Effects of Hemlock Mortality on Soil Carbon Stocks at the Harvard Forest

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Background

Eastern hemlock (*Tsuga canadensis*) is a foundation tree species in eastern North America. The introduction and spread of the hemlock wooly adelgid (*Adelges tsugae*) has caused regional decline and mortality.

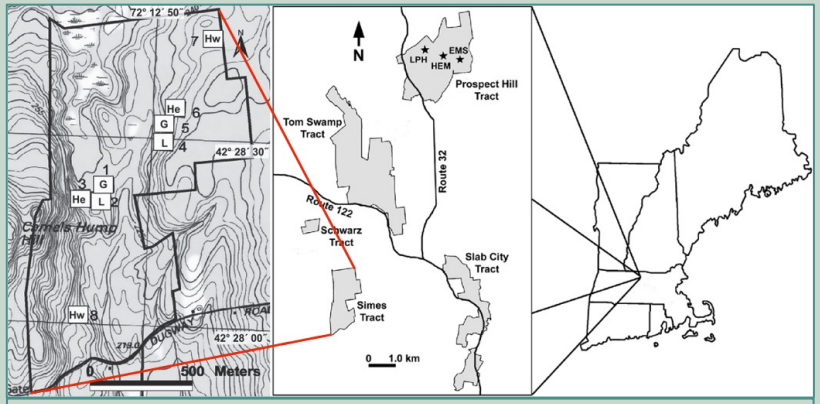

Figure1: Location of the Simes Forest tract at HF in Central Massachusetts. Adapted from Ellison et al. (2010) and Giasson et al.(2013).

Site Description and Methods

Research conducted at the Harvard Forest Hemlock Removal Experiment (HF-HERE), Petersham, MA, USA

Site cleared for agriculture & harvest circa mid 1800

Glacial till soils sampled for total C and N across multiple depths: OH, 0-10, 10-20, 20-30cm

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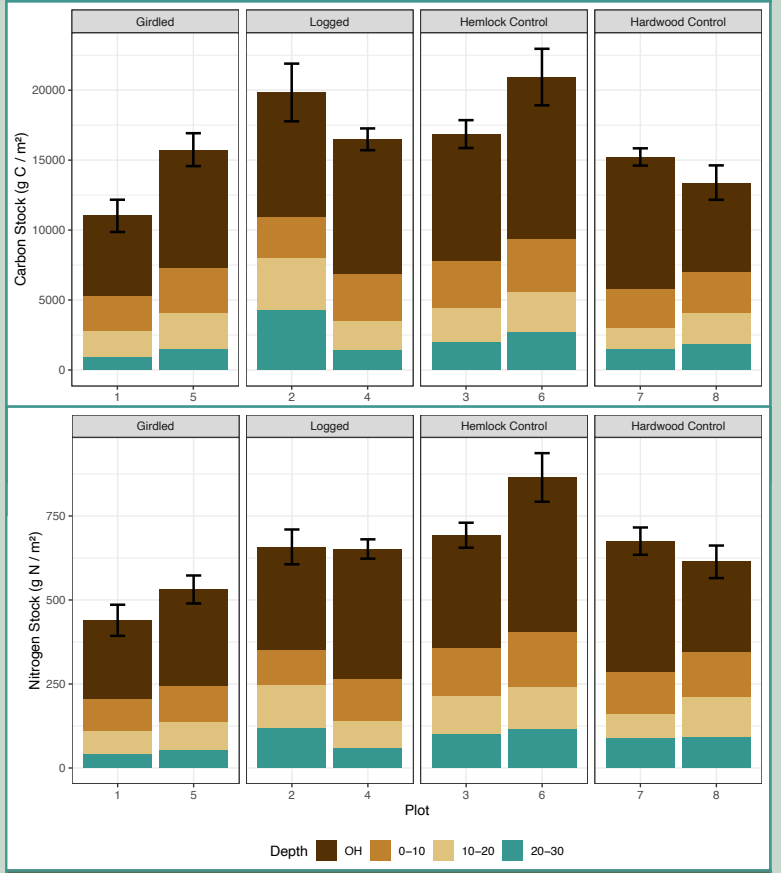
Treatments

Figure 2: From left to right: girdled, logged, hemlock control, hardwood control

How does the loss of a foundation species alter soil carbon and nitrogen storage?

Figure 3: Collecting soil samples from the HF-HERE experiment

Preliminary Results



Initial Findings

Hemlock decline and mortality might drive soil carbon and nitrogen losses given reduced stocks in girdled plots.

References: Ellison, A. M., et al. (2010). https://doi.org/10.1111/j.2041-210X.2010.00025.x; Giasson, M.-A., et al. (2013). https://doi.org/10.1890/ES13-00183.1