

THE GREAT BLOWDOWN

EFFECTS OF THE 1938 HURRICANE IN NORTHERN NEW ENGLAND



1938

The Great New England Hurricane of 1938 unexpectedly tore through the region on Wednesday, September 21, 1938. In just a few hours, it brought huge tragedy and tremendous devastation that spanned from the sandbar beaches of Long Island to the forests of northern New England. No other hurricane—long before or since—has been accompanied by such severe and widespread effects in the region.

Bow Mills, NH Courtesy U.S. Forest Service

THE GREAT NEW ENGLAND HURRICANE

Hundreds died in Long Island and in southern New England. The majority of the casualties were in Rhode Island. Entire coastal communities were wiped out. Crops were lost. Roads, railroads, and bridges were washed out. Rivers flooded. Numerous landslides occurred in the White Mountains. An unprecedented number of trees went down. Forests were decimated. The destructive effects were many.



Damage done on Main Street by the fire which followed flood and hurricane.
Peterborough, NH

Courtesy National Archives and Records Administration

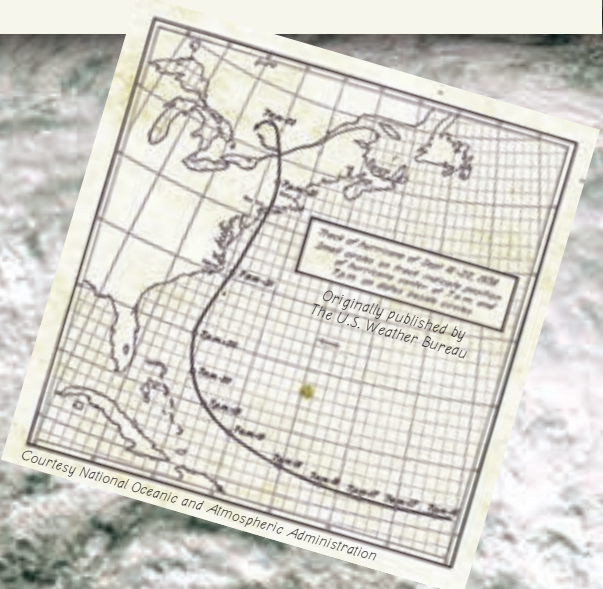
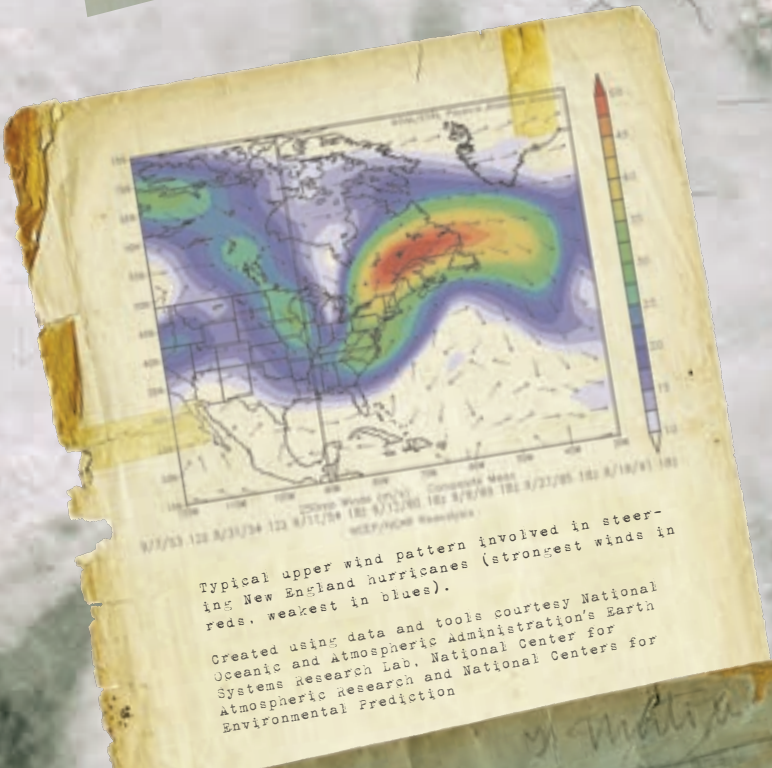
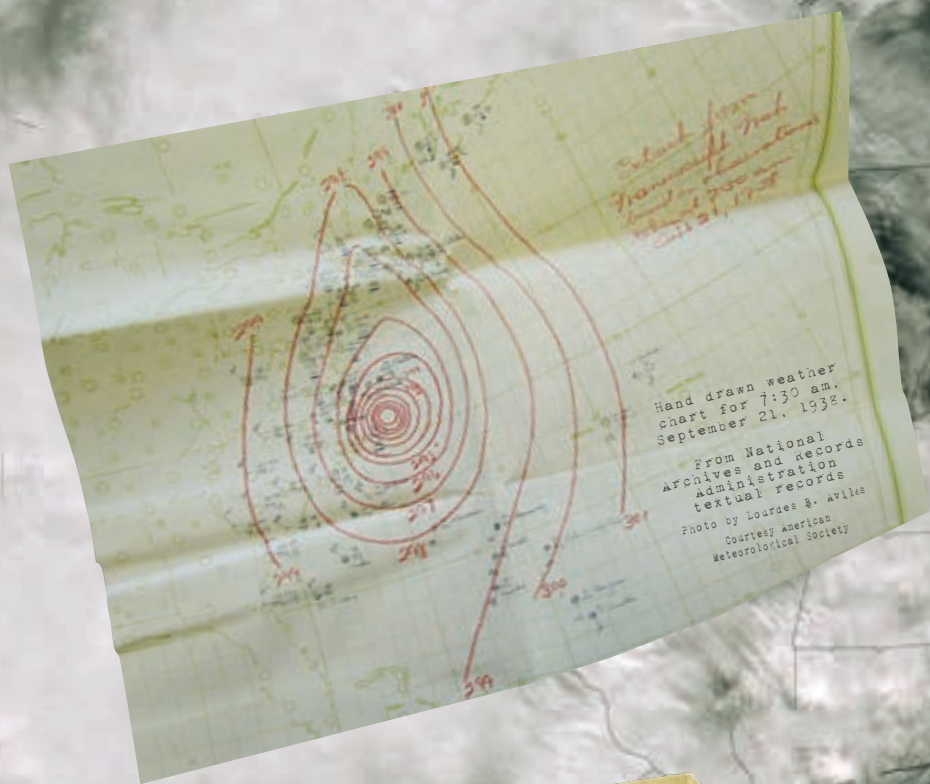


Main Street, Woods Hole, MA

Courtesy National Oceanic and Atmospheric Administration

METEOROLOGY OF THE HURRICANE

The Great New England Hurricane of 1938 formed in the tropical waters of the eastern Atlantic Ocean and traveled westward and then northward. In order for a hurricane to reach New England, the meteorological setup must be just right. As the storm is approaching North America, upper air currents over the central United States must sharply dip south and then back north near the East Coast. The result is northward steering of the storm straight toward Long Island. Although not as destructive as the 1938 storm, other hurricanes have in this way reached the region during the last few decades.



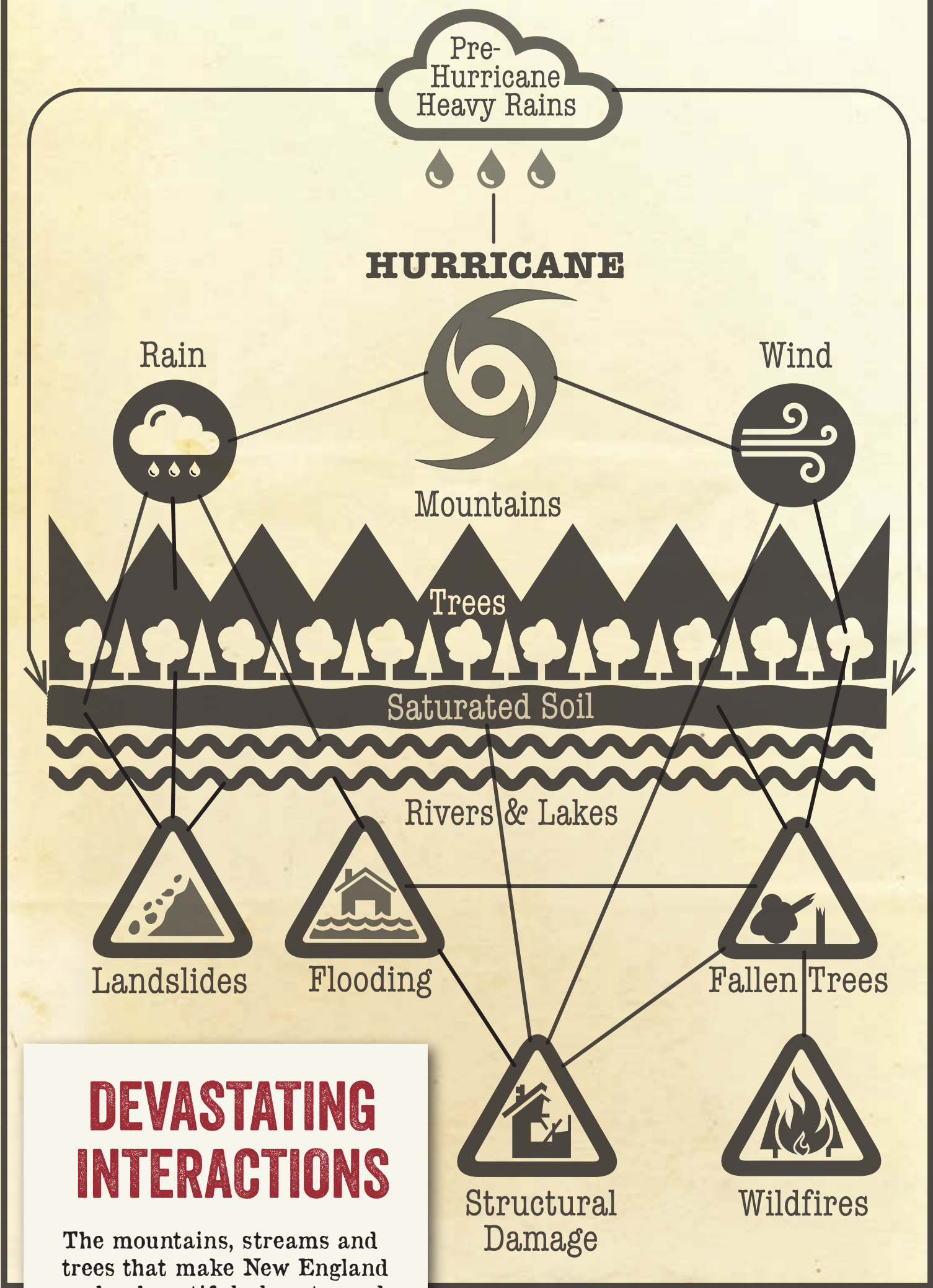


INTO THE FOREST

The rapidly approaching 1938 Hurricane made landfall on Long Island and then hit Connecticut during the early afternoon of September 21. The storm then weakened as it traveled through northern New England during the early evening. It also expanded the reach of its winds and rainfall, affecting the entire region.

At a time when it would have been preparing to receive the splendor of the fall colors, most of New England was instead left with an unrecognizable landscape.

Environmental Impact



DEVASTATING INTERACTIONS

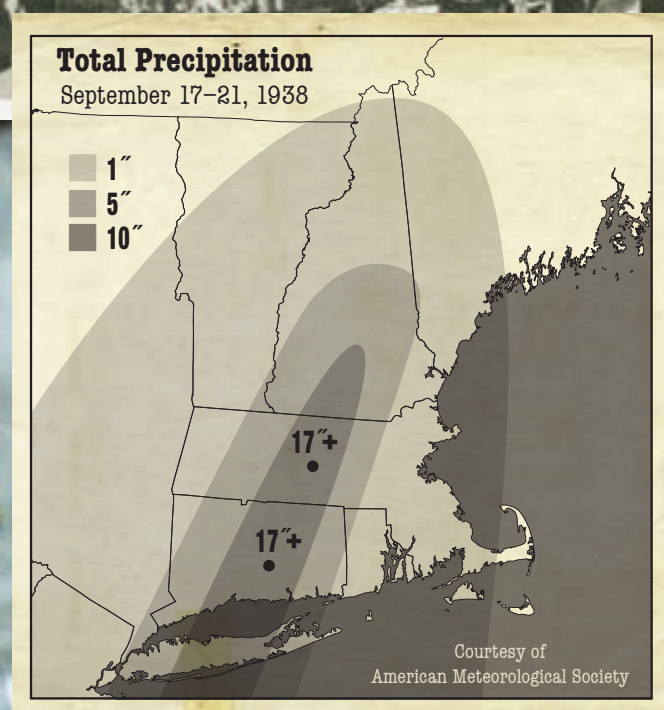
The mountains, streams and trees that make New England such a beautiful place turned into weapons of mass devastation in the presence of the Hurricane.

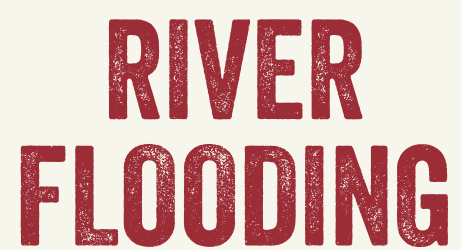
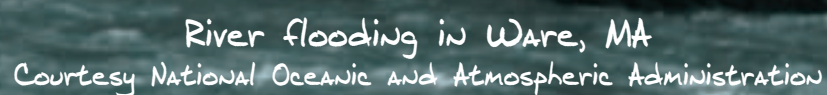


U.S. Route 25, Rumney, NH
 Courtesy New Hampshire Historical Society

TOO MUCH RAIN

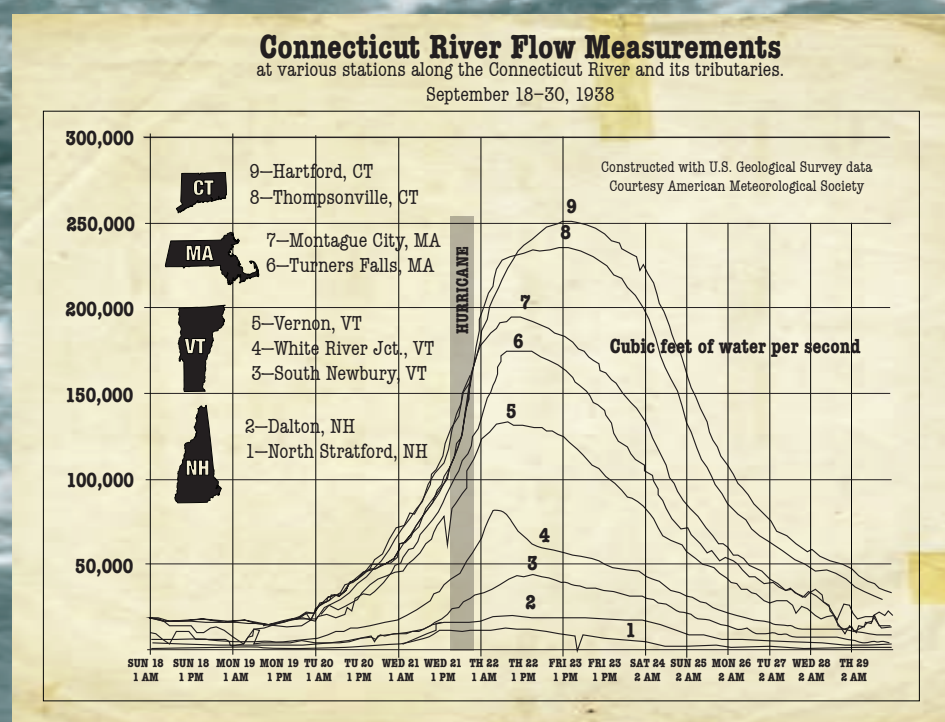
The days before the Hurricane's arrival had been extremely wet. A large portion of the region received five-day totals (combining what fell before and during the storm) of at least ten inches of rain. Some areas experienced more than 15 inches and a handful reported more than 17 inches. This was too much excess water, leading to saturated soil and region-wide river flooding.





When the storm arrived, most rivers and streams in the area were already at or close to flood stage. The additional rainfall was then enough to truly cause havoc.

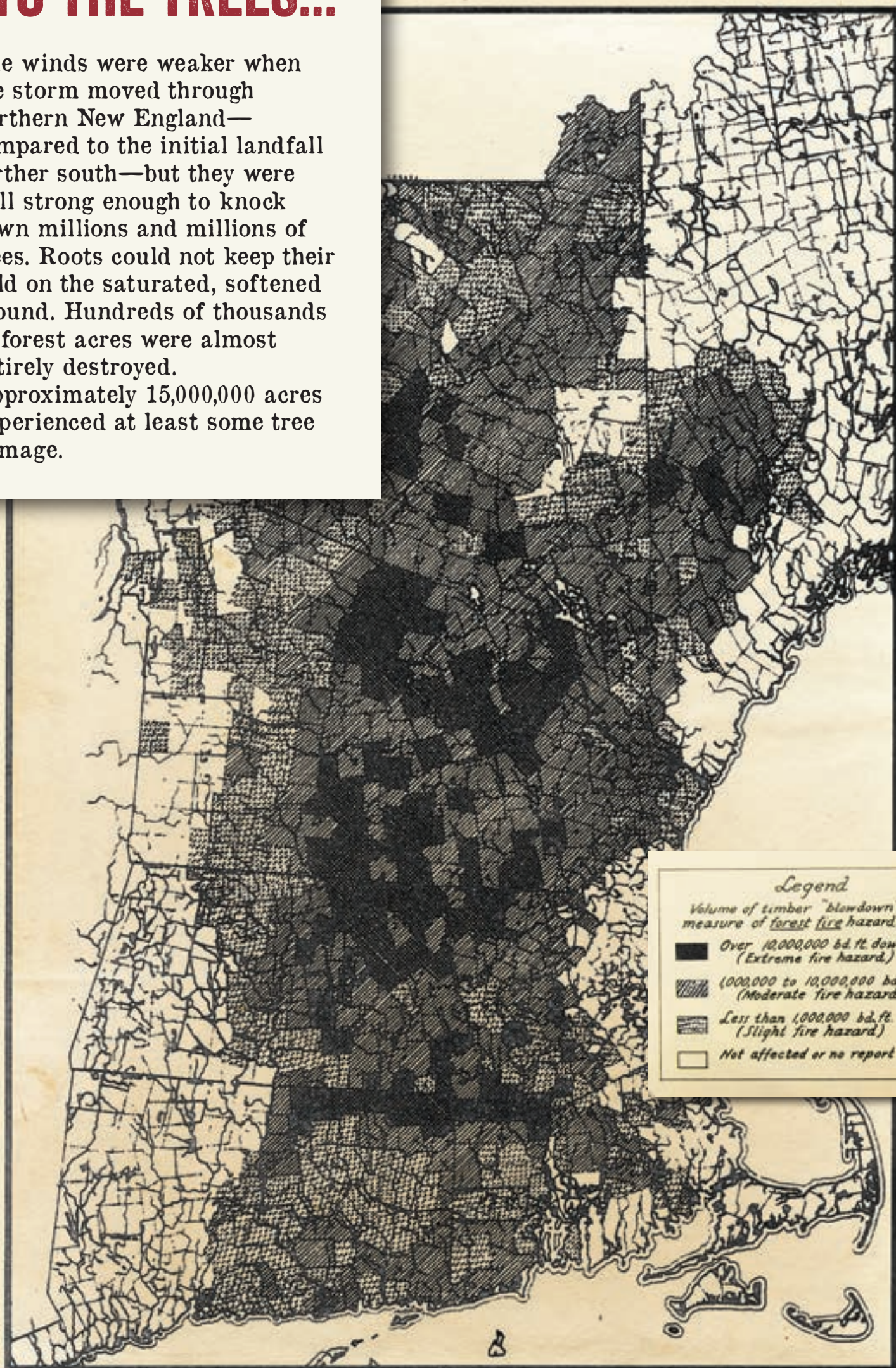
The highest water levels did not occur at the same time in all locations. In general, the water reached higher and peaked later in the downstream southern portions of the larger river basins.



WHAT HAPPENED TO THE TREES...

The winds were weaker when the storm moved through northern New England—compared to the initial landfall farther south—but they were still strong enough to knock down millions and millions of trees. Roots could not keep their hold on the saturated, softened ground. Hundreds of thousands of forest acres were almost entirely destroyed.

Approximately 15,000,000 acres experienced at least some tree damage.



SALVAGING TIMBER

After the 1938 Hurricane, the United States Forest Service coordinated a massive and complicated operation to recover as much usable wood from the fallen trees as possible. The purpose was to help land owners avoid certain economic catastrophe. The logging and sawing scenes during the first few years were reminiscent of decimating timbering operations in the late 1800s and early 1900s—except this was a response to a natural disaster.



Forest Service
log stamping in
Sunapee, NH

Courtesy
U.S. Forest Service



Rolling logs at
Peguawket Pond in
Conway, NH

Courtesy U.S. Forest Service



Lumber storage yard in Merrimack River Valley Courtesy U.S. Forest Service



Courtesy U.S. Forest Service

FIRE HAZARD

The tangled mass of fallen trees and brush created an unprecedented danger for the region. Wildfires could easily spread and threaten human lives and communities. Controlling them would be difficult, since fire watchtowers had also gone down and roads were blocked by trees and landslides. It was necessary, therefore, to restore fire-fighting capacity and clean up the most vulnerable areas as soon as possible. While recovering the value of the wood was important, reducing the fire threat was the most urgent concern of the Forest Service.



Brush burning by Civilian Conservation Corps troops, who were mobilized by the Forest Service.
Courtesy U.S. Forest Service



Keene, NH

Courtesy National Archives and Records Administration



Near the Basin, Franconia Notch
Photo by Lourdes B. Avilés

UNINTENDED CONSEQUENCES

Forests are complex ecosystems where trees, undergrowth, animals, nutrients, water, and other elements interact in many ways. A sudden loss of trees, of course, causes a disruption to the natural balance.

However, long term studies in experimental forests suggest that if left alone, a significant number of fallen and broken trees can survive and grow new leaves the year after a blowdown. In these studies the amount of water in the system also remains stable, suggesting that increases in river flow (like the ones observed after the 1938 Hurricane, which caused additional erosion) would not occur.

A large satellite image of Hurricane Irene, showing a well-defined eye and spiral cloud bands over the Atlantic Ocean. The hurricane is positioned in the upper left quadrant of the frame.

2011 IRENE VS. 1938 HURRICANE

Hurricane Irene caused damage from the Carolinas northward along the coast. Following a similar track to the 1938 Hurricane, it arrived onto an already wet northern New England with the lesser strength of a tropical storm. Still, several areas experienced devastating flooding and erosion, especially in Vermont. It is important to understand, however, that disastrous as they were, the overall effects due to Irene pale in comparison to what happened in 1938.



Route 175 (Exit 25 off Interstate 93) Plymouth, NH
Pemigewasset River Flooding, (August 29, 2011)
Photo by Phillip Haskell

Satellite Image of Hurricane Irene
NASA image courtesy Jeff Schmaltz, MODIS Rapid Response, NASA Goddard Space Flight Center.

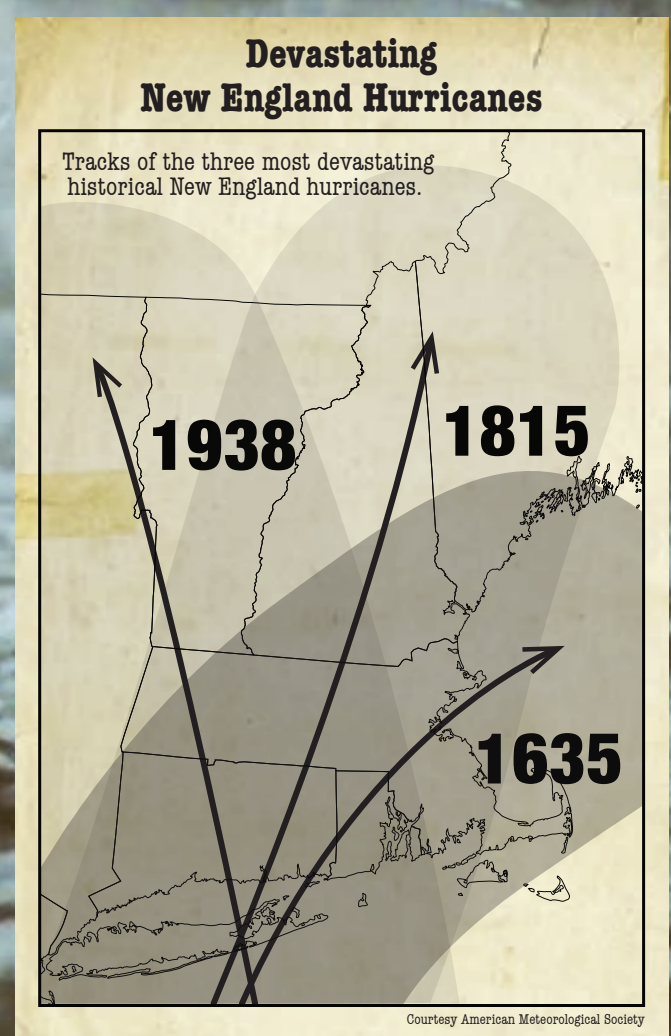


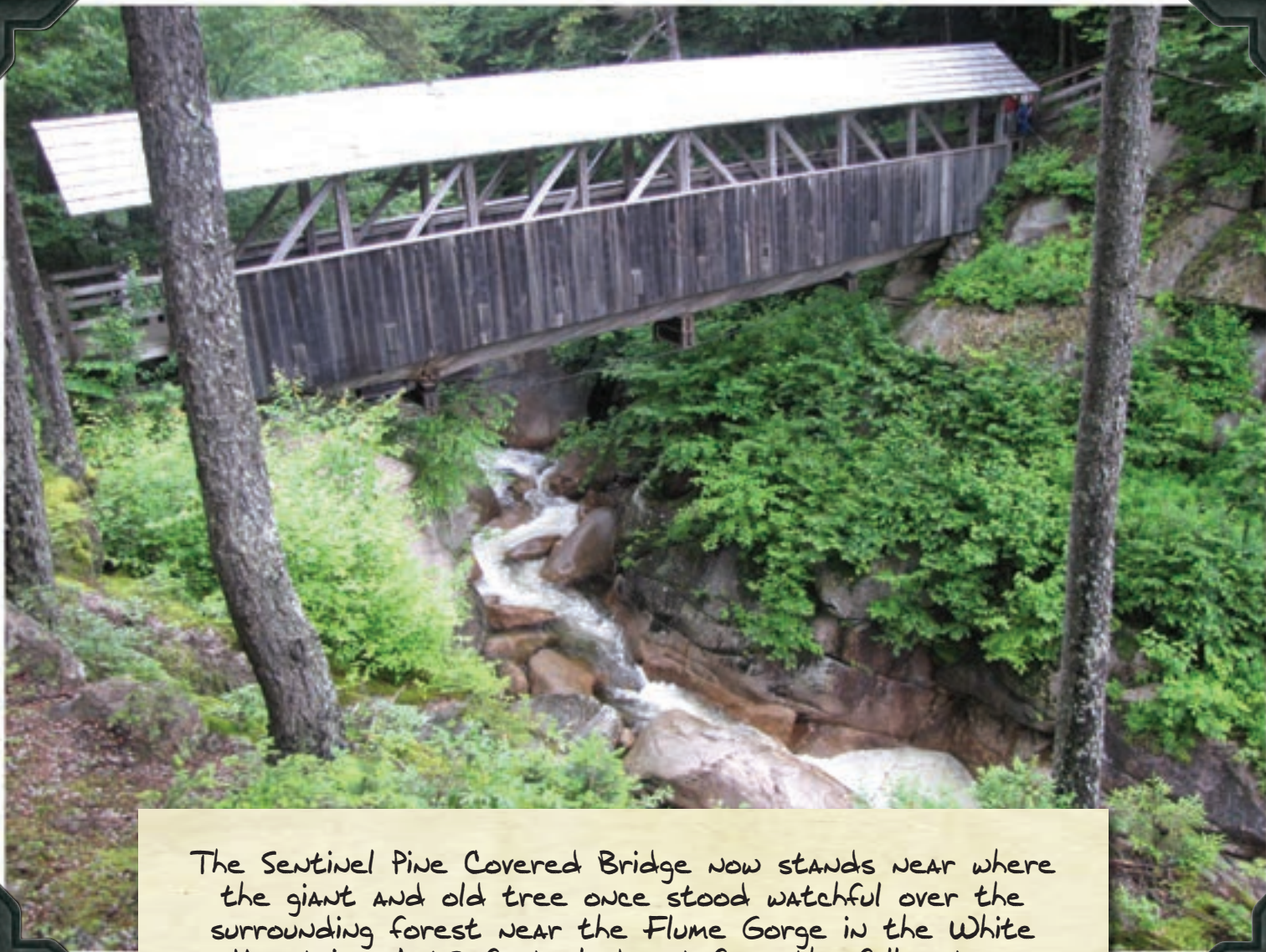
Main Street, Plymouth, NH

Courtesy Plymouth Historical Society

CAN IT HAPPEN AGAIN?

The combination of meteorological and environmental conditions needed for a storm like the Great Hurricane to devastate New England is a rare occurrence. There are only two in the historical records that have caused as much damage: the Great Colonial Hurricane of 1635 and the Great Gale of 1815. Geological studies have also identified signs of three other such storms occurring before colonial times, for a total of six during the past thousand years. This means that a storm like the 1938 Hurricane, although improbable on a year-to-year basis, will happen again. It is impossible, however, to know exactly when.





The Sentinel Pine Covered Bridge now stands near where the giant and old tree once stood watchful over the surrounding forest near the Flume Gorge in the White Mountains. A 60-foot plank cut from the fallen tree serves as the support beam and the rest of the bridge is built with other trees also downed in 1938.

Photo by Lourdes B. Avilés

THE LEGACY OF THE HURRICANE

There is much more to the story of the Great New England Hurricane of 1938, the one to which all other hurricanes in the region are sooner or later compared. It is the one that emergency managers use to plan for worst case scenarios. It was also the first one that allowed scientists to directly observe and learn about how hurricanes and their remnants behave in northern latitudes.

Accounts of the storm appear in hundreds of town histories and its signs can be found throughout the region in commemorative plaques, high water marks and an assortment of other landmarks. The storm has inspired poems, novels, songs and plays. The Hurricane's meteorological, environmental, social, economic and historical aspects indeed make it a fascinating, remarkable and important story.

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FOR MORE INFORMATION...

about the topics in this exhibition please see

Taken by Storm, 1938:

*A Social and Meteorological History of
the Great New England Hurricane*

by Lourdes B. Avilés

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