

Site Report: Perkins Arboretum

Prepared by Prof. Stone using student data from 2006
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Location and Topography

The site is located in the Perkins Arboretum of Colby College, Waterville, Maine, at 44 33'36.45"N, 69 39 14.06"W. The sampling was done within the loop section of the yellow trail, just south of Perkins Stream (Figure 1). The topography is level to gently sloping, with a north/northeasterly aspect.

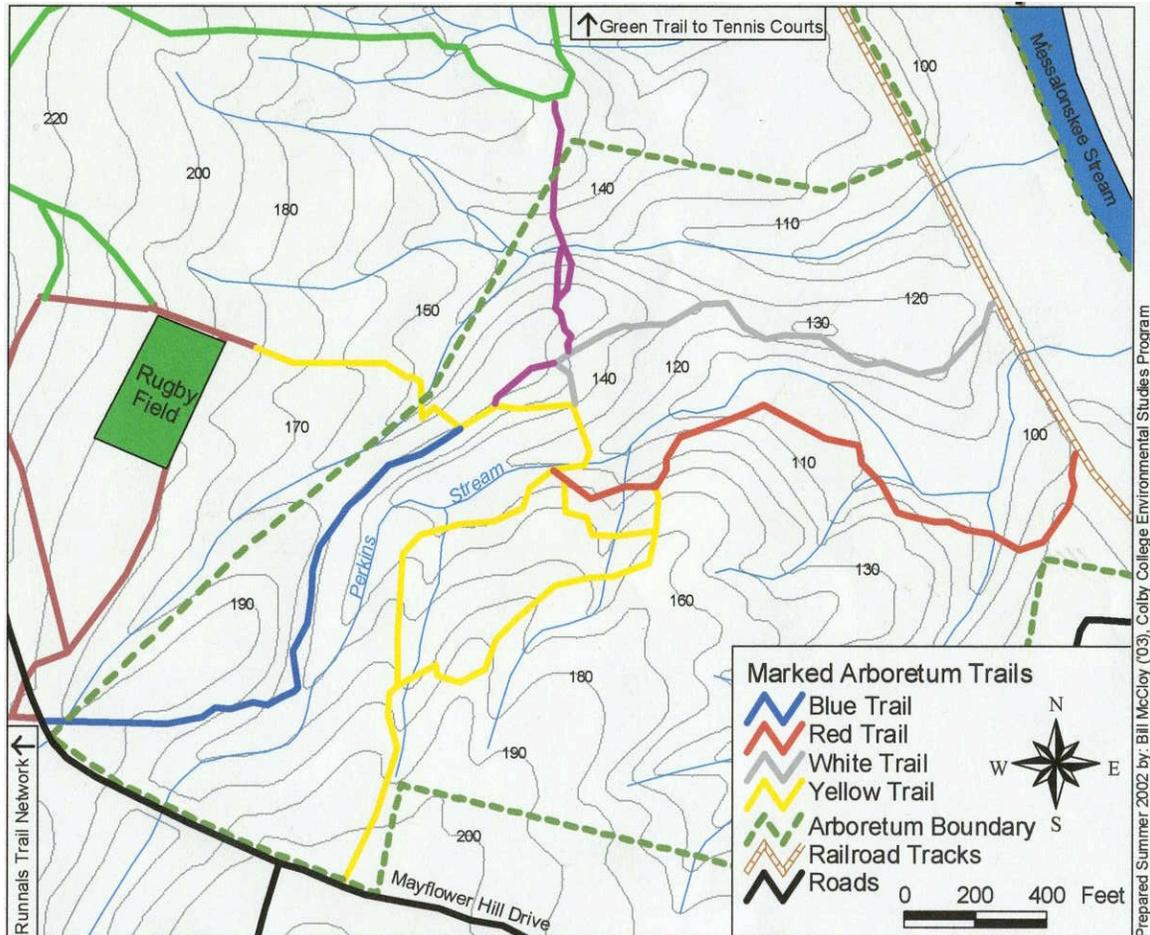


Figure 1. Perkins Arboretum trail map. The forest was sampled in within the loop of the yellow trail, to the south of Perkins Stream.

Soils

Large boulders are strewn about the soil surface, and depth obtained by soil cores ranges from 20-50 cm. The organic layer is 6-10 cm deep. At the bottom of the slope, the parent material is silty clay loam to silty clay formed on glacial marine deposits (or recent alluvial deposits), with a pH in the B layer of 5.5 to 6.0 and no visible soil horizons. These soils are mapped as Buxton silt loam. Higher up on the slope, the soils are sandy loam formed on glacial till, with a pH ~ 5.0. The sandy loam soils show a thin dark A horizon, and sometimes a pale E horizon. These soils are mapped as Hollis fine

sandy loam. The thick organic layer and presence of the E horizon are characteristic of soils developing under conifers, whose foliage is resistant to decomposition and tends to increase soil acidity. Despite the abundant boulders, the soils appear to be moderately deep and moist, and to provide a moderate supply of nutrients.

Woody Plants

This forest is dominated by hemlock (*Tsuga canadensis*). Hemlocks make up half of the sampled stems, nearly half of the basal area, and were found in every plot sampled (Table 1). The dominance of hemlock would have been even more complete had we not sampled an enormous white pine (*Pinus strobus*) in one of the plots (Table 1). Together with the hemlock and pine, the site contained northern hardwoods adapted to cool, moist, nutrient-rich sites, including yellow birch (*Betula alleghaniensis*), sugar maple (*Acer saccharum*), and basswood (*Tilia americana*), as well as the ubiquitous red maple (*A. rubrum*).

The hemlocks in the stand are approximately 80 years old, and grew up with shade-tolerant hardwoods under a canopy of earlier-successional species, including white pine. The understory is fairly open, with ferns and hemlock saplings predominating. The site supports about 700 trees > 10 cm/hectare, with a basal area of 88 m²/ha.

Table 1. Relative density, dominance, frequency, and importance value of trees > 10 cm found in four 25m² plots in Perkins Arboretum, Colby College, within the loop of the yellow trail, to the south of Perkins Stream.

	Rel. Dens.	Rel. Dom.	Rel. Freq.	I. V.
<i>Tsuga canadensis</i>	0.50	0.45	0.33	1.28
<i>Acer rubrum</i>	0.11	0.06	0.17	0.34
<i>Betula alleghaniensis</i>	0.11	0.02	0.17	0.30
<i>Acer saccharum</i>	0.17	0.09	0.17	0.43
<i>Pinus strobus</i>	0.06	0.35	0.08	0.49
<i>Tilia americana</i>	0.06	0.01	0.08	0.15

Land Use and Future Prospects

Because of its proximity to the stream, this land was abandoned from agriculture earlier than nearby upland areas, allowing for the development of a closed-canopy late-successional forest. The area is used heavily for non-motorized recreation. Lack of clear trail markings has led to diffuse soil compaction in some areas.

Barring catastrophe, the forest should continue to develop as a hemlock/northern hardwoods stand, with ever larger and older trees. Over the next decades, dead standing and fallen trees will add structural complexity and new kinds of habitats. The introduced hemlock woolly adelgid, which is spreading from the south, has the potential to dramatically alter the site.