is slipping into the ocean. Unfortunately, it seems to be eroding faster than any other area of the state. Erosion of the fort has been a consistent phenomenon since 1865 and has averaged 15 feet per year. It has eaten away at the beach, the remains of the fort, vegetation and a state owned picnic area. U.S. Highway 421, which runs from Wilmington to the tip of the barrier island has been washed out and relocated twice.

The problem also plagues other historic sites along the coast. At Cape Hatteras, for example, the ocean has been encroaching dangerously on the famous lighthouse for years—in spite of efforts at erosion control. Clay Gifford of the National Park Service has watched the sea carry off protective sandbags "as big as automobiles."

Much of the erosion at Fort Fisher can be attributed to hurricanes and northeasters. Four severe hurricanes in 1954 and 1955 snatched large portions of the fort and inspired the state to begin its first tentative efforts to control erosion there. Rubble, including broken concrete and brickwork, was piled on the bluffs. In the early 1960s sand was piped onto the beaches, but it was rapidly washed away.

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Expensive engineering may save slipping fort

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Until then man had only added to the erosion problems at the historic site. Some contend that the taking of coquina rock from the beach for road construction in 1926 compounded the difficulties.

The rubble revetment is now in poor condition. Many people are no longer content to sit silently by while erosion continues its inevitable work. The U.S. Army Corps of Engineers intends to do something about that. Its recommended plan for erosion control of the area has been authorized by Congress. The plan includes building a stone revetment which would stretch along the entire bluff fronting the Fort Fisher historic site—a distance of about 2000 feet. Beach fill would be applied to 8000 feet of the shore, making the beach an average of 80 feet wide. Seven groins, varying from 260 to 430 feet in length, are called for.

Like most serious erosion control plans, this one carries a big price tag. The current estimate for the major construction is \$7.4 million. Federal funds will cover 70 percent of those expenses. The state will pick up the rest of the bill. And that won't be the end of the expenses. Study manager Lim Vallianos, with the Wilmington Office of the Corps of Engineers, estimates that the state's annual fees will average \$90,000 for beach replenishment and maintenance of construction.

At any rate, the state probably won't have to dip into its pocketbook any time soon. The Corps of Engineers has scheduled two-year design work on the project to begin in 1979. Construction will take another two years.

Vallianos doesn't see the Fort Fisher plan as just another in a long series of futile efforts to stop nature's erosion. He contends that the project will offer a permanent solution. "It will maintain itself as long as the program of nourishment of the compartments between groins is implemented," he said. Without the plan, Vallianos predicts that U.S. Highway 421 and the entire Fort Fisher site will be eroded away by about 1998.



Remains of a former U.S. Highway 421, washed out by erosion.

For visitors only

Nature's erosion and man's construction have not completely destroyed the ocean-side Fort Fisher. Seven mounds that were part of the original land face of the fort are still intact. The mounds are laced with trails and surrounded by a reconstructed palisades fence.

More than 400,000 people visit the nearby Ft. Fisher Visitor Center/Museum annually. Built in 1965, the center houses exhibits, including artifacts from the site and restored items from sunken blockade runners. The museum is open free to the public Tuesday through Saturday from 9 a.m. to 5 p.m. and Sunday from 1 p.m. to 5 p.m.

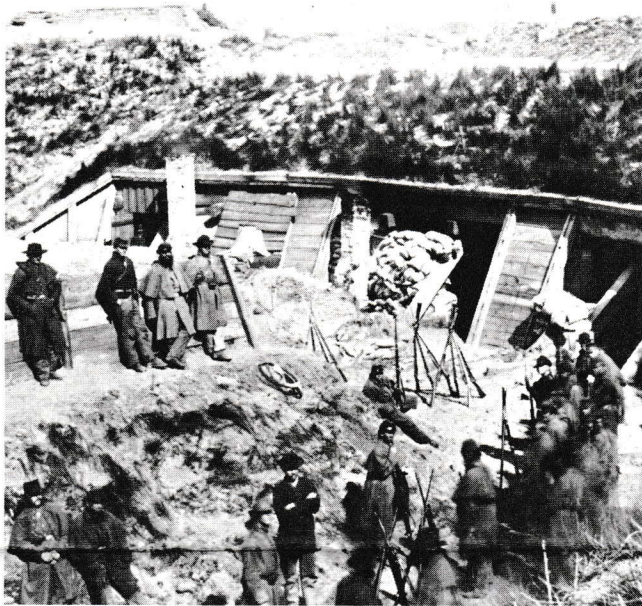
Fort Fisher is located 14 miles south of Wilmington on U.S. 421. It can also be reached by toll ferry from Southport.

Across the street from the center, there is a picnic area in the small maritime forest located just behind the beach. The beach, with its outcropping of coquina rocks, is also open to the public. During low tide, the rock outcropping is a favorite spot for sports fishermen. A monument to the Confederate dead overlooks the ocean from the adjoining Battle Acre. Part of the fort which once stood on that spot has been eroded.

The North Carolina Underwater Preservation Laboratory, also on the grounds, was built immediately after the wreck of the *Modern Greece* was salvaged in 1952. The ship sank a half-mile north of Fort Fisher in 1862. A group of Navy divers brought up about 11,000 artifacts. Many of them, in addition to artifacts from other North Carolina shipwrecks, are on display in the visitor center/museum. The preservation lab also offers a field school in the summer for college students. The curriculum includes the basic techniques of underwater archaeology. The lab is not open to the public, but special tours can be arranged for school groups.

The Fort Fisher area is famous for its shipwrecks, many of them casualties of Civil War confrontations. Diving on the wrecks is permitted, but anyone planning to remove materials from a wreck must have prior permission from the preservation lab.

The National Park Service has named the Fort Fisher area a national historic landmark, and further recreational development of the area is planned. The state of North Carolina has purchased nearby lands which are intended for public recreation. About two miles south of Fort Fisher is the Marine Resources Center/Fort Fisher, an educational facility which is also open to the public. A toll ferry just south of the center connects the barrier island to Southport.



Confederates manning a Fort Fisher battery during the Civil War. Photo courtesy N.C. Division Archives and History.

Confederate masterpiece with a rocky history

At the height of its glory, Fort Fisher was the mainstay in a system of forts devised to protect the invaluable lower Cape Fear River. It was the vital link which kept open the port of Wilmington until the very last months of the Civil War, allowing dare-devil blockade runners to slip in and out of New Inlet.

The blockade runners were loaded with provisions, clothing and war munitions for the troops and civilians of the Confederacy. Wilmington's foreign commerce boomed. Towards the end of the war, it was the Confederacy's only supply link with the outside world.

But even in its prime, Fort Fisher was an unfinished masterpiece. Its story began in 1861, when a two-gun earthenwork battery was constructed on the northern side of New Inlet at Federal Point (called Confederate Point during the war). The following year Major (later Colonel) William Lamb assumed command of the fort and began to mold it into his vision—a formidable earthenware fort modeled after the Malakoff of the Crimea.

Under Lamb's direction, slaves and military men were put to work building the huge traverses, bombproofs and gun batteries. Conditions were difficult. Exhausted soldiers wrote home complaining of rats in the cistern and "mosquitoes as large as hummingbirds."

At one time there were as many as 1000 men working on the fort, including 500 slaves. But construction progress was thwarted by the fact that troops stationed at the fort were constantly being called to

the defense of other vital points in the Confederacy. And, much to Lamb's dismay, he was unable to persuade North Carolina's Governor Vance to send more workers and slaves to finish the task.

The fort stretched in an L shape from the Cape Fear River to the ocean and down the length of the beach. The section guarding land was located a mile and a half north of New Inlet. About 900 yards in length, it consisted of 15 mounds and ended in a bastion at the point of the angle. The first 100 yards of the sea face were similar in construction. But the remainder (1400 yards) was a series of small mound batteries connected by infantry fences.

On the edge of New Inlet, Fort Buchanan stood isolated. Though it was a mile and a half from the end of the sea face, it was a vital part of Fort Fisher. This massive earthen mound held guns to cover the inlet and stood ready to receive beaten troops who might then retreat by water.

In late 1864 the Union realized that it would have to sever the Confederacy's supply link at Wilmington if it was to win the war. On Christmas Eve, 1864, Federal troops first attacked Fort Fisher. Seeing that they didn't have enough forces to take the fort, they retreated. But they returned by land and water to launch a much stronger attack on the afternoon of January 13, 1865. The fort was finally invaded the afternoon of January 15 and Confederate forces surrendered that night. They had suffered a loss of 500 men; the Federal casualties totaled 1500.

The Confederate plan to use Fort Buchanan as a retreat point also failed. Wounded commanding officers Whiting and Lamb were among those who arrived at Fort Buchanan to find that Confederate Navy forces had abandoned it and taken the boats. By February 21, 1865, Wilmington was occupied and the Confederacy's lifeline had been cut. The fall of the Confederacy followed swiftly.

But that was not the end of Fort Fisher's history as a military installation. During World War II it was used to protect the Federal Point-Smith Island area from submarine attack. The fort became part of the Camp Davis training center, located at Holly Ridge. Wells were sunk; barracks, machine gun nests and other buildings were constructed. Ammunition bunkers can still be seen along the road just north of Battery Buchanan. An experimental radar tower looms over the beach today.

Construction during World War II also meant the loss of part of the Civil War historic site. Confederate land face mounds were flattened to make an airstrip. And more than half of Battery Buchanan was dismantled to build bomb proofs to protect the ammunition bunkers.

Most of the World War II buildings were in turn destroyed when the Fort Fisher area became part of the buffer zone of Sunny Point Ammunition Loading Terminal during the early 1950s. It wasn't until 1965 that the state of North Carolina built a visitors center/museum on the site to preserve its Civil War history. The remaining batteries were restored and a palisades fence was reconstructed.

Researcher studies Fort Fisher geology

Tom Moorefield has become a familiar figure around Fort Fisher this summer. Nearly every morning, he rolls into the visitor center parking lot in a 15-year-old van, affectionately dubbed the "Gray Ghost." Attired in his usual garb of tennis shoes, shorts and a t-shirt, he heads for the beach.

But unlike most visitors to Fort Fisher, Moorefield is not off for a day of seaside rambling. He's there to observe the natural geologic processes in the life of the beach and to collect sediment samples.

"I may see that part of this rock is uncovered or that sand has moved in a new direction on a certain section of the beach," he said.

A graduate student in geology at East Carolina University, Moorefield has Sea Grant mini-grant funding to study the geology of Fort Fisher and the surrounding estuaries and marshes. He hopes to come up with an explanation that might shed some light on the severe erosion problems of this historic site. When the research is completed next fall, he plans to draw up environmental and geologic maps of the area.

Moorefield is no stranger to the Fort Fisher area or to the problems of beach erosion. As a child he spent summers at his family's cottage on nearby Carolina Beach. He remembers well when Fort Fisher beach offered a much wider expanse of sand. In those days, he and his father whiled away many hours fishing from the coquina rock outcroppings.

So far Moorefield has a theory about the erosion at Fort Fisher. He is the first to admit that it is an unorthodox one. He believes that the layers of coquina rock which make this unique among North Carolina's beaches are the culprits in the erosion process. Many scientists, on the other hand, contend that the outcroppings have protected the beach from more rapid erosion, just as a sand bar might.

But there are other factors that Moorefield believes might be influencing the erosion of Fort Fisher. The

fact that the fort with its massive mounds built of sand and sod stretched a mile along the beach might have also contributed to the erosion. The capricious New Inlet, a mile and a half south of Fort Fisher, has opened and closed several times in the past 200 years, causing shifting sand and currents.

Not all of Moorefield's work is confined to the shore. With the help of a team of divers from the Fort Fisher Marine Preservation Lab, he has located submerged outcroppings of coquina rock running about 1000 feet to the south of the visible exposure. Other large outcroppings of coquina have been found in Snow's Cut and between the cut and Fort Fisher. That may indicate that there is a long linear deposit of coquina, he noted.

Moorefield points out that there are two possible origins of the coquina rock. The sediment could have been a beach deposit during the Pliocene period or part of a shoal, similar to Frying Pan Shoals that now lies off the Fort Fisher coast. Moorefield favors the latter theory. The coquina, he explained, is a mixture of sand, pebbles and shells which were stirred up by the high energy level near the shoal. When sea level receded, ground water probably dissolved the shells, which formed a cement to bind the elements together.

Moorefield's completed study and maps could provide a sound base of geology for planning erosion control of Fort Fisher.

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