



Garden and Park After Sandy

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New York Releaf
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What does
a hurricane
bring?

Lots of water.

In a short time.

Big winds.

Shifting winds.

Gusty winds.

Why do
they fail?

Structural issues in root zone,
between leaders, or in crown

Liquefied soils in root zone

Sound trees may fail in hurricanes



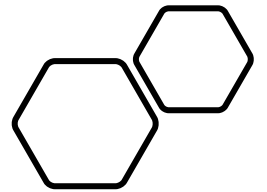
Root Decay



Some are hard to see
but can be virulent.

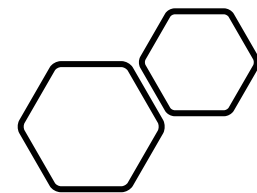


When the root zone is limited by buildings and infrastructure



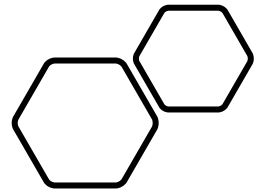


Peeling Up



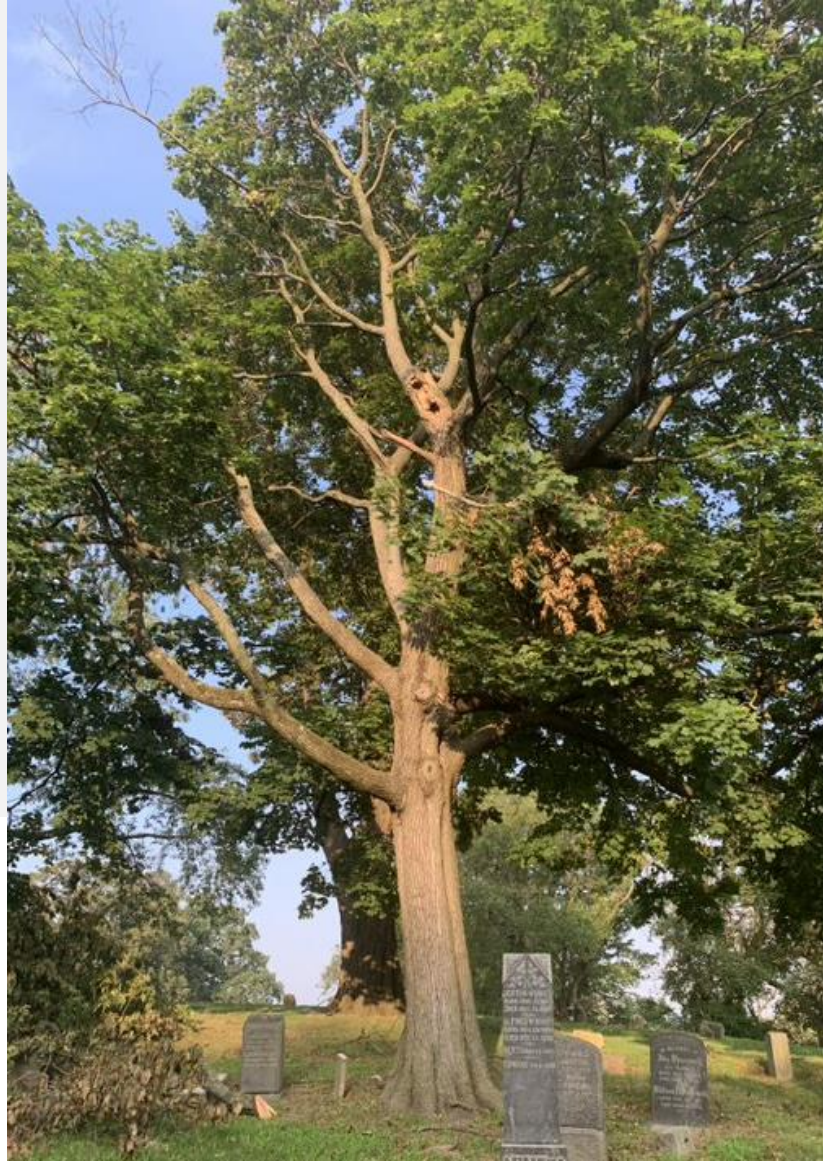


Against a Retaining Wall





Failures at Codminants



More
Codominants



Unsuspected Issues



Opening Cracks



Crown Breaks



Hollows Revealed

Can we think ahead about where failures may occur in a storm like Sandy?

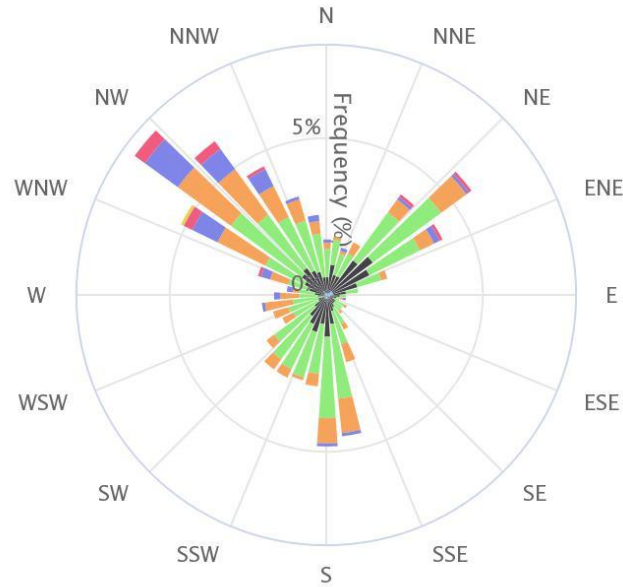
Map Winds

Map Contours

Map urban corridors

NEW YORK LAGUARDIA AP (NY) Wind Rose

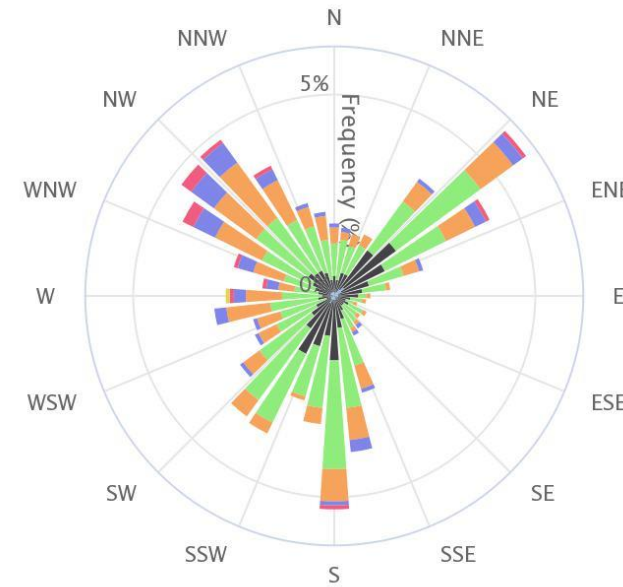
Jan. 1, 2021 - Sep. 15, 2021
Sub-Interval: Jan. 1 - Dec. 31, 0 - 23



Click and drag to zoom

NEW YORK LAGUARDIA AP (NY) Wind Rose

Jan. 1, 2020 - Dec. 31, 2020
Sub-Interval: Jan. 1 - Dec. 31, 0 - 23

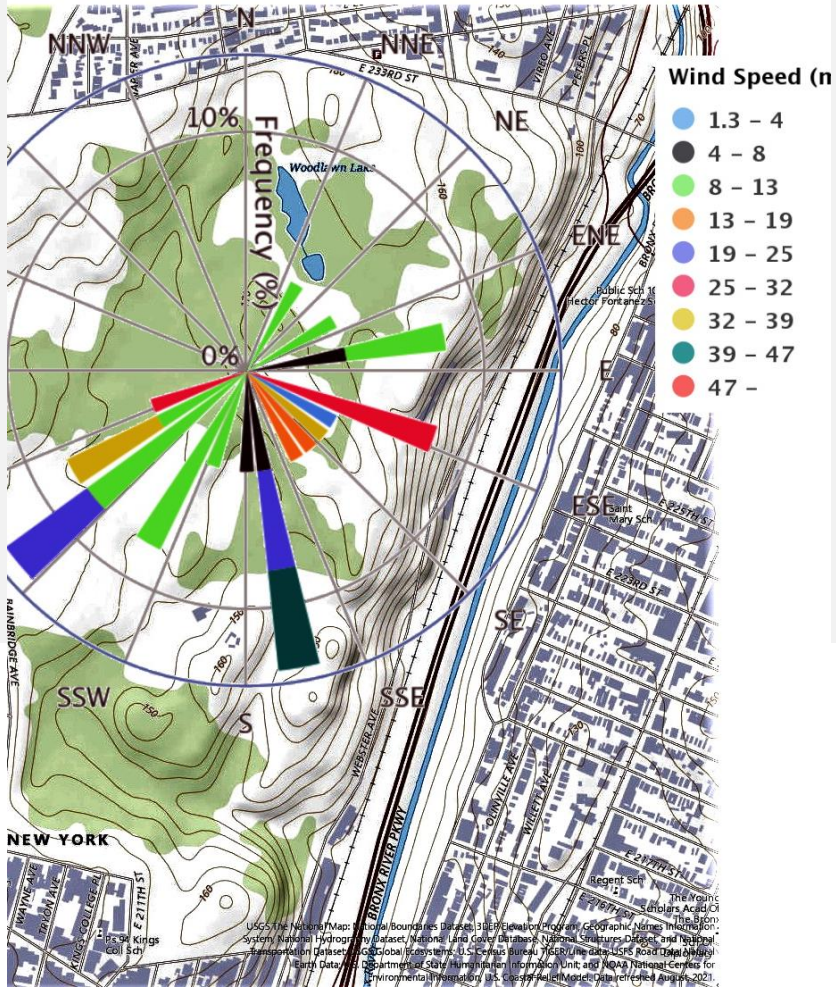


Click and drag to zoom

Using the Wind Rose: Annual Data

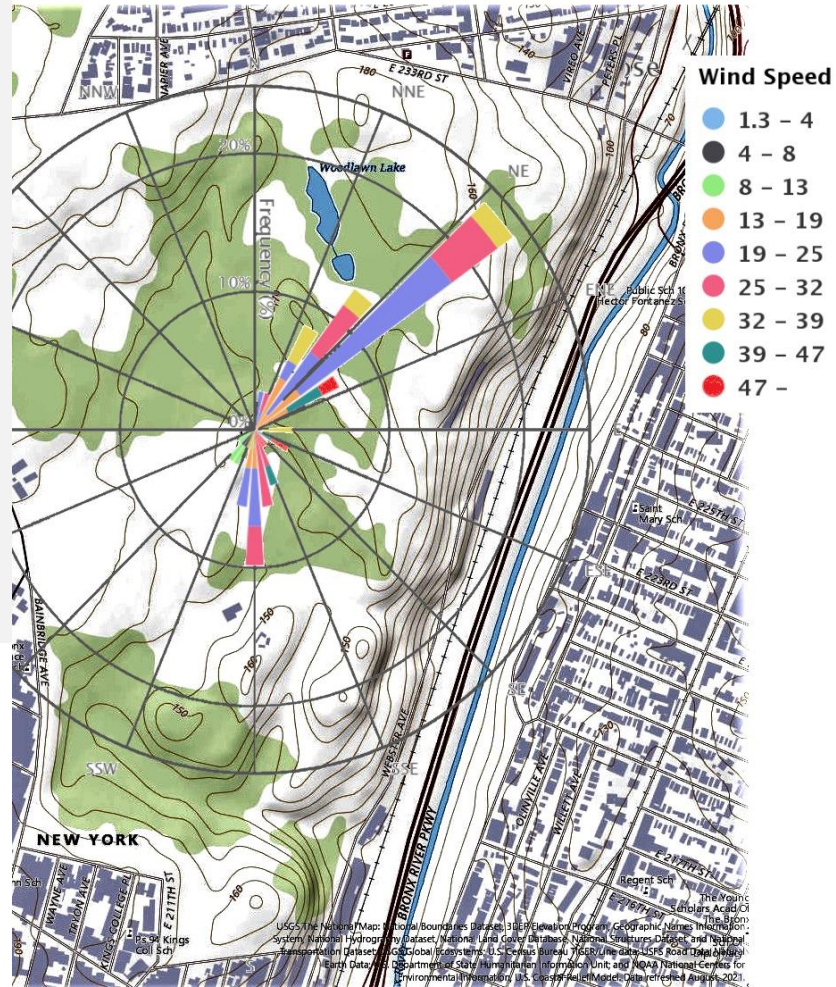
NEW YORK LAGUARDIA AP (NY) Wind Rose

Aug. 4, 2020 – Aug. 4, 2020
(Hurricane Isaias)



NEW YORK LAGUARDIA AP (NY) Wind Rose

Oct. 28, 2012 – Oct. 30, 2012
(Hurricane Sandy)



For a Storm:
Overlaid on
Contour map



Union Square Park: Wind Paths

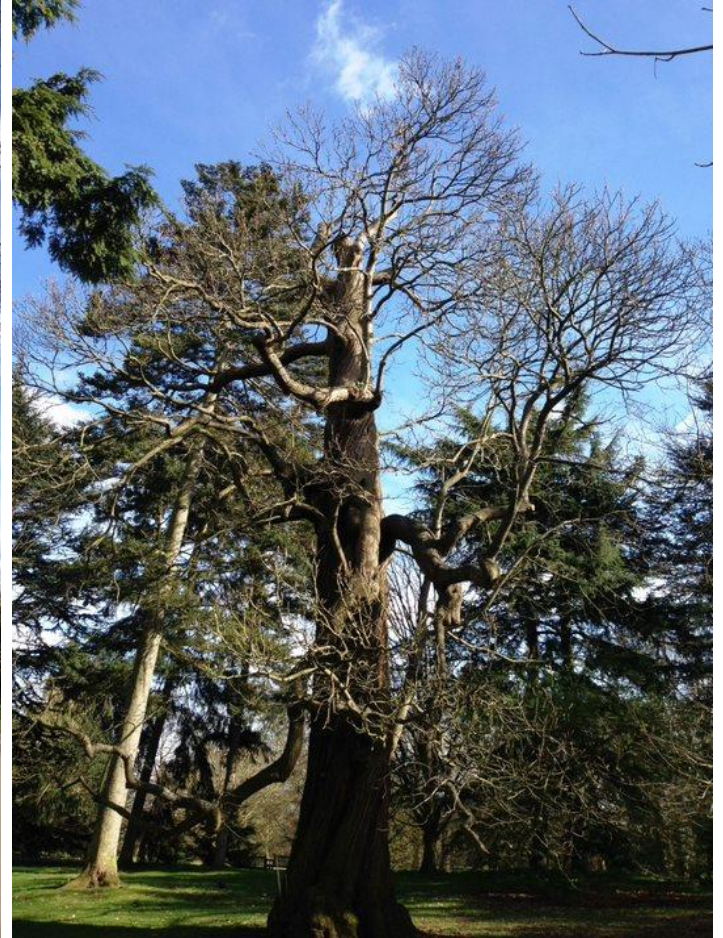


Pre-Prep: Crown
Reduction or
Retrenchment.

At Kew Gardens



More and Deeper



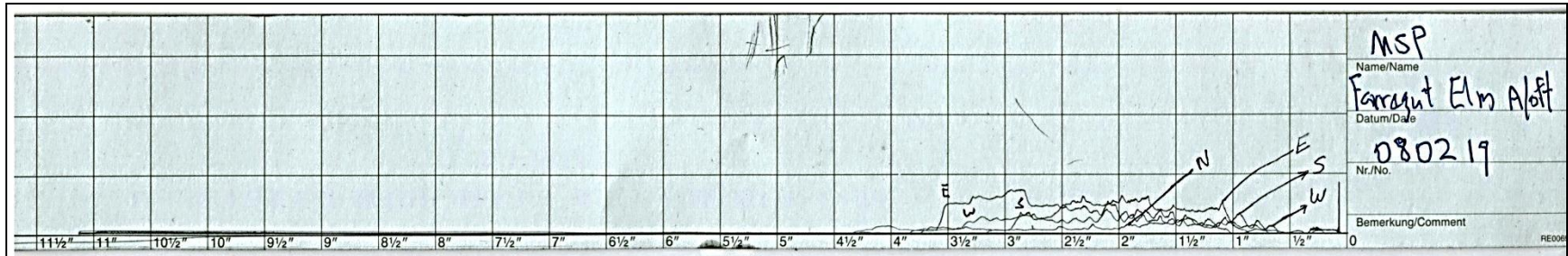


In Brooklyn Cemetery



In Manhattan Park





MSP

Name/Name

Farrant Elm Aloff

Datum/Date

Nr./No.

080219

Bemerkung/Comment

0

RE006

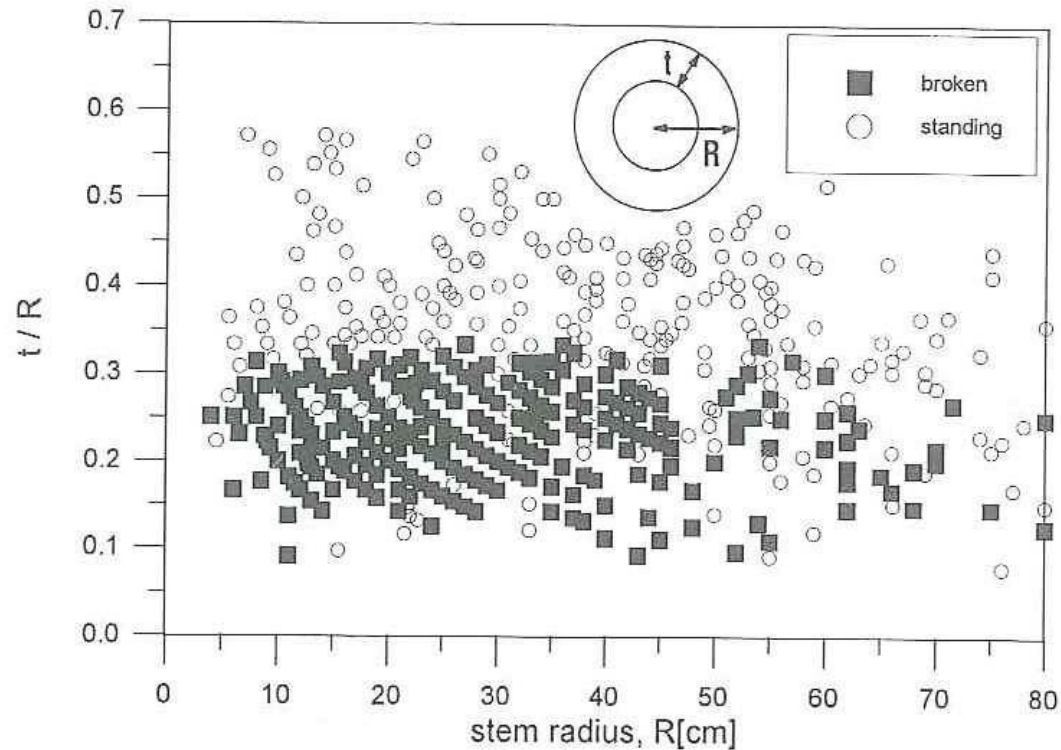


Fig 110. The tree fracture VTA diagram, which is based on a field study, shows cross-sectional flattening fractures occurring only when t/R is less than 0.3 - 0.32. The failure of hollow trees with reduced crown sail area tends to happen only if the t/R ratio is even smaller, often when $t/R = 0.25$.

Mattheck's t/R Hypothesis



Responding



Reducing the Second Stem





In leaf