

The Great New England Hurricane of 1938

The Great New England Hurricane of 21 September 1938 was one of the most destructive storms to ever strike New England. It killed over 600 people and devastated coastal communities in Long Island, Connecticut, Rhode Island, and Massachusetts (Allen 1976; Federal Writers' Project 1938; Minsinger 1988) (Figure 4). The storm, which formed in the Caribbean, moved quickly up the Atlantic seaboard. On the preceding day, seas and winds were not particularly high, and New England coastal residents had little warning that severe weather was headed their way. The winds grew gradually during the morning of the 21st, and through the afternoon and evening, 80-100 mph winds crushed houses, knocked down trees, and lifted barges and boats onto land. Throughout New York and New England, the wind and water felled 275 million trees, seriously damaged more than 200,000 buildings, knocked trains off their tracks, and beached thousands of boats (Haberstroh, 1998). Damage from the storm was estimated at \$600 million. This value is in 1938 Dollars; multiplying by 10 provides an estimate in present currency. Considering that wind and rain damage extended as far north as Rutland, Vermont, that entire city blocks burned in New London and other industrial towns, and that downtown Providence, Hartford, and other cities were flooded, if this storm were to occur today, the cost of the damage wrought would be staggering.

The following quote from USACE 1958a (Appendix G, History of Storms) describes the storm's characteristics:

66. Hurricane of 21 September 1938 (Category A). This hurricane was the most destructive in the 20th century to strike the study area. It was detected about 300 miles northeast of Puerto Rico on 18 September 1938 and traveled west to within about 200 miles of the Florida coast, at which point its path was deflected to the north. On the morning of 21 September the storm was reported off Cape Hatteras proceeding northward at a velocity of about 40 miles per hour. The center of the storm skirted the east coast of New Jersey and struck the south shore of Long Island near Moriches Inlet, less than 10 miles west of Westhampton Beach, on the afternoon of 21 September during a rising predicted tide. The predicted stage of the tide for that time was one foot above mean sea level near Moriches Inlet. Wind velocities of up to 80 miles per hour from the northwest were recorded at New York City, and the barometer at that station dropped to a low of 28.72 inches. At Bellport Coast Guard Station about 15 miles west of Westhampton Beach, the lowest recorded barometric pressure was 27.94 inches. The central pressure of the hurricane at the time the center passed the south shore of Long Island was estimated by the Weather Bureau at 27.86 inches. A maximum wind speed of 96 miles per hour was reported near the east end of Long Island. A 5 minute average wind velocity of 82 miles per hour was observed at the Block Island Weather Bureau Station. It is estimated that waves reached a height of 10 to 12 feet along the south shore. Abnormally high tides accompanying the hurricane caused damages along the Long Island coast line. No tide readings are available for this area. Computations indicate that the still water elevation in the ocean was about 10 feet above mean sea level.

Clowes (1939; pp. 9-10) describes how the seas overwhelmed Long Island's south shore beaches:

Soon after three o'clock the situation on the beaches became critical, especially on that long strip from Shinnecock Bay to Moriches Inlet where the dunes were mostly low and had at their backs a succession of bays and canals.... By three, the sea there was all over the beaches and beating and breaking at the foot of the dunes. By half-past three, it was breaking over and through the dunes at many places and sometime toward four o'clock the final catastrophe occurred. Before the onslaught of that terrible tide, itself perhaps ten to fifteen feet above normal height and crested with breakers towering fifteen feet higher or more, the whole barrier of the dunes crumbled and

went down save here or there where a higher dune or bulkhead held....

By 5:30, the hurricane had passed Long Island and the wind began to drop steadily. The next morning dawned clear, calm, and sunny.

Although the worst damage was in Connecticut and Rhode Island, Long Island was not spared (from Federal Writers' Project 1938):

When the gale swept up from Jersey, the exposed back of LONG ISLAND was lashed by a wind wave. The entire coastline, fringed with fashionable resorts and vacationists' cottages, shivered under the blow. At Long Beach, *grotesque pyramids of bricks and shingles* replaced comfortable homes.

The Merrick Road at Center Moriches was covered with marsh grass and stubble. Autoists worked far into the night exhuming their cars from layers of hay and topsoil piled high on the roadways.

A *Long Island railroad express* was derailed at East Hampton. Tracks were squeezed into bulging loops of steel. The town's locusts and elms, which formed a half-mile arch down the Main Street crashed. Old residents wept at the destruction of the trees immortalized on canvas by Childe Hassam.

The Coast Guard found nine women, two men, and a child cowering on a dune the next morning. Said one of the women, "I struggled out and managed to crawl to a high knoll. It was sometime before I even realized that there were others with me. One of the men was crippled. We just huddled together all through the night."

The great waves redrew the topography of the beach, carving a mile-long inlet into the very center of town.

Scores of houses and boats were wrecked on Fire Island, six miles south of Bay Shore. Kismet, Fair Harbor, Saltaire, and Cherry Grove, were all but wiped out. Point O'Woods, Seaview, and Ocean Beach, protected by sand dunes, escaped with slight scars.

A ferryboat captain rescued 43 residents before the sea roared over their homes. Through the heart of the village of Saltaire the tide cut a channel eight feet deep. Three hundred of the island's inhabitants spent a sleepless night staring across Great South Bay to the mainland. Next morning they were evacuated by the Coast Guard ice-breaker AB-25 and a ferry boat. *Guardsmen carried the maimed* down from the Saltaire village hall. One of the victims tried to swim to the mainland. *He was pulled out, exhausted, by heroes in underwear.*

Why were people caught so unawares by this storm? Three factors may account for the tragedy. First, the storm moved quickly up the coast from Florida to New England, and weather forecasters, without the benefit of satellites or storm-chasing aircraft, were unable to effectively track it. Second, because the storm moved so quickly, radio stations and newspapers were unable to spread warnings to all the affected areas. Finally, an intriguing note from Clewes (1939; p. 60), "However, reports received by the Weather Bureau indicate that owing to the general alarm over the European situation the public took little interest in news regarding the weather." September 21, 1938, was one of the fateful days that Neville Chamberlain was in Munich negotiating with Adolf Hitler about the partition of Czechoslovakia in the attempt to avert war (Churchill 1948). Americans and Europeans, terrified that another world conflagration might break out, anxiously listened to the wireless broadcasts from Germany hoping that the Prime Minister might appease the German dictator.

In Long Island, the hurricane caused \$6,000,000 damage (1938 prices). Effects of the storm have been documented in a number of volumes of personal recollections (Bennett 1998; Clowes 1939; Perry and Shuttleworth 1988; Quick 1939 - see Appendix E). According to newspaper accounts, there were a total of 45 dead and missing, of which 29 died and seven were missing at Westhampton Beach (USACE 1958a). If the storm had occurred two weeks earlier, before summer vacationers returned to their permanent homes, the loss of life would have been much greater. If the storm had passed after dark, some of those who did escape might have perished.

The barrier beach from Fire Island Inlet to Southampton sustained the greatest damage. The seas washed over the barrier and destroyed or damaged over 1,000 houses. Some of the summer communities, such as Saltaire, Fair Harbor, Point O'Woods, and Westhampton Beach were insufficiently protected by dunes and therefore suffered greater damage than other towns. The section of the Long Island Intracoastal Waterway between Westhampton Beach and Quogue was almost completely blocked by sand and debris. "One fact of importance concerning the effect of this storm on the dunes is that, generally, dunes with a crest height of 18 feet or more above mean sea level withstood all attacks of the sea and storm and protected the leeward area. Those areas in which the dune crest was less than 16 to 18 feet above mean sea level were generally damaged by wave overwash or breached." (from USACE 1958a, p. C-3). For the most part, the area east of Southampton was not damaged as severely as the western communities as a result of the generally higher elevation of the land, but severe inundation occurred at Napeague Harbor and Montauk. Three of the coastal ponds, Mecox Bay, Sagaponack Lake, and Georgica Pond, were breached in the storm (Howard 1939).

Ocean water levels during the storm are not available. Surge computations indicated that the still-water level in the ocean was about 3 m (10 ft) above mean sea level, or about 2.5 m (9 ft) above astronomical tide (USACE 1958a). High-water marks measured in some of the bays indicated that the maximum height, including wave uprush, exceeded 5 m (15 ft) above msl. Total accumulated rainfall was 9.9 in. at Freeport and 11.0 in. at Mineola.

The center of the eye of the storm crossed eastern Long Island over Moriches Bay (according to Figure G-1 of USACE 1958a). Therefore, the strongest onshore winds and highest surge buffeting the shoreline east of Moriches Bay. Four openings were cut into Shinnecock Bay during the storm, one near Warner's Islands, 0.8 km east of Ponquogue Point, a second opposite Cormorant Point, a third opposite the Shinnecock Hills, and a fourth opposite the Shinnecock Indian Reservation.

It is interesting to note on a series of 24 September photographs flown from Southampton to Fire Island Inlet that most coastal morphological changes were restricted to Moriches and Shinnecock Bays and Fire Island east of Davis Park. The photographs show the massive amount of washover at both bays, and many breaches were cut. Moriches Inlet became four wide openings. Along Fire Island beyond Davis Park, there were fewer washover fans. The edge of the dune is straight, indicating a storm scarp. Only a few of the washover fans on Fire Island crossed the entire barrier, whereas this was common at Moriches and Shinnecock Bays.

Three of the breaches into Shinnecock Bay closed by the end of 1938, but one stabilized and continued to widen until it was over 200 m across in 1939. In 1939, Suffolk County built a revetment along the west side of the inlet to stabilize the channel and prevent migration. By 1941, the inlet was 300 m wide, an inner and outer bar had formed, and a tortuous channel connected the Atlantic with Shinnecock Bay. Although in places the channel was over 6 m deep, the controlling depth was only about 1.2 m.

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Morang, A. 1999. *Coastal Inlets Research Program. Shinnecock Inlet, New York, Site Investigation, Report 1, Morphology and Historical Behavior*. Technical Report CHL-98-32, USAE Waterways Experiment Station, Vicksburg, MS.