

## Historical Hurricane (and other meteorological events) Descriptions

Compiled from Emery Boose et al. *HF Data Archives HF011* - Landscape and Regional Impacts of Hurricanes in New England.

Note: See E.R. Boose publications below. The compilation of these descriptions formed part of a large study that reconstructed the meteorology of every known hurricane that impacted New England through 1996. The work focused on inland impacts from winds rather than the coastal effects of surges or erosional and flooding impacts from extreme rain events. Nonetheless, the descriptions below include some references to the coast and Vineyard.

Boose, E. R., Chamberlin, K. E., & Foster, D. R. 1997. *Reconstructing historical hurricanes in New England*. Paper presented at the Proceedings of 22nd Conference on Hurricanes and Tropical Meteorology, Boston, Massachusetts.

Boose, E. R., Foster, D. R., & Fluet, M. 1994. Hurricane impacts to tropical and temperate forest landscapes. *Ecological Monographs*, 64, 369-400.

Boose, E. R., Serrano, M. I., & Foster, D. R. 2004. Landscape and regional impacts of hurricanes in Puerto Rico. *Ecological Monographs*, 74, 335-352.

Descriptions from Martha's Vineyard are bolded in **blue**

LOC – Location of description

SRC – Source

DAM – Damage description

MET – Meteorological descriptions

SUR – Surge descriptions

### 1635

LOC: Boston MA

SRC: Ludlum, p.10 (John Winthrop)

DAM: "Aug. 16 (26). The wind having blown hard at S and SW a week before, about midnight it came up at NE and blew with such violence, with abundance of rain, that it blew down many hundreds of trees, near the towns, overthrew some houses, and drove the ships from their anchors.... About eight of the clock the wind came about to NW very strong, and, it being then about high water, by nine the tide had fallen three feet. Then it began to flow again about one hour, and rose about two or three feet, which was conceived to be, that the sea was grown so high abroad with a NE wind, that, meeting with the ebb, it forced it back again."

SRC: Ludlum p.12

DAM: The Ship Great Hope out of Ipswich, England was driven aground by the NE wind on Charleston Point and then blown off again when the gale shifted to NW.

LOC: Cape Sable NS

SRC: Ludlum, p.10 (John Winthrop)

MET: "This tempest ... made a double tide all that coast."

LOC: Isles of Shoals

SRC: Increase Mather, *Illustrious Providences* p.312

DAM: "And I must confess, I have peculiar reason to commemorate that solemn providence, inasmuch as my Father and Mother, and four of my Brethren were then in a Vessel upon the Coast of New England, being at Anchor amongst the Rocks at the Isles of Shoals, when the Storm began; but their Cables broke, and the Ship

was driving directly upon a mighty Rock, so that all their lives were given up for lost, but then in an instant of time, God turned the Wind about, which carried them from the Rock of Death before their eyes."

LOC: Isles of Shoals

SRC: Ludlum p.12

DAM: A similar occurrence near the Isle of Shoals endangered the lives of one hundred passengers, including the Rev. Richard Mather, when the James of Bristol drove close to the rocks near Piscataqua on the heels of a NE gale. Then a seemingly miraculous shift of wind to the NW saved the vessels and passengers.

LOC: Isles of Shoals, coast

SRC: New England Hurricanes, p.2 (Richard Mather)

DAM: "August 15 (25), 1635. The Lord had not yet done with us, nor had he let us see all his Power and Goodness... when we came to Land, we found many mighty Trees rent in pieces in the midst of the Bole, and others turned up by the Roots, by the fierceness thereof.

LOC: Narragansett Bay

SRC: Ludlum p.10 (John Winthrop)

SUR: "The tide rose at Narragansett fourteen feet higher than ordinary, and drowned eight Indians flying from their wigwams."

LOC: Plymouth MA

SRC: Ludlum p. 11-12 (William Bradford)

DAM: "This year, the 14th (24) or 15th (25) of August (being Saturday), was such a mighty storm of wind and rain as none living in these parts, either English or Indians, ever saw. Being like, for the time it continued, to those hurricanes and typhoons that writers make mention of in the Indies. It began in the morning a little before day, and grew not by degrees but came with violence in the beginning, to the great amazement of many. It blew down sundry houses and uncovered others. Divers vessels were lost at sea and many more in extreme danger. It caused the sea to swell to the south wind of this place above 20 foot right up and down, and made many of the Indians to climb into trees for their safety. It took off the boarded roof of a house which belonged to this Plantation at Manomet, and floated it to another place, the posts still standing in the ground. And if it had continued long without the shifting of the wind, it is like it would have drowned some part of the country. It blew down many hundred thousands of trees, turning up the stronger by the roots and breaking the higher pine trees off in the middle. And the tall young oaks and walnut trees of good bigness were wound like a withe, very strange and fearful to behold. It began in the southeast and parted toward the south and east, and veered sundry ways, but the greatest force of it here was from the former quarters. It continued not (in the extremity) above five or six hours but the violence began to abate. The signs and marks of it will remain this hundred years in these parts where it was soarest."

LOC: Rockport MA (Thatcher's Island)

SRC: Increase Mather, Illustrious Providences p.4-12 (Anthony Thatcher)

DAM: "... before daylight, it pleased the Lord to send so mighty a storm, as the like was never known in New England since the English came, nor in the memory of any of the Indians.

### **1638a**

LOC: Boston MA

SRC: Ludlum, p13 (John Winthrop)

MET: 8/3 (13). "in the night there was a very great tempest, or hiracano at SW..."

LOC: Narragansett Bay

SRC: Ludlum, p.13 (John Winthrop)

SUR: "It flowed twice in six hours, and about Narragansett, it raised the tide fourteen to fifteen foot above the ordinary spring tides, upright."

### **1638b**

LOC: Scarborough ME

SRC: America Begins, p.27-28 (John Joselyn)

MET: "The twenty-fourth of September, being Monday about four o'clock in the afternoon, a fearful storm of wind began to rage, called a hurricane.

DAM: "The greatest mischief it did us was the wrecking of our shallop and the blowing down of many tall trees, in some places a mile together."

### 1683

LOC: Boston MA

SRC: Ludlum p. 17 (Increase Mather)

MET: "With us in Boston it was then at first an Euroclydon<sup>1</sup>; but in the afternoon the wind became southerly, when it blew with the greatest fierceness."

LOC: Wethersfield CT

SRC: Ludlum p.17 (H. R. Stiles)

FLD: On 13 (23) August the Connecticut River rose 26 feet above its usual level as a result of torrential rains.

### 1716

LOC: [Martha's Vineyard MA](#)

SRC: Ludlum, p20 (Rev. William Holmes)

MET: "violent storm of wind and rain."

### 1761

LOC: Salem MA

SRC: Ludlum, p24 (Edward Holyoke)

MET: On the 22nd and the 23rd Edward Holyoke noticed very moist air with southerly winds. Late on the 23rd the wind went to northeast with "a most violent storm for six hours" following.

LOC: Ship (Samuel) off Sandy Hook NJ

SRC: The Boston Newsletter, Thurs. 11/12/1761

DAM: "He sailed from Sandy Hook the 8th inst. bound to the West-Indies, and the same Night met with a violent Gale of Wind which lasted him six Days, in which he was obliged to throw overboard 43 fine Horses and all the Lumber off his Decks, and was in Expectation of foundering."

### 1769

LOC: Providence RI

SRC: Diary of Ezra Stiles, p23

MET: 9/8. "Violent N.E. storm at night"

### 1770

LOC: Boston MA

SRC: The Massachusetts Spy, Sat. 10/20-10/13/1770

SUR: "Great damage has been sustained by the loss of sugars, salt and other articles in storm on the wharfs, which were overflowed in all parts of the town."

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<sup>1</sup> Euroclydon (Latin: Euroaquilo) is a cyclonic tempestuous northeast wind, mostly in autumn and winter.

HUR: N1770

LOC: Boston MA

SRC: Ludlum, p. 25-26 (Massachusetts Gazette)

MET: The Boston area lay within the track of high winds...Last Saturday "a most violent storm came on the wind about NNE, attended with rain and hail."

SUR: "The tide rose about noon to such a height that it overflowed most of the wharves in this town...it is said that the tide rose higher than has ever been known, except once about 47 years ago, it rose a foot higher."

LOC: Massachusetts (south coast)

SRC: CT Journal and New Haven Post Boy, Fri. 11/2/1770

DAM: "From the Southward [of Boston] we hear that great Damage was done along shore." Many boats were driven ashore, including at Cape Ann, Eastham, Hingham, Marblehead, Nantasket, Plymouth, Race Point, Salem, and Tarpaulin Cove. Stores, Sheds, Barns, Fences, Trees were blown down and roofs of houses were blown off at the southward.

LOC: **Nantucket MA**

SRC: The Providence Gazette, Sat 10/20-10/27/1770

DAM: Ships were cast onto shore at Nantucket and Nantucket Shoals.

LOC: New England

SRC: Ludlum, p. 25-26

MET: All winds reported from land stations were from northeast to north; since we do not have any data from Cape Cod or the Islands, we do not know whether the center of the storm cut across any outer land areas there.

SUR: A late season storm in October 1770 struck the New England Coast from eastern CT to ME and achieved lasting reknown by bringing in a tremendous tide, said to be the highest since the much publicized harbor flood of February 1723.

LOC: Newport RI

SRC: Ludlum, p. 25-26 (Ezra Stiles)

MET: The storm was described as "a violent hurricane, wind N or NE, Rain violent--hail..." The thermometer dropped to 35.5 degrees by 1900 and a stiff west wind was blowing. The mention of hail...would indicate that a very cold air mass lay to the west of the storm track over western and northern New England, a situation that would certainly intensify the storm circulation.

## **1788**

LOC: Ashfield MA, Conway MA, Whately MA

SRC: Hampshire Gazette 8/27/1788

DAM: In these towns, "several buildings were thrown down, whole groves of large Wood blown up by the roots and many cattle and horses killed thereby...much damage was done to the towns westward of this and the gale extended many miles to the east. The roads in many places were blocked up by the fallen trees, and rendered for some days impassable."

LOC: Dummerston VT, Putney VT

SRC: Cumberland Gazette (Portland ME), 9/18/1788

MET: "The wind blew for about 15 minutes southwardly, & then suddenly varied southwestwardly with redoubled violence."

DAM: "Scarcely a town in that vicinity that has not suffered considerably by cattle being killed, buildings unroofed and blown down, and in some places the devastation is marked by acres of

sturdy oaks being swept from their places by this terrible besom of destruction."

LOC: Hartford CT

SRC: Connecticut Journal (New Haven), Wed. 9/3/1788

DAM: 8/25. " A great multiplicity of trees that have stood for ages unhurt, were torn up by the root."

LOC: Hillsdale NY

SRC: Hampshire Gazette, 9/17/1788

MET: "The day had passed from morn until about four o'clock P.M. attended by heavy showers, the air remarkable thick and sultry, the wind at southeast, when it chopp'd round, as it were in an instant, and blew a most violent hurricane from the northwest, attended by amazing deluge of rain..."

DAM: "The sudden and surprising rise and roar of water, attended by the continual crush of the stupendous pines, which as it were, hung nodding over our houses... oxen, and sheep killed, fences, mill-dams, pot-ash works, species of domestic vegetation is laid level with the ground."

LOC: Northampton MA

SRC: Cumberland Gazette (Portland, ME), 9/18/1788

MET: "On Tuesday of last week there was a violent gale of wind..."

DAM: "Whole groves of large wood blown up by the roots, and many cattle and horses killed thereby. A child was killed in Hatfield, and a man at Conway."

LOC: Petersham MA

SRC: Cumberland Gazette (Portland ME), 9/18/1788

DAM: "The effects of the tornado appear similar [to Putney VT and Dummerston VT] in Petersham, Westminster, and other towns in this county. The roads in many places were blocked up with fallen trees, some of which were two feet in diameter, and were broken off only a few feet from the ground, and many were violently removed many yards distance."

LOC: Sanborntown NH

SRC: NH Gazette and General Advertiser, Thurs. 9/11/1788

MET: "On Tuesday the 19th of August last, they had a violent gale of wind from the SSE to WNW attended with heavy showers of rain, which at about half past one o'clock, A.M. blew a mere hurricane..."

DAM: "Several hundred acres of thick wood land, in different parts of that town, were blown up and hurled to the ground--even the stoutest oaks and rock maples were either broken off or hurled up by the roots---Many barns were unroofed and hardly a shed escaped from being blown to pieces, one in particular, 70 or 80 feet long, was taken up by this powerful element and carried 150 rods from its foundation---Many young and beautiful orchards which teemed almost to the ground with their useful fruit, were suddenly broken off and destroyed, and those which remain unhurt have scarcely an apple left on them. Whole cornfields were blown flat to the ground, and even the pole fences did not escape its fury...many cattle were killed in the woods..."

## 1804

LOC: Barnstable MA, Boston MA, Kennebec ME, **Nantucket** MA, New Bedford MA, Portland ME, Wiscasset ME

SRC: Hampshire Gazette, 10/24/1804

DAM: "the late heavy gale of wind, which in our last, furnished us with the particulars of its destructive effects in this town [Boston] did not reach far on the Eastern or Southern coast. This agreeable intelligence has been communicated in letters from Wiscasset, New Bedford, Nantucket,

Portland, Kennebec, Barnstable, &c. To the Northward, Westward, and Southward, its violence has been sensibly felt; and much damage done to property of almost every description."

LOC: Boston MA

SRC: The Providence Gazette, Sat. 10/13, 1804

MET: 10/11. "On Tuesday morning last a most violent storm commenced in this place, and continued its destructive career until about 5 o'clock on Wednesday morning. The wind blew at first from SSE then shifted to E increasing its power until about 3 o'clock, when it abated for a few moments, and then veered to NE. From this quarter the gale blew with a violence and fury unprecedented in the annals of this town."

DAM: "The damage which has been sustained by this tremendous hurricane cannot at present be estimated, but is very great and extensive. There was damage on several wharves...The damage sustained in the interior of the town has been considerable; scarcely a tree particularly the poplars, which ornamented almost every yard and garden, is left standing; many of the houses are unroofed, and some of the new buildings are so much bent and twisted, that if they do not fall of themselves, they must be taken down...The roof of the tower of the Chapel was wrenched off by the violence of the wind, and carried above 200 feet before it fell...The North Church steeple...fell on an adjoining house..."

LOC: Lynn MA

SRC: Annals of Lynn p. 366

MET: "One of the greatest storms ever known in New England commenced on Tuesday morning, the 9th of October. The rain fell fast, accompanied by thunder. At four in the afternoon the wind became furious, and continued with unabated energy till the next morning. This was probably the severest storm after that of August, 1635..."

DAM: "Buildings were unroofed, barns, chimneys and fences were blown down, and orchards greatly injured. The chimney of the school-house on the western part of the Common, fell through the roof, in the night, carrying the bench, at which I had been sitting a few hours before into the cellar. Many vessels were wrecked, and in several towns the steeples of meeting-houses were broken off, and carried to a great distance. The number of trees uprooted in the woodlands was beyond calculation. Thousands of the oldest and hardiest sons of the forest, which had braved the storms of centuries, were prostrated before it, and the woods throughout were strewn with the trunks of fallen trees, which were not gathered up for many years. Some have supposed that a great storm, at a early period, may have blown down the trees on the marshes; but it could not have buried them several feet deep; and trees have been found thus buried."

LOC: New Haven CT

SRC: Ludlum, p.36

MET: Thomas Beers' register: "October 9--0600--Hard rain in early part, noon heavy black clouds wild and dark, very heavy rain most of forenoon with considerable heavy distant thunder--wind highest at SE till about 1030, round to SW, W and NW and blew very hard with heavy rain--slacked toward noon, 1300--appears to be clearing off, 1800--wild heavy black clouds driving rain, clouds fly quick, 2100--a high gale of wind this evening and for a part of night." Professor Day's observations on the Yale campus also showed a southeast wind at 0600, but by 1300 it had shifted to northwest. By sunset, with the gale now out of the north, his thermometer read 38 degrees, a drop of 17 degrees since morning. He reported "frequent lightning and heavy thunder. Wind very violent through the night."

LOC: Northeast

SRC: Upper Ashuelot: A History of Keene, NH

MET: "On October 9, 1804, a tropical storm of small size swept the Middle Atlantic states, but it developed hurricane force when it reached New England. A cold air mass was on the western side of the storm which produced a very heavy snowfall driven by a fierce gale...."

SRC: Ludlum, p.35-38

MET: Ludlum's analysis: A tropical storm of small size, but packing full hurricane force, swept the Middle Atlantic States and New England on Tuesday, 9 October 1804. Its path ran very close to New York City and then across southern New England, with the center probably passing directly over Boston and Salem. Though this storm did great damage and was considered at the time to be the severest blow on record, its memory has all but been submerged in the flow of notoriety given the much larger hurricane a decade later, the Great September Gale of 1815....It appears that the center passed between Philadelphia and Atlantic City (Absecon Beach), very close to NYC, south of Poughkeepsie, certainly north of New Haven and New London, and probably right over Boston.... Certainly a great mass of unseasonably cold air was poised over northern NY and Northern New England that morning as evidenced by the commencement of heavy snowfall in those areas about dawn. Our data showed that only the northwesterly and northerly winds following the passage of the center were of whole gale and hurricane force. No doubt the cold air mass was responsible for the steepening of the pressure gradient and the intensification of the whole system.

## 1806

LOC: Barnstable MA, [Edgartown MA](#)

SRC: Ludlum p.39

MET: At Edgartown an observer related that Saturday morning dawned with the wind in the southwest and a light rain falling, with flashes of lightning but no thunder. The rain increased, falling in torrents most of the day, but abated toward evening. Early in the night the wind went into the east, then veered to northeast "and increased to one of the severest gales I have ever experienced." He estimated that 36 inches of rain fell during the storm.

DAM: From Barnstable on Cape Cod and Edgartown on Martha's Vineyard, much closer to the track of the ocean storm, the reports spoke of a tremendous deluge and winds severe enough to cause structural damage. There was great crop destruction on the island. Five coasters were driven ashore there.

## 1815

LOC: Abington MA

SRC: Perley 1891

DAM: Barns blown down, houses unroofed, some buildings carried off from their foundations, boards and shingles lodged miles away, hay blown everywhere, whole orchards and fences flattened.

LOC: Amherst NH

SRC: Farmer Cabinet, 9/30/1815

DAM: "Damage done to the interior to timber and fruit trees is incalculable."

LOC: Andover MA

SRC: American Advocate 9/30

SUR: Salt spray reached Andover and blighted everything.

LOC: Barnstable County MA, Bristol County MA, Essex County MA, Hampshire County MA, Middlesex County MA, Norfolk County MA, Plymouth County MA, Worcester County MA

SRC: Darling 1842

SUR: In all places to leeward of salt water, pastures ruined by salt spray, and whole of trees and vegetables so blighted and changed to appear as though they had been burned.

LOC: Barre MA

SRC: Walker 1910

DAM: Hurricane swept through the eastern part of town, prostrating huge trees and almost complete forests. As this was then a heavily wooded region the loss even for those days was a serious one. After the hurricane people worked to save as much timber as possible and every available wood chopper was pressed into service. The trunks of trees were cut into logs and dozens of yokes of oxen engaged to draw the logs to the nearby sawmills, all of them being driven to their utmost capacity night and day to convert the best logs into planks, boards, etc. Many pines were not saved and could still be seen rotting 100 years later.

LOC: Block Island RI (New Shoreham)

SRC: Palladium 9/29

DAM: Gale was felt severely there. All small crafts were destroyed - several houses were blown down.

HUR: N1815

LOC: Boston MA (Dorchester)

SRC: Boston Patriot 9/27

DAM: "The devastation unparalleled...17 houses unroofed, 68 chimneys blown over, about 40 barns unroofed and demolished, upwards of 5000 fruit and forest trees were prostrated."

LOC: Bristol RI

SRC: Salem Gazette 10/6

SUR: Nearly all the vessels there driven a great distance on land and injured. The tide rose 7 ft higher than was ever known before, which carried away several buildings. Wharves completely swept away.

LOC: Cape Cod MA

SRC: Darling 1842

DAM: Gale was but slightly felt.

LOC: Cape Cod MA

SRC: Palladium 9/29

DAM: On the north side of Cape Cod the damage done was comparatively inconsiderable. The salt works there received little or no damage. On the south side of Cape Cod the destruction was great - nearly all the Salt Works were destroyed. The loss at Falmouth is estimated at \$40,000. The vessels were generally driven on shore in the harbours and rivers on that side. 18 vessels driven ashore at Bass River.

LOC: Concord NH

SRC: New Hampshire Gazette 10/3

MET: 9/23. The wind commenced in the morning at NE - about 1200 it changed to the SE and for 2 hours it seemed to threaten everything with ruin.

DAM: The sturdy oak, the stately elm, and the pliant poplar, were alike victims to its fury. Many cattle have been killed by the falling trees.

LOC: Connecticut

SRC: Connecticut Mirror 10/2

DAM: "The adjacent towns, we learn, have suffered their full proportion. The destruction of fruit and forest trees is immense; and from all quarters we hear of houses and barns blown down, unroofed, or otherwise injured. Great quantities of hay, which had been stacked in the field are blown away and lost. Many farmers have also suffered heavily in the destruction of large quantities of young timber."

LOC: East Greenwich RI

SRC: Connecticut Gazette 10/11

SUR: The tide rose 7 ft higher than was ever known before. It carried away all the wharves and stores.

LOC: **Edgartown MA**

SRC: Salem Gazette 10/3

SUR: 9/23. "At 1030 the sea from the Atlantic broke over the South Beach and the tide flowed into the harbor like a devouring flood. It rose at least 3 ft in 45 minutes; the wind increased with some rain. The wharves torn to pieces. At 1120 the tide suddenly ebbed, about 4 hours before the proper time for high water. All the fresh ponds are laid open to the sea. Large tracts of meadows are cover with sand. The tide two miles west of the harbor was at least 2 ft higher. The wind on the mainland and west of here was much stronger. The tide and not the wind was the principle cause of damage."

LOC: **Edgartown MA, Martha's Vineyard MA, Tisbury MA**

SRC: New Bedford Mercury

DAM: The salt works on Martha's Vineyard were considerably destroyed, at Tisbury and Edgartown they were all carried away, and at Edgartown 12 or 15 schooners and sloops were driven on shore but will be got off without much injury.

LOC: Groton CT

SRC: Salem Gazette 10/3

DAM: Most severe hurricane ever experienced there. Trees of every description uprooted, barns and houses blown down, almost everything levelled with the ground.

LOC: Little Compton RI

SRC: New Bedford Mercury 10/6

SUR: The saw mill was removed from its foundation and nearly destroyed, and the salt works were swept away. 250 rods of stonewall were completely leveled.

LOC: Lyme CT (River Head)

SRC: Connecticut Gazette 9/27

MET: From a letter dated 9/25: The morning 9/23 was cloudy, with a cool wind and very heavy rain from NE which continued till 0800, when the wind veered to the SE and a much warmer wind was sensibly felt by most people who stood in the open air. The violence of the wind increased gradually until 0900, at which time it blew a perfect hurricane, and continued with the utmost fury till 1100.

SUR: At River Head the tide rose 6 ft higher then ever it was known, carrying away bridges.

DAM: In its course it tore down barns, unroofed dwelling houses, upset cider mills, carried away chaise houses, destroying the carriages, &c. It tore up the largest trees by the roots; some orchards are nearly destroyed, the trees lay level with the ground; the heart sickens at the sight. The forests from New London to Connecticut River (which is as far as I have heard) exhibit to the eye the most dreadful destruction ever made by a tornado in this part of the country; whole forests are either broken down, or torn up by the roots, and crossing each other; fences level with the ground.

LOC: **Martha's Vineyard MA**

SRC: Darling 1842

DAM: 9/23. Gale was very severe.

LOC: **Martha's Vineyard MA**, Stonington CT

SRC: Boston Centinel 9/30

SUR: One man drowned on the Vineyard.

DAM: "The hurricane was very severe; many small vessels were destroyed, houses blown down, & c."

LOC: **Nantucket MA**

SRC: Ludlum 1963

DAM: Trusted weather watcher said "the gale was not severe" there.

LOC: **Nantucket MA**

SRC: Salem Gazette 10/3

SUR: "...the tide being down, did no injury to the wharves..."

DAM: "We are informed, very little damage was sustained ... One barn blown down, and some other buildings a little shattered."

LOC: Narragansett Bay

SRC: Davis 1992

SUR: 9/23. The tides were 12 ft above normal.

LOC: New Bedford MA

SRC: Franklin Herald 10/3

SUR: 6 people drowned.

DAM: From a letter dated 9/24: Every wharf and store near the the water were destroyed. The north store was completely blown over into the river and immediately crushed to pieces.

LOC: Norwich CT

SRC: (Norwich) Courier 9/27

SUR: The water on the Wharves and Lower St. was 4 ft higher than ever remembered. The water beat over the wharf bridge with incredible force where the water was at least 6 ft.

DAM: The damage done in this town and neighborhood by the violence of the wind and extraordinary rise of the tide, is great beyond precedent. Immense numbers of trees of every description were levelled to the earth - as also fences in all directions. The strength of the gale was confined to the duration of 3 or 4 hours. At least 7 barns blown down, one house down, 3 houses unroofed, a blacksmiths shop down, another shop down, a slaughter house blown down, a bridge damaged by the wind, several outhouses down, ropewalks down.

LOC: Petersham MA

SRC: Spooner diary

DAM: 9/23. Went out to the orchard and found most of the apples blown from the trees, many of them broken down and blown over. Got my horse and set out for home in the rain a little before 1200. The wind had blown and broken down the trees in every direction - the roads were so covered with broken limbs and trunks of trees thrown in every direction such that in many places it was most impossible to pass. Got home and the water had risen so that all hands had to use utmost endeavor to prevent the water from washing away what little I had done to my waterworks.

William Brown and I walked up through the woods to Mr. Curtis and John Negus to see the destruction of the wind which is beyond description. Buildings of all kinds and an immense quantity of timber laid on the ground.

LOC: Providence RI

SRC: Salem Gazette 9/26

MET: From the Boston Gazette: 9/23. Tornado commenced about 0900 with wind at SE.

SUR: The tide rose to its greatest height about 1140. The water rose from 10 to 12 ft above its usual height.

LOC: Provincetown MA

SRC: Goodwin

DAM: It was only a "hard blow" there. "By no means a hurricane."

LOC: Region: New Bedford MA to New Haven CT

SRC: Smith 1946

DAM: All the forests on the coast between these two cities were prostrated.

LOC: Salem MA

SRC: Bentley diary

MET: 9/23. About 1000 the wind began to rise and gave us a terrible gale at the SE.

SUR: 9/26. The progress of the salt water in the gale many miles into the interior is certain. It caked the windows and left the leaves wilted [writes about direction of the wind and exposure].

LOC: Sandwich MA

SRC: Goodwin

MET: 9/23. About sunrise storm had risen to a hard gale, but not as severe as previous gales. Height was at 11:40 when the tide rose 8-10 ft.

DAM: Some trees were torn up, but those were mostly in loose soil or in exposed areas. Some old or feeble buildings were prostrated. When compared with the damage of forests and property in counties to north and west, the gale in this region was light.

LOC: Sandwich MA

SRC: American Advocate.. 9/30

DAM: "From the Cape towns we have no accounts of any severe damage, excepting at Sandwich."

LOC: Wellfleet MA

SRC: Darling 1842

DAM: Gale was but slightly felt.

LOC: Worcester MA

SRC: Mass Spy 9/27

DAM: "... prostrating in its course orchard and forest trees, some of which had withstood the storms of a century. Many windows were broken by the seed balls of buttonwood or sycamore trees. We have traced a column of more than 60 miles in width with nearly the same devastation... The loss of fruit trees and ornamentals is great, but the destruction of forest trees is incalculable. From the best information we can obtain, it may be estimated that the ordinary consumption of 10 years of the whole town will not exhaust the wood which is now prostrate."

**1821**

LOC: Bridgeport CT

SRC: Ludlum, p. 85 (American Farmer)

MET: "The storm at this place lasted until near 11:00 o'clock at night."

DAM: "Several buildings have been blown down and unroofed, chimneys and windows demolished, the largest trees torn up by the roots, fences destroyed and the roads rendered impassable in many places by the trunks and branches of prostrate trees. The spire of the steeple of the Presbyterian meeting house, together with the lightning rod, vane and ball, were blown down. On the water the scene of desolation is yet more appalling..." The light house at Black rock was destroyed.

LOC: Litchfield County CT (northern)

SRC: Ludlum, p. 81-87

DAM: Fallen tree trunks all pointed towards the southeast.

LOC: Long Island NY

SRC: Providence Gazette, Wed. 9/19/1821

DAM: "The shores on Long Island have been strewn with lifeless bodies and with fragments of wrecks..."

LOC: Long Island NY

SRC: Ludlum, p. 85 MET:

DAM: To the eastward on Long Island, in the violent eastern semicircle of the storm, the scene was "the most awful and desolating ever experienced." Eastward in Nassau and Suffolk Counties the havoc increased. All along the South Shore, exposed to the southeasterly hurricane, ships were either completely wrecked or driven high and dry on the sandy stretches of Long or Rockaway Beaches...Many barns and smaller buildings were laid completely flat by the wind blasts.

LOC: Middletown CT

SRC: Rutland Herald, Mon. 9/17/1821

MET: "The oldest inhabitants of this place do not remember a more severe Wind Storm, than was experienced on the evening and night of the 3d of September inst...The gale was principally from the southeast quarter, veering occasionally to different points of the compass between south and east."

LOC: **Nantucket** MA

SRC: New Bedford Mercury, Fri. 9/14/1821

DAM: 9/12. "It is mentioned that the late gale, which proved so destructive to the shipping &c. in New York, Philadelphia, Norfolk, &c. was not felt in Baltimore, nor at Eastport, Maine. We have not heard of any damage being done in this vicinity, except to the orchards."

SRC: Ludlum, p. 81-87

MET: On the late afternoon of 3 September 1821 a tropical storm of full hurricane intensity smashed across extreme western Long Island with the center moving onshore partly **within the limits of present-day NYC**. The landfall appears to have been near Jamaica Bay close to the present site of NY International Airport (Idlewild). Crossing through Nassau County, the center of lowest barometric pressure traversed Long Island Sound on approximately the Oyster Bay-Stamford axis, and then raced northward through the hill country astride and to the east of the NY-CT border. Available weather records indicate that this is the only major hurricane whose center actually passed over a part of NYC in the last 200 years.

NOT: Because there were many skilled observers within the area through which the hurricane

passed it was possible to accomplish the first careful analysis of an American hurricane.

LOC: New York NY

SRC: Boston Daily Advertiser, Fri. 9/7/1821

"We were last evening visited by one of the most tremendous hurricanes ever experienced in this city..."

DAM: "All the wharves on the south side of the city have been very much injured, and all the vessels at the wharf, have been more or less damaged."

## **1825**

LOC: **Nantucket** MA

SRC: Ludlum, p. 88

MET: Rain all day Saturday with falling barometer and northeasterly winds. At sunrise on Sunday, however, the barometer had reached its lowest point at a stated observation, 29.57", and the wind had shifted into the southeast and by noon was at south-southeast. Temperatures had risen from the mid-50's on Saturday to 61 degrees at sunrise. All would indicate that the center of the June hurricane passed well to the west of that island outpost.

## **1830**

LOC: **Nantucket** MA

SRC: Ludlum, p. 88

MET: The gale force winds swept the islands and capes...on the 17th-18th. The Nantucket Inquirer thought the storm "one of the most severe gales experienced for a long time." The peak winds occurred from midnight to 0100 and "almost amounted to a hurricane." Winds backed from NE to NNE, and to N. DAM: Some small buildings were blown down and trees uprooted.

## **1839**

LOC: **Nantucket** MA

SRC: Ludlum p.90

MET: Out at Nantucket, much closer to the path of the tropical whirl, the wind came out of the northeast all day on the 30th with heavy rain falling and the temperature hanging in the cool fifties. William Mitchell thought: "we have not had so severe a gale for many years." The Inquirer reported a long list of marine disasters with many ships driven ashore both on the Islands and on Cape Cod. "On land the trees, shrubbery, corn, and other vegetables have suffered greatly" commented the Inquirer.

SRC: Ludlum p.89

DAM: A vigorous hurricane moved up the Atlantic Coast on the 28th, 29th, and 30th of August 1839. Though it did not cross the coastline at any point, its path was not far offshore and the sweep of winds in its western semicircle were of such force to cause considerable crop damage in North Carolina and eastern New England. On Cape Cod the storm was "the most severe in years," and in eastern Maine it was thought the greatest blow since the Great September Gale of 1815.

## **1841**

LOC: Barnstable MA

SRC: Hampshire Gazette, 10/13/1841 (from the Barnstable Journal of Wed.)

SUR: "...the tides flowed to such an unusual height as to sweep [the wharves] of almost every moveable article, beside overflowing our salt meadows, and carrying off hundreds of tons of hay."

DAM: "The effects of the wind are everywhere around us. Buildings have been injured, trees, some of large size, fences, corn, &c., have been prostrated in many places and vegetation generally has

suffered more or less damage. Saltworks have also suffered severely in this vicinity and a considerable damage has been done about our wharves..."

LOC: Cape Cod MA, **Martha's Vineyard MA**

SRC: Ludlum, p.91-94

DAM: Both experienced the same type of destruction as was meted out to Nantucket. Much damage to shipping.

LOC: Chatham MA

SRC: Daily Evening Transcript (Boston), 10/13/1841

DAM: Many bodies found dead on shore.

### **1841**

LOC: Harwich MA

SRC: Ludlum, p.91-94 (Yarmouth Register)

MET: 10/3, "A very severe storm of wind and rain from the north-east which has continued through the day, steadily increasing in violence." 10/4, "Storm raging with dreadful fury. Wind NNE, constant rain." DAM: "Trees, fences, and small buildings prostrated.... All vegetables of any height laid flat to the ground; even the large leaves of cabbages torn off and strewed about fences. Everwhere the ground is covered with the green leaves of fruit and forest trees. Roads leading through woods are thickly carpeted with leaves and small branches. Everwhere are seen trees uprooted, or large limbs hanging by a few splinters. But the great disaster is among the shipping..."

LOC: Middletown CT

SRC: Ludlum, p.91-94

MET: Middletown, located in a singular snowbelt only a dozen miles inland from Long Island Sound, had a fall of 12 inches with depths to 18 inches reported in the surrounding highlands.

LOC: **Nantucket MA**

SRC: Ludlum, p.91-94

MET: One of the most intense hurricanes of the century raced northward through the shipping lanes off the Middle Atlantic seaboard on the morning of 3 October 1841, and arrived almost unheralded soon after noon on that fateful Sunday to catch a large portion of the Cape Cod fishing fleet on their favorite grounds southeast of Nantucket. The easterly gales, quickly rising to full hurricane strength, prevented the small vessels from turning the Cape and making safe port behind Provincetown. Nantucket, the closest land mass to the path of the storm, bore the full brunt of the hurricane winds on the 3d and 4th.

LOC: **Nantucket MA**

SRC: New Hampshire Patriot and State Gazette, Thurs., 11/4/1841

MET: "The wind blew a perfect hurricane from the east."

### **1858**

LOC: Cape Cod MA, **Nantucket MA**

SRC: Ludlum, p. 101 (SI)

MET: "The greatest force was from 3:30P.M. to 4:30 P.M., wind S-by-E to SSW." The Nantucket barometer at the 1500 observation was down only to 29.42", indicating the center lay much farther to the west.

DAM: "A terrible gale on the 16th prostrated chimneys and fences throughout the town."

### 1869a

LOC: Block Island RI

SRC: New Bedford Evening Standard, Tues. 9/14/1869

DAM: "Several dwelling houses and barns were blown down and also a great many hay stacks. The walls and fences are down for rods. Corn fields levelled with the ground."

LOC: **Martha's Vineyard** MA

SRC: New Bedford Evening Standard, Fri. 9/10/1869

DAM: "The full strength of the gale probably came by the west end of the Vineyard, as but little damage is reported on the island."

LOC: **Martha's Vineyard** MA

SRC: New Bedford Evening Standard, Sat. 9/11/1869

DAM: The damage to the island is confined to the north side.

LOC: **Nantucket** MA

SRC: Ludlum, p. 103-108

MET: "Nantucket, lying about 80 miles to the east of the storm track, had its most violent gale since the coastal hurricane of 2 August 1867. On the morning of September 8th the wind from the southeast increased steadily until 1900 when it veered to the southwest."

LOC: **Nantucket** MA

SRC: New Bedford Evening Standard, Sat. 9/11/1869

DAM: Nantucket escaped damage. The gale was described as more violent than any since 1867 but no damage was reported.

LOC: New England

SRC: Diaz, Part I: 1851-1870

MET: The estimated width of the path of destruction was 40-50 miles, all to the east of the apparent path of the center. Lowest pressure over land was about 29 inches. Five to ten miles west of the center there was no destruction but also there was no wind. The center probably cut across the eastern tip of Long Island, striking the CT-RI coast near the interstate border and then continuing towards the NNE over RI to the west of Newport and Providence. By 4:45 P.M. the gust of wind had become severe from ESE.

LOC: Providence RI

SRC: Massachusetts Weekly Spy, Fri. 9/24/1869

MET: "The gale seems to have been even more violent and destructive than in Boston, though, perhaps, not of so long duration...as well as the fury of the wind, was proportionally more severe than in the larger city...The weather had been fitful and squally all day, with rain at intervals. About 1 o'clock the wind increased to a hurricane from the south south-east, and for an hour spread havoc and devastation on every side."

SUR: The tide was out when the gale hit. But the wind sent surges up the bay quite rapidly. "For more than an hour the tide rose a foot every ten minutes, until three hours before the time for high tide, the water stood within a few inches of the floor of the horse railroad depot on Weybosset bridge. At this time the wind shifted to the westward, and abated its fury, and soon the flood began to subside. Had the gale continued another hour at its highest force, we see no reason why the water would not have touched as high a point as at the great flood of 1815...the tide came no nearer than about six feet of that famous high water mark. The gale continued about one hour; that in 1815 continued its fearful severity for three hours." This storm was comparable to the 1815 storm in

force but not in duration.

LOC: Salem MA

SRC: Ludlum, p.103-108

DAM: The storm was judged here by "severity at its height, although shorter in duration, its destructiveness was probably greater than in 1815." In addition, many vessels in the small harbors dragged their anchors and piled up onshore.

### **1869b**

LOC: **Nantucket MA**

SRC: Ludlum p.109

MET: The always weather-conscious Nantucket Inquirer informed us that the barometer had fallen to a low point of 28.70" (uncorrected) at 1500/4th when the wind veered around from southeast to southwest. The editor of the Inquirer thought "the gale of Monday last (the 4th) was much more violent here than that of Sept. 8th, but did not do material damage."

SRC: Ludlum p.109

MET: This wind behavior placed the center track of the tropical disturbance between the two localities (Boston and Nantucket) - probably close to **Martha's Vineyard** and across outer Cape Cod. There were many reports in the vicinity of Nantucket Shoals and off Cape Cod of full hurricane blasts from the southeast which later veered to the south and southwest. There were no reports from any quarter of a northeast hurricane, evidence which again leads to the belief that the deep eastward-moving trough had caused the western part of the tropical storm to become highly disorganized, with its former eye dissolved as cold air entered the circulation. It now presented, in its western part at least, a rather broad area of very low pressure but relatively light winds.

### **1878**

LOC: **Tisbury MA (Vineyard Haven)**

SRC: NYT, 10/24/1878

DAM: Ships were blown ashore.

### **1888**

LOC: Block Island RI

SRC: BG, 11/28/1888

MET: Wind blew at 84mph. The storm is the worst ever known.

### **1924**

LOC: Cape Cod MA

SRC: BG, 8/27/24-am

DAM: Cape Cod got the brunt of the storm. Trees were uprooted and fences and sheds blown over.

### **1924**

LOC: **Tisbury MA (Vineyard Haven)**

SRC: BG, 8/27/24-am

MET: The island was swept by 60mph winds.

DAM: Many houses lost porches and roofs.

### **1927**

LOC: **Nantucket MA**

SRC: BG, 8/25/27-am

MET: Nantucket reported the worst lashing from the storm. The official rainfall was 2.44 inches and the wind at times reached 68mph.

### 1933

LOC: **Nantucket MA**

SRC: BG, 9/18/33-am

MET: In early evening a 60mph northeasterly gale came upon the island. Shortly after 7pm the wind shifted to the northwest.

LOC: New England

SRC: BG, 9/18/33-am

MET: The Outer Cape and Nantucket were the only sections of New England to receive the brunt of the diminished tropical hurricane.

LOC: **Tisbury MA (Vineyard Haven)**

SRC: BG, 9/18/33-am

FLD: The heaviest rains in the memory of the oldest inhabitant of Martha's Vineyard fell there yesterday, causing several small streams to become raging torrents.

LOC: Wellfleet MA

SRC: BG, 9/18/33-am

DAM: Despite a heavy gale that blew all today along the Cape from here to the Canal, damage was reported to be slight.

### 1938

LOC: Boston MA (East Boston)

SRC: BG, 9/23/38

MET: The Boston Airport recorded winds at 100mph during the hurricane and the weather service reported 99mph wind for a brief period. The barometer fell to 29.02 inches at its lowest at the height of the storm. Heavy surf and high tides accompanied the storm but very little rain fell, 0.09inches.

LOC: Bourne MA

SRC: BG, 9/23/38

SUR: The 12 ft tidal wave pushed up Buzzards Bay by an 80 mile wind made three breaches across the land. Cape Cod, isolated by a tidal wave that cut the RR tracks just above Bourne and hurricane winds that laid low all telephone and telegraph communications, has 15 known dead in Bourne and Falmouth, scores homeless and property damage incalculable. Bourne MA, Fairhaven MA, Marion MA, Wareham MA. The worst damage from the 15 foot tidal wave appeared in these towns.

LOC: **Chilmark MA (Menemsha), Gay Head MA (Lobsterville)**

SRC: BG, 9/23/38

These towns were wiped out by the hurricane. **Edgartown MA**. The keeper of the lighthouse requested to be taken off as the heavy seas were undermining the foundations of the lighthouse. **Nantucket**. Only slight damage.

LOC: Grafton MA (North Grafton)

SRC: BG, 9/22/38

DAM: A man was caught by the wind and hurled 25 feet to his death from the roof of his barn on his farm.

LOC: Jamestown RI

SRC: BG, 9/23/38

An entire fishing fleet of thirty vessels were wrecked beyond repair and almost all roads were disrupted.

LOC: Long Island NY

SRC: BG, 9/23/38

SUR: One could see roofs floating without walls, walls without roofs, and whole houses afloat.

DAM: A flight over the island showed a scene of desolation and wreckage. Bodies were seen clad only in shoes and socks, the wind had blown off the rest of the clothes. One thousand small boats capsized, tossed on shore, or wrecked.

LOC: Milton MA

SRC: BG, 9/23/38PM

MET: Blue Hill Observatory measured winds at 186mph.

DAM: There were also bands of great destruction of trees.

LOC: New England

SRC: BG, 9/23/38

MET: The course of the storm was as follows: At 8:30 the morning of the 22nd the center of the storm was 75 miles east of Cape Hatteras. Traveling then at the rate of 55 mph the storm headed straight across the western end of Long Island, constantly increasing in velocity and at 4:35pm it was just west of New Haven. The barometer reading was 28.17, the lowest point reached in New England. At 8:30 last night the center of the hurricane was at Burlington VT, where the barometer was 28.74. Thence the storm traveled towards Ottawa where at 8:30 this morning the barometer reading was 29.26 indicating that the storm was diminishing in its intensity.

LOC: New London CT

SRC: Tyler, The NE Hurricane, 1938.

DAM: Perhaps the hardest hit town. Many entire roofs off buildings. A few large vessels were blown ashore, one causing a fire when its galley stove upset. Brick buildings reduced to piles of rubble. Trees laid down in a row. Many large trees with good root systems snapped off.

LOC: New London CT

SRC: BG, 9/23/38PM

SUR: Six miles of water front property was completely wrecked. Boats large and small were scattered among the streets.

DAM: A pullman car weighing 67 tons was rocking back in forth in the wind despite the fact that it had been moved so as not to be broadside to the wind. One factory had its roof blown off just before the flood waters and a fire demolished the rest. Trees were uprooted all over New London, many of them crashing through houses and cars.

LOC: Newport RI

SRC: BG, 9/23/38PM

SUR: The tidal wave which rose to a height of 25 feet and struck this island without warning Wednesday afternoon, demolished 500 homes at Island Park alone.

LOC: **Oak Bluffs, Tisbury** MA

SRC: NYT, 9/23/38

DAM: One person was dead and several missing from about a dozen homes on the north side of the island which were wrecked by the wind.

LOC: Vermont (northern)

SRC: BG, 9/23/38

DAM: Practically all of northern VT is isolated from the outside world. Homes were damaged and fruit and sugar orchards flattened by the hurricane.

LOC: Wareham MA

SRC: BG, 9/23/38

SUR: At Swift's beach 500 cottages and homes were demolished or damaged. This included the first four rows of cottages. Tormeset Point was wiped out by the tidal wave and every house at Briarwood flooded or swept away.

LOC: Wareham MA (Onset)

SRC: BG, 9/23/38

SUR: Onset Island was swept by mountainous seas. A handful of inhabitants saved themselves only by climbing to the top of trees. Twelve cottages on the island were washed away and the remaining 30 were badly damaged. Half of the dollar amount of damage was attributed to the yachting fleet that was virtually destroyed. Record breaking tides washed 30-ft. cruisers into Main St. The water stood 20 ft deep in places.

## **1940**

LOC: **Nantucket** MA

SRC: BG, 9/3/40

MET: The storm passed off shore but New England got heavy seas, high winds and rain. Nantucket was lashed by winds at velocities of 75mph. Most of the damage was inflicted on Nantucket and the Cape. Considerable damage was done to the trees and light poles around the island.

## **1944**

LOC: Barnstable MA (Centerville)

SRC: Boston Globe, 9/16-17/44

DAM: Trees, telephone, telegraph and power lines were down. Bathhouses were levelled and 25 summer homes cracked up or moved off their foundations. Houses were twisted and boathouses strangely tilted, garages were torn from foundations, and scores of tiny cottages strewn as if a giant had tossed them from his hand in jest as he might a handful of jackstones. Eight mansions were nearly ruined. The exclusive Hyannisport West Beach Club was split in two and the famed golf club atop a hill was half blown away. Of 40 yachts anchored only two were found undamaged. The rest were sunk or carried 200-300yds. into streets.

LOC: Barnstable MA (Hyannis)

SRC: Daily Hampshire Gazette, 9/15/44

DAM: Nearly 20-30 fishing vessels were dashed ashore.

LOC: Boston MA (East Boston)

SRC: Boston Globe, 9/15/44

SUR: The tide was reported at two feet above its normal high tide.

DAM: The wind reached a peak gust of 98mph at midnight. The barometer reached a low of 29.09 inches which was lower than the 1938 records for Boston.

LOC: Cape Cod MA

SRC: Boston Globe, 9/16/44

DAM: The Cape and its offshore islands bore the full brunt of the storm's fury, along with New Bedford, causing more damage than in 1938. From the air the Cape looked like a realtor's ad, showing the interiors of buildings, while the more affected forests appeared like rows of tall trees, all felled in neat rows. More than 50% of the large shade trees of the Cape were reported uprooted. Camp Edwards: Several barracks lost their roofs when winds reached 100mph.

LOC: Charlestown RI (Charlestown), South Kingston RI (Matunuck), Westerly RI (Misquamicut)

SRC: NYT, 9/16/44

DAM: Scores of summer cottages at these beaches were tossed around like doll houses.

LOC: **Chilmark**

SRC: Boston Globe, 9/17/44

SUR: A cottage from Stonewall Beach washed up to higher ground. Three other cottages removed from foundations. **Edgartown**. Boats torn from moorings. Waterfront damage. Docks, bulkheads and seawalls were demolished. **Martha's Vineyard**. Three quarters of the boats anchored there were either driven ashore or sunk. **Oak Bluffs**. The New England Steamship Co. pier at Oak Bluffs was partially demolished. Many cottages were destroyed, along with a small shipyard and scores of boats. **Tisbury**: A section of shipyard making small boats for the Army and Navy was destroyed and roads in the vicinity buried under tons of sand and shale.

LOC: Dennis MA

SRC: Boston Globe, 9/17/44

DAM: Trees uprooted. Two steeples toppled through roofs of churches. Twenty-five cottages completely destroyed on south shore. One hundred trees down, tearing up roads in Toy Village.

LOC: **Falmouth** MA

SRC: Boston Globe, 9/15-17/44

MET: Falmouth was blacked out at 10:00 and the wind reached a velocity of 90mph.

SUR: Streets were inundated with more than a foot of water.

DAM: Trees were toppled. Scores of cottages along Falmouth Beach were levelled. An estimated 200 dwellings were damaged, with many more swept away. The storm here was worse than the 1938 storm. Winds reaching 90 mph left streets filled with sand, bricks and debris, seriously damaged the docks of the US Bureau of Fisheries and those of the Marine Biological Laboratories. Most of the damage on the Cape was on the southern shores. West Yarmouth: 30 medium sized summer cottages were bowled over and carried more than a mile inland where they piled up on the Parkers River Bridge.

LOC: Mattapoisett MA

SRC: Boston Globe, 9/17/44

SUR: A tidal wave destroyed 25 houses.

DAM: All roads impassable. Houses demolished, number not known. Houses and telephone poles knocked flat. Six boats ashore. At Crescent Beach, 50 cottages demolished. Eight permanent homes destroyed.

LOC: **Nantucket** MA

SRC: Boston Globe, 9/15-16/44

SUR: The high tides washed away the Coast Guard station. Six boats, three yachts washed ashore.

DAM: Twelve farm buildings destroyed. Sixty percent of fruit crop damaged or destroyed.

LOC: New Bedford MA

SRC: Boston Globe, 9/16/44

DAM: This city experienced destruction far surpassing that of 1938. Old parks full of elms were potential logging camps, scores of summer cottages were in splinters. Crescent Beach was a flattened mass of shingles, chimneys and plywood. Some falling trees ripped up pavement and crushed automobiles.

LOC: Plymouth MA

SRC: Boston Globe, 9/16/44

SUR: Everywhere along the Pilgrim shore boulders lay in strange spots.

DAM: Tree damage was appallingly apparent. Fifteen fishing boats and yachts were sunk at their moorings and a dory was blown 200 feet through the air and smashed against a tree.

LOC: Providence RI

SRC: Providence Journal, 9/15/44

MET: Providence received 3.78 inches of rain from 5:55pm to midnight. The eye of the storm passed over Fisher's Island, Westerly and Providence. The storm hit RI on the nose, but because it hit at low tide less damage was done than otherwise could have been expected. RI got winds up to 75mph with gusts up to 100mph.

LOC: Providence RI

SRC: Boston Globe, 9/15/44

MET: 100mph winds made choppy waves throughout the business district which was flooded. Rainfall was measured at nearly four inches in the city which brought the three-day precipitation to nearly eight inches. Driving through Provincetown was like driving through a tortured forest. Over the roads in all kinds of fantastic patterns trees and limbs were strewn.

## **1950b**

LOC: **Nantucket** MA

SRC: NYT, 9/12/50

MET: The storm center passed east of Nantucket. The weather Bureau correctly predicted that New England would not experience anything greater than 45mph fringe winds.

LOC: Provincetown MA

SRC: NYT, 9/12/50

MET: The Cape and Nantucket caught the heaviest blows from the big wind. Gusts of 50mph were felt at Provincetown. Cape Cod got fringe winds of 65mph.

DAM: Some small trees and electric wires were downed.

## **1954a**

LOC: Barnstable MA (Hyannis)

SRC: BG, 8/31/54pm

DAM: Trees were reported down in all sections of town.

LOC: Block Island RI

SRC: Daily Hampshire Gazette, 9/1/54

SUR: Water and sand swept through the Bullard Inn.

DAM: Block and Fisher's Islands escaped the brunt of the storm. On Block Island most of the roof was torn off the 250 year old Ocean View Hotel. About 20 small boats either sank at their moorings

or were pulled off and beached. Only one residence was seriously damaged, with many sustaining minor damage.

LOC: Boston MA

SRC: The Hartford Courant, 9/1/54

MET: Harvard U observatory reported sustained winds of 93mph and gusts of 125mph.

DAM: Hit hard. Church steeple felled. Old elms on commons downed. Scores of yachts dashed ashore at South Boston.

LOC: Boston MA

SRC: NYT, 9/1/54

MET: Blue Hills Observatory recorded at its metropolitan station wind velocities of 93mph at 12:20pm and a maximum gust of 125mph.

DAM: The Old North Church lost its steeple.

LOC: Boston MA (South Boston)

SRC: BG, 9/1/54pm

DAM: 300 boats were wrecked.

LOC: Bourne MA

SRC: BG, 9/1/54pm

DAM: In the Taylor's Point section 198 homes were destroyed or badly damaged. Only two homes were untouched.

LOC: Cape Cod MA

SRC: BG, 9/1/54pm

DAM: The fury of the storm was concentrated between the canal and Falmouth, although there was considerable damage all the way to the tip. As far down as Dennis, the picture was one of awesome destruction. Getting into Chatham, the scene changed for the better. Damage at the Cape's elbow was little more than one would see after any hard Northeaster.

LOC: [Martha's Vineyard](#) MA, Nantucket MA

SRC: NYT, 9/1/54

DAM: The islands escaped the worst impact. Nantucket retained full power and had very little damage.

LOC: New England

SRC: Daily Hampshire Gazette, 9/1/54

DAM: Carol spent the greatest fury on the RI and MA coast line. Cottages on Cape Cod were a shamble of splinters.

LOC: Westerly RI

SRC: The Hartford Courant, 9/1/54

SUR: Seemed to be the worst hit. More than 200 summer cottages were swept away at Misquamicut Beach leaving only 2 standing.

LOC: Westerly RI

SRC: BG, 9/1/54pm

DAM: The Watch Hill Beach Club was destroyed.

## 1954b

LOC: Boston MA

SRC: BG, 9/12/54

MET: The worst winds of the storm came after the eye had passed around 5pm. Boston lay 50 miles to the west of the two eyes of the storm and had gusts of 87mph and steady winds of 74mph between 4 and 5pm. Hurricane gusts penetrated as far as Worcester which had one wallop of 81mph. The rainfall in this storm was much greater than in Carol.

LOC: Cape Cod MA

SRC: BG, 9/12/54

MET: Cape Cod was slashed by the eye of the hurricane bringing winds of 60-70mph on the outer Cape shortly after 6pm. The fact that the tide was low cut damages.

DAM: The Cape, which was crossed by the eye and had sunshine for 45 minutes before the rear of the storm hit, escaped without extensive damage.

## Chilmark MA (Menemsha)

SRC: NYT, 9/12/54

MET: About noon the storm began moving in and before the eye passed at 2:20pm easterly winds reached a velocity of 70mph. The back half of the eye brought westerly winds of 90mph.

DAM: Although the second phase was worse than the first, it caused little major property damage.

LOC: **Oak Bluffs** MA

SRC: BG, 9/12/54

DAM: Many windows were reported broken.

## 1960

LOC: Boston MA

SRC: BG, 9/13/60

MET: 140mph winds at Blue Hill, 69mph winds at Logan Airport at 6pm. Tides rose to 14 feet above normal.

LOC: Bourne MA

SRC: BG, 9/13/60

DAM: This was one of the hardest hit areas on the Cape. Store windows all along the street were blown in. Boats were dashed on shore all along the Buzzard's Bay shore. The hurricane smashed every plate glass window in 25 businesses facing the water. Winds were clocked at 100mph.

LOC: Cape Cod MA

SRC: BG, 9/13/60

SUR: The hurricane hit Cape Cod the hardest on the upper Cape and at Provincetown, Truro and Wellfleet. Hundreds of craft were shattered against rocks and seawalls or sunk. Hundreds of cottages were damaged or destroyed as waves 15 feet high crashed ashore. Tides were 14 feet above normal in some sections. Dozens of cottages in Dennisport, Yarmouth, Wareham, Bourne and Falmouth were inundated. Dennis: Cottages were smashed and washed out to sea.

LOC: East Hampton NY (Montauk)

SRC: NYT, 9/13/60

MET: At the height of Donna's passage winds reached 105mph at 3pm.

LOC: Falmouth ME

SRC: Daily Hampshire Gazette, 9/13/60

DAM: Twenty-eight boats were torn loose and smashed to pieces on rocks at the Portland Yacht Club.

LOC: **Martha's Vineyard** MA

SRC: BG, 9/13/60

DAM: 100 homes and summer cottages were damaged.

LOC: **Nantucket** MA

SRC: BG, 9/13/60

SUR: Little damage occurred until winds changed to the west and sent waves crashing onto Cicso, Surfside and Madaket Beaches. Four houses at Madaket were damaged and two yachts.

LOC: New Bedford MA

SRC: Morning Union, 9/13/60

DAM: Wind uprooted thousands of trees and falling branches tore down power and communication lines in all sections.

SRC: Daily Hampshire Gazette, 9/13/60

MET: Donna cut inland at Bridgeport CT late on the 12th and rapidly lost strength as it swept up through central MA, NH and ME and crossed into northeastern New Brunswick. As the storm veered to the westward and approached the shore of CT near Bridgeport, the winds shifted to the south in RI and MA, reaching 75mph at Cuttyhunk and 60mph at Point Judith, RI.

LOC: Region: Falmouth MA to Chatham MA

SRC: BG, 9/13/60

DAM: Shores were dotted with uprooted trees and shrubs, toppled utility poles and severed power lines, smashed store fronts and twisted commercial signs.

## **1961**

SRC: BG, 9/22/61-pm

MET: Dead = 0, Damage = Little, Destroyed = 0, compared to the '38 hurricane 23 years ago. At 6am yesterday, Esther was traveling at 17mph until she reached the demarcation between the Gulf Stream and the chilled coastal seas 65miles south of Block Island, between Block Island and Nantucket Island on a north-east course with winds in the eye of 115mph. She then slowed down to 7mph losing strength rapidly due to the cold waters. She faded into anonymity at 6pm last night. At 7pm last night the eye had winds of 23knots and was moving to the East beneath the Cape's lower coast. An hour later they had diminished to 20knots and winds on the periphery no longer formed a 200-mile circle.

LOC: Provincetown MA

SRC: BG, 9/22/61-pm

MET: Winds reached 65mph. The hurricane was stalled 90 miles southwest of the Cape. Around noon the ebbing tide slowed her down enough for the eye to start picking up cold water and her outer winds were diminished by the constant circling over land masses.

## **1963**

LOC: New England

SRC: BG, 10/30/63

MET: Rainfall of 1.24 inches in Boston, 1.6 inches in RI, and 1 inch in Worcester. Ginny shot north

quickly after passing Cape Hatteras. She had top winds gusting up to 100mph and was hitting the Maritimes hard though she was classified as an extra-tropical storm. She was expected to continue moving northeast at about 35mph for the rest of the night. By 7pm Tuesday the Weather Bureau had cancelled the hurricane watch and issued advisories for gales. New England never felt the hurricane force at all. Top winds in Boston were only 44mph. Cape Cod, Nantucket and **Martha's Vineyard** took the heaviest blow with occasional gusts up to 85mph.

## 1969

LOC: **Nantucket** MA

SRC: NYT, 9/10/69

MET: Winds of 60 mph swept the island. The lightship Nantucket was 50 miles south of the island and reported gusts as high as 140mph.

SUR: Beach erosion was heavy on Nantucket and **Martha's Vineyard** because of the surf.

LOC: **Nantucket** MA

SRC: BG, 9/9/69-pm

MET: The storm passed well east of the island at 2pm after unexpectedly changing course to a more easterly direction. The hurricane at that time was moving northeast at 50mph. 60mph winds were experienced on the Island.

## 1985

LOC: Cape Cod MA

SRC: Boston Globe, 9/28/85

MET: Gloria struck the Cape with 90mph winds. In the early afternoon, as the wind gusted to speeds of 50mph, sunlight broke through the clouds, causing some residents to believe that Gloria was leaving earlier than predicted. By 3pm, however, as the storm's eye headed into central Massachusetts, the rain increased and the wind became stronger with gusts up to 90mph reported by the Coast Guard.

LOC: **Falmouth** MA

SRC: Boston Globe, 9/28/85

DAM: By 5pm, Falmouth was inundated with reports of trees and utility poles blocking roads.

HUR: N1985

LOC: Long Island NY

SRC: Boston Globe, 9/30/95

MET: Gloria made landfall on Fire Island 40 miles east of Manhattan. Winds had diminished to between 70 and 90mph, though some gusts of 100mph were reported in Suffolk County. Lower winds than expected were speculated at being caused by the hurricane eye widening to 20miles in diameter as Gloria reached LI sapping the core of its strength. Gloria raced across LI at 40mph.

DAM: Trees and utility poles were upended, windows smashed.

LOC: Milton MA

SRC: Boston Globe, 9/28/85

MET: At Blue Hills Observatory winds clocked 100mph with sustained winds considerably slower putting Gloria into the lowest class hurricane.

LOC: **Nantucket** MA

SRC: Boston Globe, 9/28/85

SUR: In Nantucket waves mauled beaches, flooding was minimal.

DAM: Only minor damage to buildings.

## 1991

LOC: Barnstable MA

SRC: Minsinger, Hurricane Bob, 1992, p32-33

DAM: The Harborview Motel lost a good part of its roof at the height of the storm. An estimated 10,000 trees fell throughout town. A plane at the airport was flipped over and totaled.

LOC: Block Island RI

SRC: Minsinger, Hurricane Bob, 1992, p23

MET: The eye passed directly over the island with winds clocking at 105mph and gusts of 125mph.

DAM: Trees were downed across the island, 52 boats blown aground at New Harbor. 52 boats were blown ashore.

LOC: Bourne MA

SRC: Minsinger, Hurricane Bob, 1992, p57

MET: The peak wind was measured at 90mph at Otis Airforce Base at 3:30pm. Less than one dozen year round homes said to be uninhabitable after the storm. Over 200 boats sunk or swept away.

LOC: Bristol RI

SRC: Minsinger, Hurricane Bob, 1992, p25

MET: The eye of the storm passed very close to Bristol, perhaps just to the east. The town manager said it was the worst he had seen. Even the old timers agreed that the tree damage was as bad as in 1938. Every sector of town was damaged. It was felt that the damage was far greater than Gloria.

LOC: Cape Cod MA

SRC: Minsinger, Hurricane Bob, 1992, p39

DAM: A report of Bob's impact on Cape Cod ecology. Where Black Locust and/or Autumn Olive grew in groves nearly every tree was flattened with root masses torn from the ground and exposed to the air. Where there were large tap rooted trees such as Pitch Pine they did not appear to go over but rather snap into two or more remnants. Tap roots rarely pulled out but it appears that the stress of the wind on the foliage set up the tree for snapping. Clearly the wind strength exceeded the tensile strength of many healthy trees. In several Cape swamps Bob's winds destroyed all of the dominant tree canopy. Locust, catalpa, white pine, American elm, silvermaples, redmaples, oaks, poplar in a variety of habitats appear gaunt and with stunted growth in '92 especially on the side experiencing the worst winds. Carver. The Miles Standish State Forest was fairly heavily hit and was closed to allow for tree clearing.

Chatham MA: Winds were reported to have reached 96mph. Wind gusts were measured to be 90mph at a NOAA station with sustained winds at 60-70mph and only .18 inches of rain.

Eight hundred boats were damaged and 300 large boats were washed up. Dennis MA: There was some storm surge flooding. Falmouth: Hurricane force winds gusted from the southeast. By 3:00 peak gusts were measured at 85mph in town and as high as 100mph along the shore. Four hundred fifty moorings were lost in Waquoit Bay, at least 300 boats sunk or ashore. Two hundred fifty telephone poles down.

Sunday the 17 was warm with a brisk SW wind. At noon a hurricane watch was issued north to Plymouth. At 6pm the NHC issued a hurricane watch for all of New England. It was a beautiful clear night. The SW winds subsided as the approaching front stalled to the north and East Falmouth came under a weak ridge ahead of the hurricane. The midnight advisory indicated that Bob continued to strengthen with winds to 115mph and the central pressure was still falling. At 2:30 the hurricane passed due west. The storm surge caused water to rise another 3 feet in one half hour. The winds

peak gusts were later reported to be 90mph. Blowing spray reduced visibility to a couple hundred yards. The surge was higher in Carol doing more damage. The dunes in Bob were broken through in places but not topped. Woods Hole lay a little closer than Falmouth to the eye of the storm and took a considerable beating. The high tide at Woods Hole also came much closer to the height of the storm than in Falmouth. The Land's End Restaurant received heavy damage as did other structures near the water.

LOC: Maine

SRC: Minsinger, Hurricane Bob, 1992, p74-75

MET: Bob will be remembered for eclipsing all records for rainfall in coastal ME. Even in downeast ME winds gusted to 93mph at Blue Hill and 92mph in Wiscasset despite the storm's downgrade to a tropical storm at this point. The hurricane passed to the west of both towns. The heaviest rains fell in Gorham with 8.08" followed by Westbrook at 8" and the Portland National Weather Service Office at 7.82". Totals over 6 inches of rain fell across southwestern ME and southeast New Hampshire with 7 inches or more stretching from York and southern Cumberland counties into bordering NH. Amounts in this area included 7.43" in West Buxton, ME and 7.14" in Rochester, NH.

LOC: **Martha's Vineyard MA** (Chilmark, Edgartown, Gay Head, Oak Bluffs, Tisbury, West Tisbury)

SRC: Minsinger, Hurricane Bob, 1992, p40

MET: Sustained winds as high as 85mph were recorded by the NWS in Edgartown with an unofficial gust at 112mph in Chappaquiddick. Southerly winds were as high as 98mph at the Airport and 85 knots at the Menemsha Coast Guard Station. Hurricane Bob was a dry storm. Total rainfall for the storm was .15". For a time **Chappaquiddick** was an island again. Many of the low areas became flooded. Edgartown was the hardest hit. More than 30 boats were washed up on shore or sunk. A house on the south shore was moved 20 feet from its chimney. The islands oldest trees fell throughout the island. Microbursts were experienced on Chappaquiddick, West Tisbury and Chilmark. Long swaths of trees were downed in the State Forest. A severe microburst leveled four of the eight acres of the Trustees of Reservation Japanese garden, leveling 100 trees. Huge trees fell on homes, crossed roads and changed the skyline in the towns of Gay Head, West Tisbury and Chilmark. More inland damage specifically to trees said to have been caused than in '38. All the deciduous trees lost their leaves to wind and/or salt. Weeks later the island blossomed in a second spring, cherry, apple, lilac and shadbush blossomed in September.

LOC: **Martha's Vineyard MA** (Chilmark, Edgartown, Gay Head, Oak Bluffs, Tisbury, West Tisbury)

SRC: Minsinger, Hurricane Bob, 1992, p31

MET: Martha's Vineyard was closer to the center of the storm than Nantucket. Edgartown measure sustained winds at 85mph with gusts at 111mph. 86mph winds were noted at Oak Bluffs and a 98mph wind gust was noted at Menemsha CG Station. The barometer reached its lowest at 29" at 2:30pm. 0.15" of rain fell during the storm. An unofficial gust was measured at 112mph at Chappaquiddick.

SUR: At Katama the beach was badly eroded. The parking lot was filled with sand. There was local flooding in Tisbury. Cranberry bogs flooded with salt water. Salt spray damaged foliage. Cuttyhunk Island had a tidal surge of 8-10 feet and had a few docks awash.

DAM: The strong southeast wind which shifted strong to the south by that time bent the weathervane atop the Edgartown church. Edgartown was blocked by fallen trees and as many as 84 boats were thrown up on the beach, 13-15 capsized, sunk or missing. Other harbors had boats adrift as well. On South Beach an entire house was blown 90 degrees on its foundation. In the Manuel Correllus State Forest one million board feet of white pine was lost to the winds.

LOC: **Nantucket MA**

SRC: Minsinger, Hurricane Bob, 1992, p31

MET: Sustained winds were measured at 88mph with gusts up to 102mph. The airport barometer bottomed out at 29.27" between 2:30 and 3:00. There was little rain,

SUR: Salt spray damaged fruit crops. Five to fifteen feet of beach erosion occurred on south shore.

DAM: Over 2000 trees were lost across the island. Over 50 boats damaged, some boats thrown against bulkhead, others dragged anchor and others were driven ashore. The island was spared heavy damage.

## 1996

LOC: **Martha's Vineyard** MA

SRC: Boston Globe 9/3/1996 p.A1

MET: "On Martha's Vineyard, wind gusts up to 70 mph and heavy rain plagued the island for much of the morning."

DAM: "Tree limbs, downed power lines and debris littered the roads, and ferry service was postponed until evening."

LOC: **Nantucket** MA

SRC: Boston Globe 9/3/1996 p.A1

MET: "Top winds gusted to about 80 mph on Nantucket, barely hurricane strength, as Edouard lost force and edged its way east, away from land."

DAM: "Still, winds and rain lashed Nantucket, felling a historic elm tree, beaching boats and stranding vacationers ... On Nantucket, about 15 boats were flung on the beach after breaking their harbor moorings, and a historic 100-foot elm tree was toppled on Main Street."