Antebellum Plans for Reopening Roanoke Inlet

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Roanoke Inlet closed between 1792 and 1798, thus depriving the northeastern North Carolina port towns of an outlet to the Atlantic. In 1820, Hamilton Fulton, civil engineer to the State of North Carolina, devised a plan for reopening the inlet. During the next twenty-five years, civil engineers in the employment of the State of North Carolina and engineers of the United States Army Topographical Bureau conducted a number of other surveys of the Albemarle Sound region while Congress considered the practicality of the plan. The project was never undertaken. However, the reports of the engineers provide a detailed account of the dramatic geomorphic changes that took place in Croatan Sound after Roanoke Inlet closed. This article presents extracts from these reports alongside details of historic maps that document these changes.

Key Words: *Roanoke Inlet, Albemarle Sound, Croatan Sound, Hamilton Fulton, Coastal Plain Geomorphology*

Introduction

The maritime commerce of the Albemarle Sound region of North Carolina expanded during the closing decades of the Colonial Era as more land in the vast Roanoke River Basin came under cultivation. The closing of Roanoke Inlet in the late 1790s curtailed the development of a major port in the state's northeast. Beaufort Harbor and the port of Wilmington were located too far to the south to be beneficial; and the Dismal Swamp Canal, completed in 1805 (improved during the 1810s), attracted the produce entering Albemarle to the Norfolk market. Hamilton Fulton, while serving as civil engineer for the State of North Carolina, prepared a plan for reopening Roanoke Inlet in 1820. The plan involved dredging Roanoke Inlet and closing Croatan and Roanoke sounds to prevent the flow from Albemarle Sound to Pamlico Sound from causing Roanoke Inlet to close again (Combs, 2003, 1:1-27; Merrens, 1964, 85-172; Murphey, 1818, 18; North Carolina, 1820, 11, 14-15). The State of North Carolina did not have the resources to undertake such an ambitious project at the time. The United States Government, considering the project's potential for improving commerce and national defense, commissioned additional surveys.

Historic Maps

The sequence of gradual changes that occurred around Roanoke Island prior to Fulton's visit is recorded on several historic maps. The Edward Moseley Map of 1733 shows marshland extending across Croatan Sound between Roanoke Island and the mainland. He labels Croatan Sound "The Narrows," and includes a note about Roanoke

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Inlet: "Roanoke Inlet has generally 10 feet at low water, where it rises commonly about 4 feet, but those Shoals shifting, it was not thought proper to lay them down at large, as ye other Harbours. The Channel may be seen within from ye Mast head (tho' ye Bar breaks) so as to guide a Vessel in" (Figure 1). The John Collet Map of 1770 provides more detail of shoals surrounding Roanoke Island. The narrow channel through Croatan Sound is labeled as "Through Fare," and there is a cluster of marshes between Roanoke Island and the mainland at the southern mouth of this channel (Figure 2). The Price-Strother Map of 1808 shows in intricate detail the marshland connecting Roanoke Island to the mainland. The passage through the marshland is little more than a ditch. The shoaling of Roanoke Inlet appears to be filling in the passage from the sound side (Figure 3).

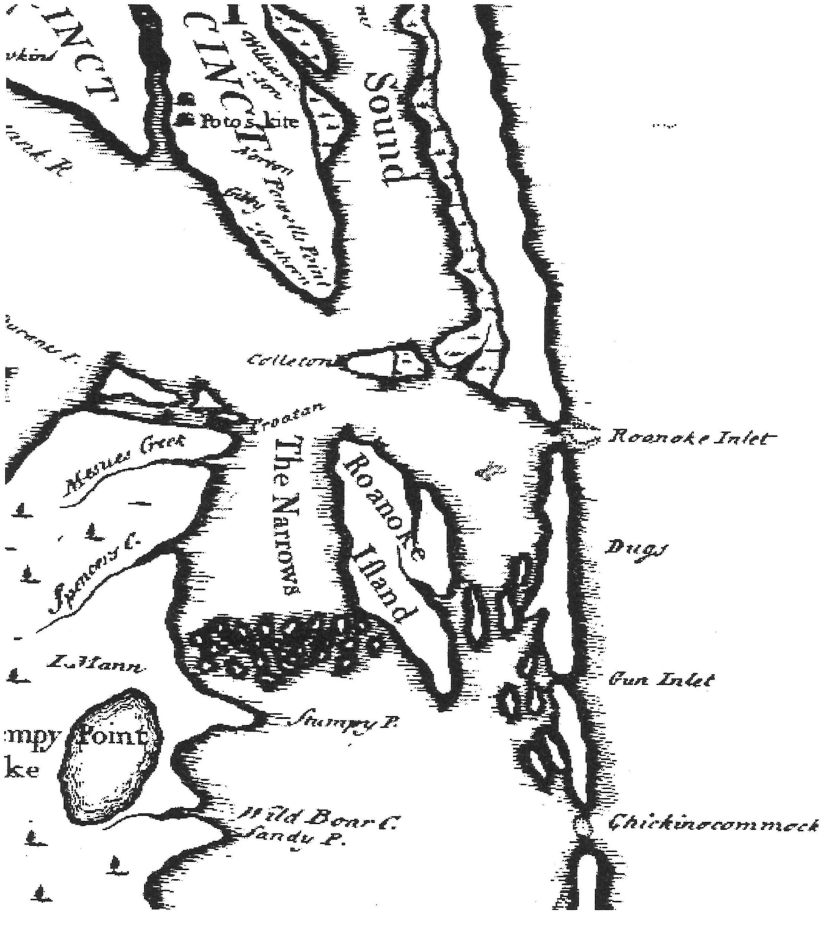

Figure 1. The 1733 Map of North Carolina by Edward Moseley depicts the shoaling at Roanoke Inlet and the marshes at the southern end of Croatan Sound between Roanoke Island and the mainland. Source: Cumming, W.P. (1966). *North Carolina in Maps*. Plate VI.

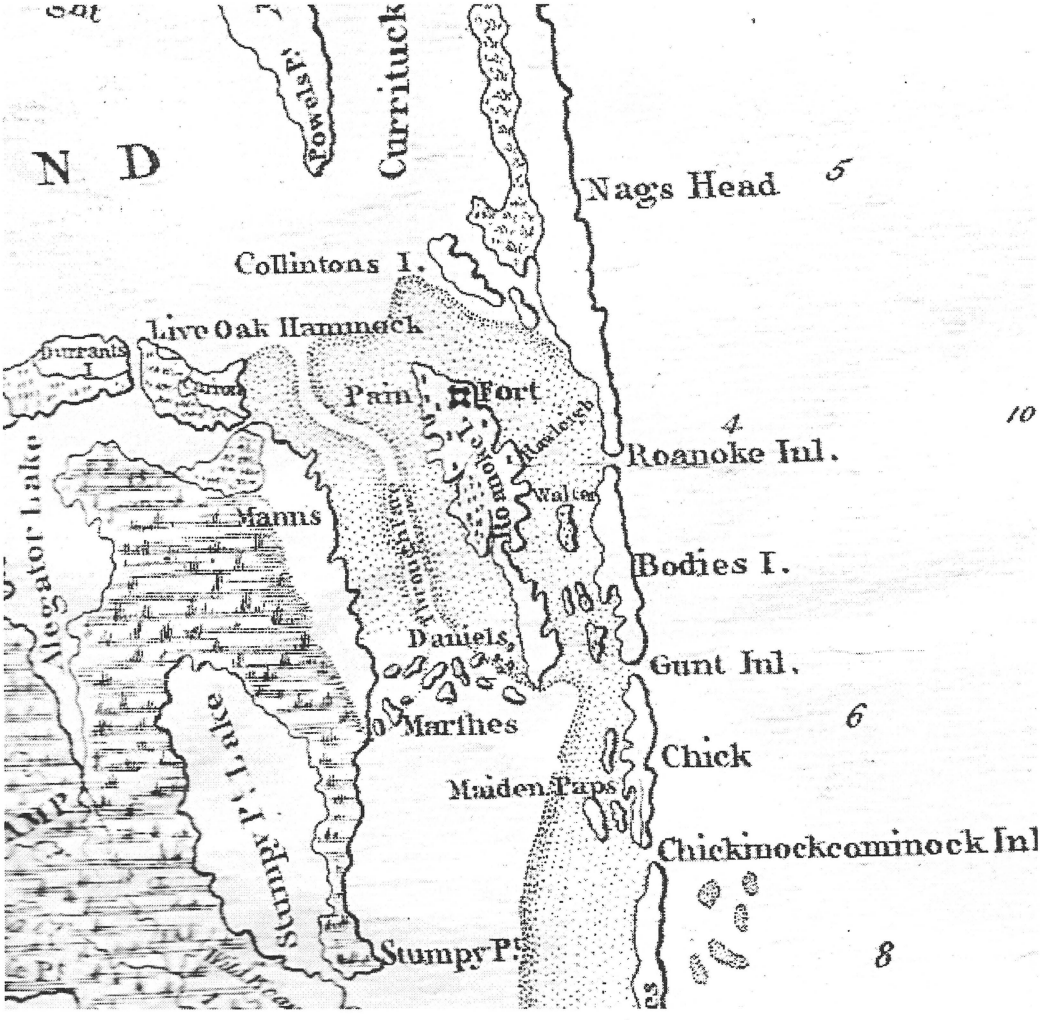

Figure 2. The 1770 Map of North Carolina by John Collet depicts the ship channel through Croatan and the marshes at the southern end of the sound. The barrier islands near Roanoke Island are broken by three inlets. Source: Cumming, W.P. (1966). *North Carolina in Maps*. Plate VII.

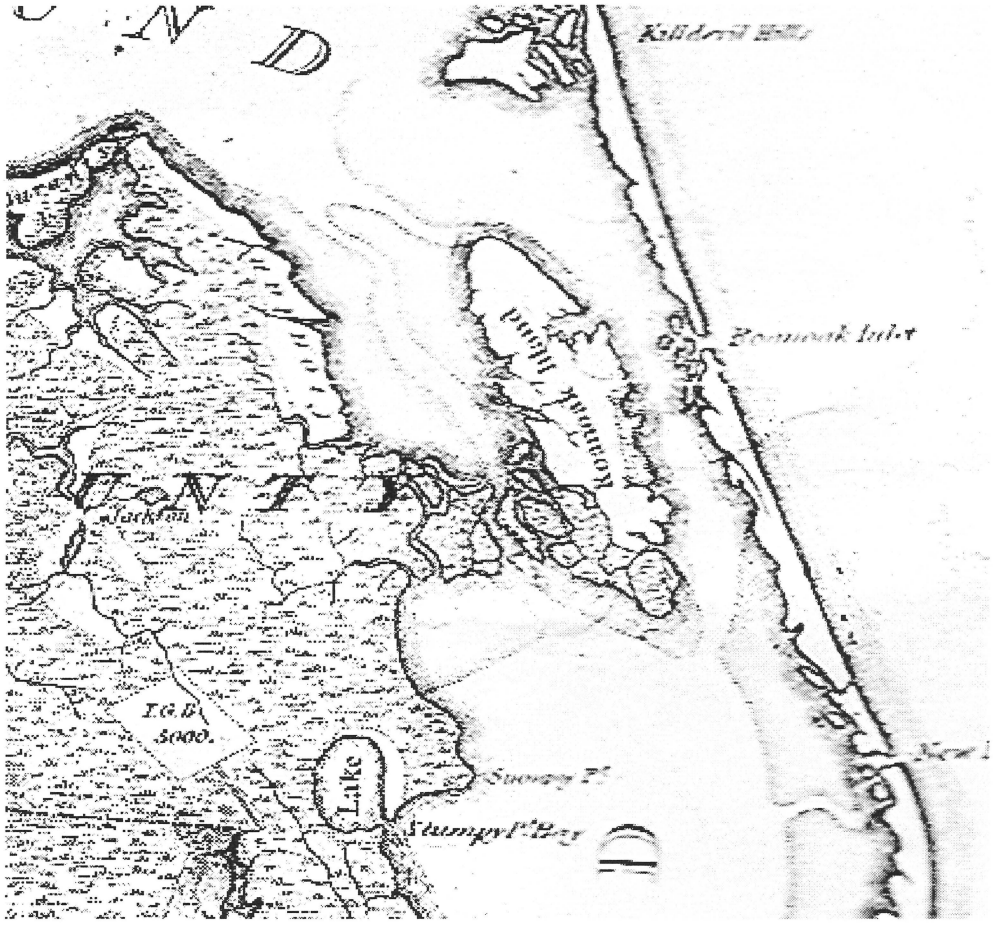

Figure 3. *This First Actual Survey of the State of North Carolina* of 1808 by Jonathan Price and John Strother depicts the environs of Roanoke Island in detail. Roanoke Inlet is obstructed, and the marshes at the southern end of Croatan Sound form a connection between Roanoke Island and the mainland that is broken by streams.
Source: Cumming, W.P. (1966). *North Carolina in Maps*. Plate IX.

In 1882, W.C. Kerr, the geologist for the State of North Carolina, prepared a map of the state incorporating information from surveys undertaken from 1820 to that date. He identifies several former inlets on the Outer Banks and the dates these inlets closed. Cheeseman's Inlet, south of Beaufort, closed in 1806; Cedar Inlet, north of Cape Lookout, 1805; Chickamicamico (Chickinocommock) Inlet, north of Cape Hatteras, 1795; Roanoke Inlet, east of Roanoke Island, also 1795; New Currituck Inlet, east of Knotts Island, 1828; and Currituck Inlet, near the Virginia line, 1775 (Cumming, Plate XIV). Only Oregon Inlet, Hatteras Inlet, and Ocracoke Inlet have remained open.

Antebellum Surveys

Hamilton Fulton arrived in North Carolina to begin his employment as the state civil engineer in 1819. The Board of Public Improvements gave Mr. Fulton instruction to investigate the possibility of opening an inlet at the lower end of Albemarle Sound. Fulton visited Roanoke Island on 14 March 1820. His initial comments to the Board suggest that he did not consider reopening Roanoke Inlet a practical undertaking. He believed that closing the inlet would increase flow between Albemarle Sound and Pamlico Sound. He also thought that the sand that made the closure had been shifted south across Roanoke Sound from Nags Head. The scouring of Croatan Sound seems to have occurred rapidly after the closing of Roanoke Inlet. Residents of Roanoke Island gave Fulton an idea of the rate of that change.

> *"There are people now alive on Roanoke Island, who remember the passage between Albemarle and Pamplico Sounds being confined to what is still called the ship channel. Since that time another channel has gradually opened, which is now one mile and a quarter in width, with soundings, in some places, twenty-four, and others thirty feet deep. This circumstance plainly shews the effect of the waters passing and repassing through the marshes. It became a matter of course, as these channels increased in width, so did the quantity of water issuing into the Sea by the Inlet decrease in a proportional degree". (North Carolina, 1820, 15) –*

Fulton proposed that stone embankments should be built across both Roanoke Sound and Croatan Sound, and that Roanoke Inlet be reopened by dredging. Those embankments would have spanned Croatan Inlet from Fleetwood's Fishery to Pork Point on Roanoke Island, and from the east side of Roanoke Island to Ballast Point (Figure 4). He estimated the cost of the project at $2,363,483 for the stone embankments and dredging, or $1,157,186 for timber and earth embankments (North Carolina, 1820, 16-22). Fulton's plans were submitted to the United States Engineers (administered by the War Department), and printed in the *Report to the Board of Public Improvements of North Carolina* the following year. The report of General Bernard, Colonel Gratiot, and Major Totten, prepared by Col. W. K. Armistead, Commander of the U.S. Engineers, supported Fulton's plan. However, there was some concern that sediment would eventually be deposited on the ocean side of the opened inlet and render it too shallow to be useful; and it also concerned them that the water in Albemarle Sound would find a new outlet to Pamlico Sound when Croatan and Roanoke sounds were closed. The most obvious difference between Fulton's 1820 map and the present geography of Croatan Sound is that Fulker's Island, the nearby islands, and the marshes at the southern end of the sound are gone.

The United States Engineers expressed their concern about the waters of Albemarle Sound forcing a new channel through lowlands west of Croatan Sound. They anticipated that the water level in Albemarle would rise. In his response to this report, Fulton did not believe that possible. He cited an unnamed source that did not believe a canoe could travel from the Alligator River to Pamlico Sound by way of connecting creeks. He also notes that fresh stumps of pine and cedar on the seashore at Nags Head indicated a recent encroachment by the ocean (North Carolina, 1821, 16, 21).

An alternative plan is suggested by Captain Hartman Bache, of the Topographical Engineers that is based upon a survey carried out from 1827-1828. Bache, like Fulton before him, cites historical sources for the previous condition of Roanoke Inlet. James Wimble's 1838 chart of the coast of North Carolina with soundings, later incorporated into Captain John Collet's 1770 map of North Carolina, as well as *The History of Carolina, by John Lawson, Gentleman Surveyor General of North Carolina* published in 1709.

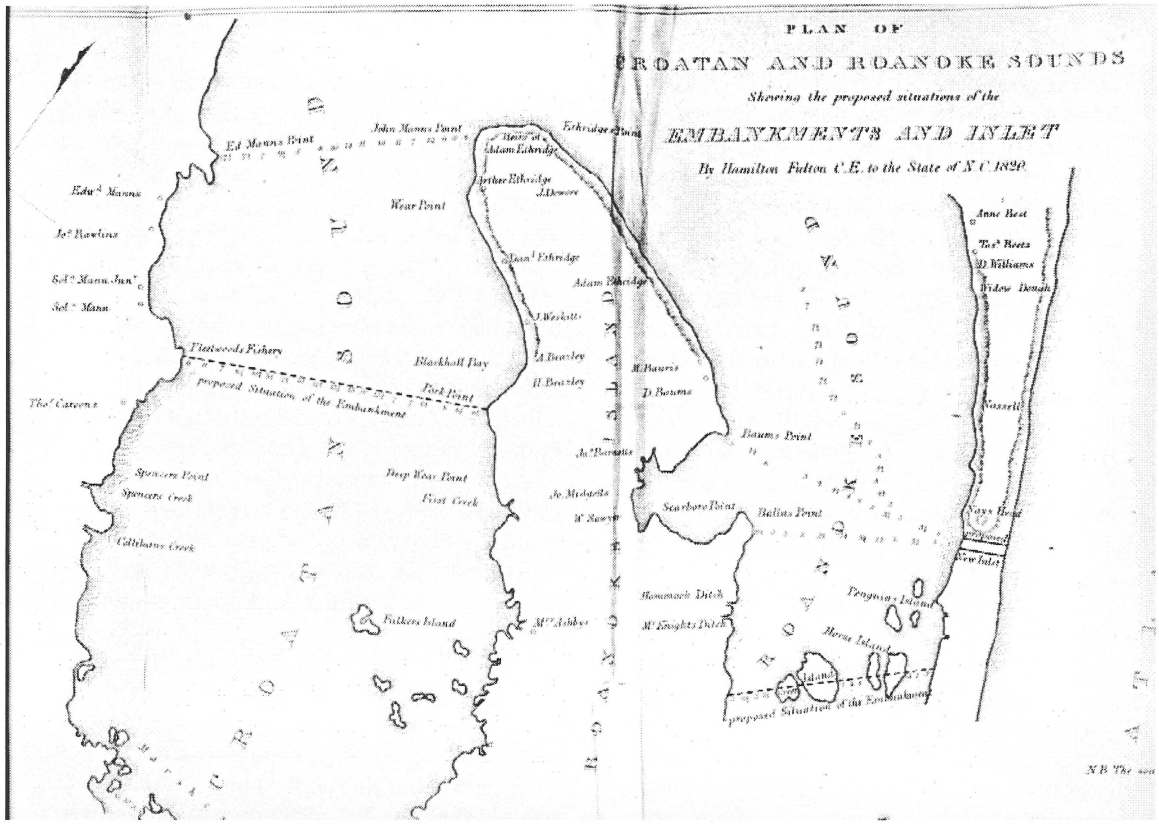

Figure 4. *The Plan of Croatan and Roanoke Sounds Shewing the proposed situations of the Embankments and Inlet By Hamilton Fulton C.E. to the State of N.C. 1820* illustrates how the embankments would stop the flow from Albemarle Sound to Pamlico Sound so that dredged Roanoke Inlet remained open.
Source: United States. (1829). *Report of the Secretary of War, with one from the Engineer Department, On the practicability of an Outlet from Albemarle Sound to the Ocean, &c.* Washington, DC: 20th Congress, Document 106

Bache notes that there is little doubt that Roanoke Inlet had been used by small vessels. He also mentions that even though the soundings for the former inlet were at nine feet on the bar, the sound was merely six feet. He agreed that the washing away of the marshes on Croatan Sound had caused the inlet to fill, and he believes that "no human foresight can predict the precise result" of an improvement when the forces involved are "so various and powerful." Yet, Bache had determined the project would be useful, and he offers a less expensive alternative to Fulton's plan. This plan featured a tide lock so that outbound vessels could gain access to the ocean with the channel being ten feet wide and three hundred feet long, lined with stone, and set at a depth of ten feet "below the common level of the sound." While the channel would not benefit ships attempting to enter Albemarle Sound, it would provide outbound trade with a direct outlet (United States, 1829, 12-22, 24).

The Letter from the Secretary of War, transmitting A Report of the Survey of Roanoke Inlet and Sound, in the State of North Carolina dated 24 February 1829 is a recapitulation of the proor surveys for the US House of Representatives (United States, 1829a). The *Resolution of the Legislature of North Carolina, Upon the subject of re-opening the Old Roanoke Inlet* was intended to solicit aid from the Federal Government for the languishing project (United States, 1831). The following year, a report on Roanoke Inlet was referred to the House Committee on Internal Improvement to accompany H.R. 517 confirming the acts of incorporation for the Roanoke Inlet Company granted by the North Carolina Legislature in 1821 and 1828, and to consider re-surveying the inlet. A convention was held at Edenton, North Carolina to discuss reopening the inlet in February 1830. Local citizens of eastern North Carolina memorialized Congress to encourage action on the project (United States, 1832).

In the spring of 1840 Walter Gwynn undertook a survey for North Carolina's Board of Internal Improvements to determine the practicality of reopening Roanoke Inlet. Gwynn, a West Point trained civil engineer, had already distinguished himself in Virginia as well as North Carolina as the chief engineer for several early railroads. His report contains more information about hydrologic processes than the previous reports. Like his predecessors, he agreed that the opening of the marshes at Croatan Sound was the cause of the closing of Roanoke Inlet; but he provides more information about the extreme nature of the cutting through of the water from Albemarle Sound.

> *"And, all along above the marshes, we have evidence of the continuing encroachment of the waters of the sound. Stumps are found as high up as Mann's point, both on the shores of Roanoke island and the main land, stretching out from a hundred yards to a mile into the sound, and, in some places, reaching nearly across it; and the recent abrasion of the banks is shown by bare roots of hundreds of trees – some recently fallen, others in a tottering condition" (United States, 1841, 3)*

Noting accounts of older local residents, he learned that the channel through the marshes was once narrow enough to be crossed with a fence rail. He suspected that at some distant time Roanoke Island was connected to the mainland. Like Fulton, he verified that the water level in Albemarle Sound was higher than that of Pamlico Sound; but he noted that the water flowing into Pamlico Sound had not brought about any improvement to Ocracoke Inlet. The current coming from Albemarle Sound interfered with the combined currents of the Neuse and Pamlico rivers, and the reduced velocity caused sediments to fall out of suspension to form shoals at the entrance to Ocracoke Inlet. Based on his own observations and those of others, he dismissed the notion that Roanoke Inlet was filled by blown or shifting sand from Nags Head; and the sediment deposited at the site of the old inlet was not brought there by ocean currents (ibid, 3-7).

The final historical document worth noting is entitled *Roanoke Inlet, At Nag's Head* dated 10 February 1846 and presented to the Committee on Commerce of the US House of Representatives – read, and laid upon the table. The report, authored by Captain Campbell Graham of the Corps of Topographical Engineers, contains a few details related to the closing of Roanoke Inlet. Graham accompanied Walter Gwynn on his 1840 survey, and they observed that the current between Albemarle and Pamlico had carried away several islands. Further, they determined from interviews that Roanoke Inlet began closing in 1792, about the same time the marshes on Croatan Sound started to give way. Referring to the recently published *Westover Manuscripts* of William Byrd, Graham notes that a storm had opened a New Currituck Inlet five miles south of Old Currituck Inlet in 1713. Prior to this event, the Northwest River, in Currituck County, had not been known to ebb and flow. Byrd observed that Old Currituck Inlet was closing in 1728. Graham's research found no instance of an

inlet closing as the result of a storm; rather the outflow through an inlet was diverted to other channels that had been opened. Graham places the closing of Roanoke Inlet to be complete in 1798, the closing of the New Currituck to be about ten to twelve years prior to his report, and he was not sure when Caffee Inlet closed. Graham recommended omitting the embankment across Roanoke Sound in Hamilton Fulton's plan, or leaving a section open so that water could pass from Albemarle Sound to Pamlico Sound to the east of Roanoke Island as it once did. He estimated that the watershed feeding into Albemarle Sound covered about seventeen thousand square miles yielding 44, 944,903 cubic yards of water per day (United States, 1846, 3-9).

Discussion

In 1972, Robert Dolan and Kenton Bosserman published an article in the *Annals of the Association of American Geographers* that offered an explanation as to why researchers and archaeologists have been unable to locate the settlement site of the Lost Colony (1585-1587). The site, separate from Fort Raleigh, was likely at the near shore on the northern end of Roanoke Island. Using coastal survey maps dating back to 1851, the authors observed that the 928 feet of northern shoreline had eroded between 1851 and 1970, then extrapolated the shoreline of the same area from the time of the Raleigh's colony based on the rates of recent erosion, then concluded that the northwestern shoreline had lost 2,000 (feet), and the northeastern shoreline had lost 1,300 (feet). The authors concluded that the settlement site has not been found because it had washed away long ago. The researchers attribute the loss of land to wave action driven by high winds (Dolan and Bosserman, 1972, 424-426). It is apparent from the nineteenth century reports of the civil engineers that changes around Roanoke Island began to take place long before 1851. The closing of multiple inlets from the late eighteenth century through the early nineteenth century suggests geomorphic change that cannot be disassociated from the changing flow patterns between Albemarle and Pamlico sounds. Fulton observed in 1820 that residents of the region had witnessed the disappearance of marshes in Croatan Sound. Subsequent reports by other civil engineers state that erosion in the sound was an ongoing process twenty years later. Croatan Sound was getting wider and deeper as Roanoke Sound was filling with sediment.

Conclusion

Historic maps and the reports employed to develop a plan for reopening Roanoke Inlet suggest the inlet and the marshes of Croatan Sound were stable from the late 1500s to the late 1700s. The inlets remained open with a depth of nine to ten (feet), and the overall depth of Albemarle Sound was about six (feet) – or about two and a half (feet) above the ocean at low tide. The Croatan marshes extended to a narrow channel in the center of the sound that was the width of a "fence rail," and supported a stand of trees extending at least a (mile) into the sound and as far north as Mann's Point. Roanoke Inlet filled and the marshes of Croatan were scoured away – trees and islands - in the decades that followed. History maps also testify to the fact that a number of inlets in the region also closed within a short period of time. This does not appear to have occurred south of Roanoke Island. For example, Ocracoke Inlet, has remained open since Europeans first encountered it in the late 1500s, however, it has migrated south about a mile. The entire region of Albemarle Sound and the barrier islands that enclose it are one system, and if historic maps and the reports of antebellum civil engineers provide an accurate assessment change in that system, changes in one part of the system affect the behavior of the whole.

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