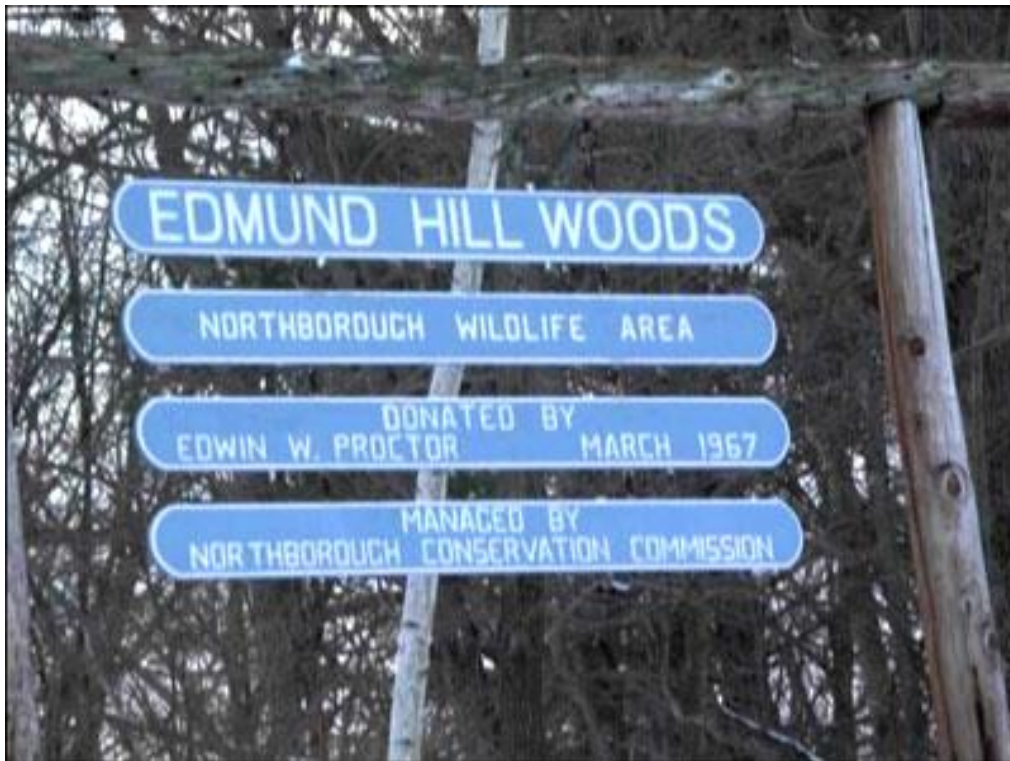


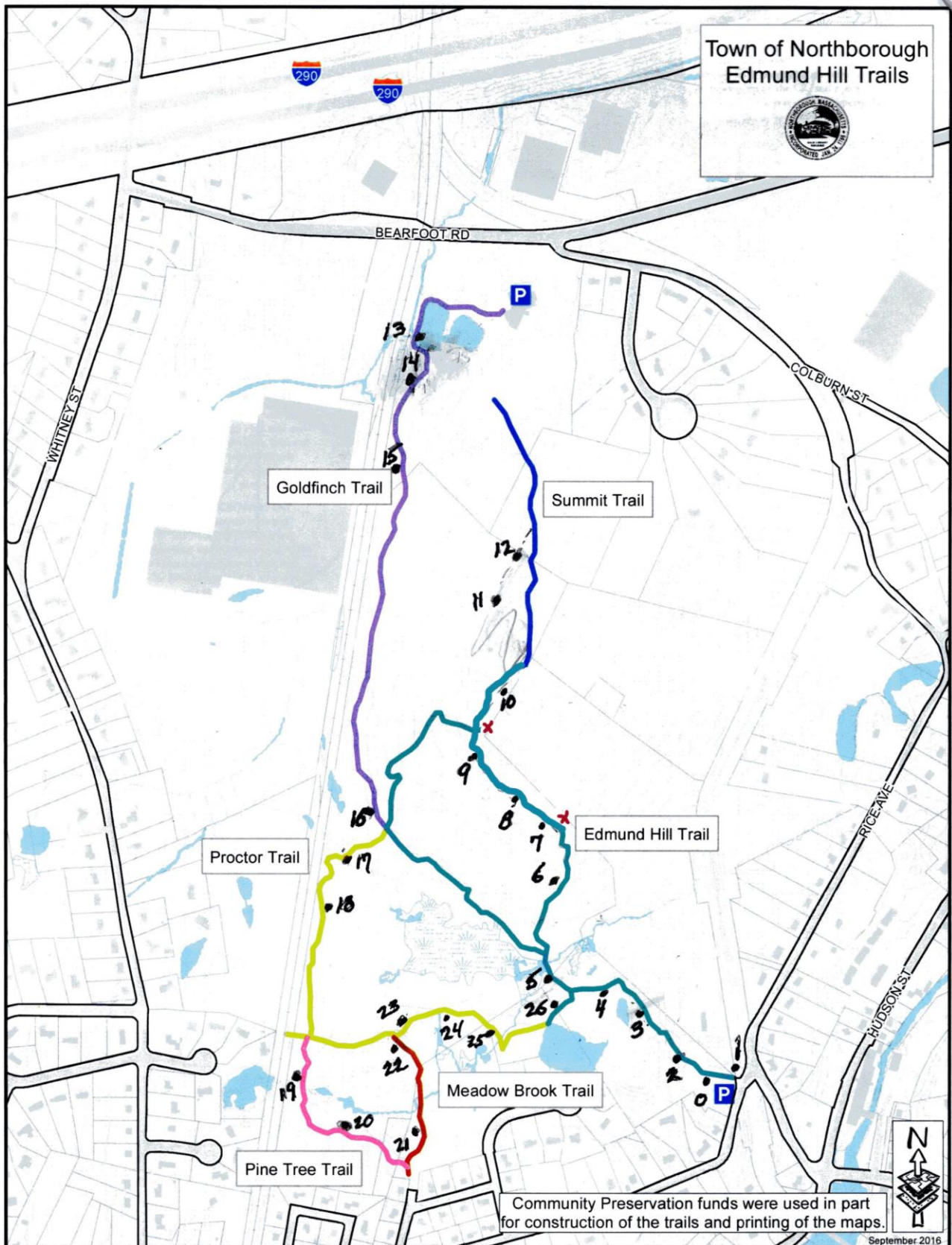
The Edmund Hill Woods Natural and Cultural History Trail

Northborough, Massachusetts



Prepared by Forest Lyford and Sherral & Spencer Devine (Version of July 5, 2021)

Town of Northborough
Edmund Hill Trails

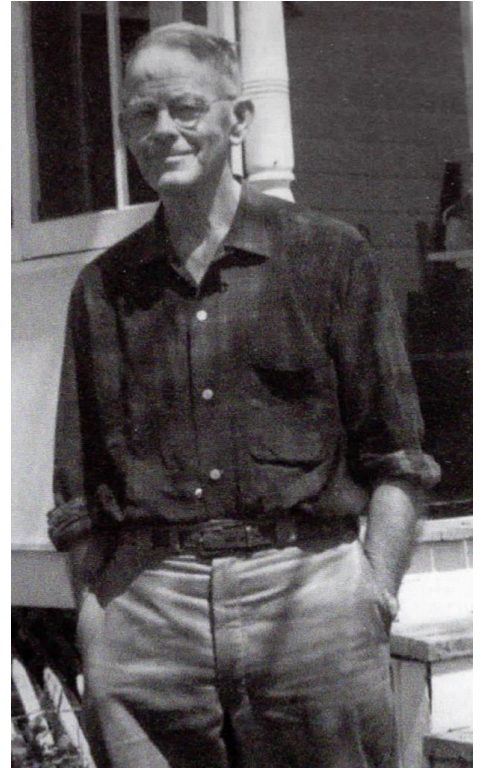


Community Preservation funds were used in part
for construction of the trails and printing of the maps.

September 2016

Station 0 Introduction

The Edmund Hill Woods Conservation area in Northborough, Massachusetts, includes a 75-acre parcel donated to the town by Edwin Proctor in 1967, and an 18-acre parcel near Colburn Street and Bearfoot Road that was purchased by the town in 2002 and now is the site of the Northborough Senior Center. Edwin Proctor, a Harvard graduate and teacher by profession, was born in Northborough and was very active in numerous civic organizations after his retirement from teaching in 1948 until his death in 1978. He donated the land to be preserved in a wild state for the enjoyment of all and emphasized that the land be used recreationally.



Edwin Proctor

The conservation area includes a system of trails, maintained by the Northborough Trails Committee that passes through forested uplands and wetlands. Most of the conservation area was cleared for farming, starting with settlement by Europeans in the early 1700's and reached a peak in the mid 1800's. Subsequently, farms were slowly abandoned and woods soon covered most of the area.

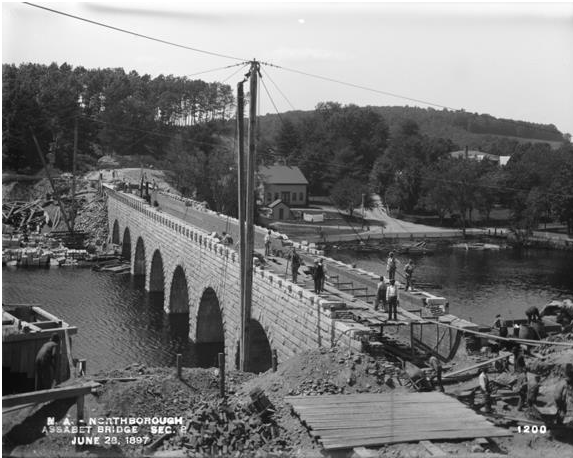
Continental glaciers shaped much of the landscape during the last two million years. The last glaciation covered the region from about 70,000 to 15,000 years ago. Glacially-formed features are described at several interpretive stations. Modifications of the landscape by humans, such as stone walls and ditched wetlands, are also discussed.

The interpretive trail network is approximately 2.5 miles long. Numbers on markers at interpretive stations can be accessed on-line at www.northboroughtrails.org

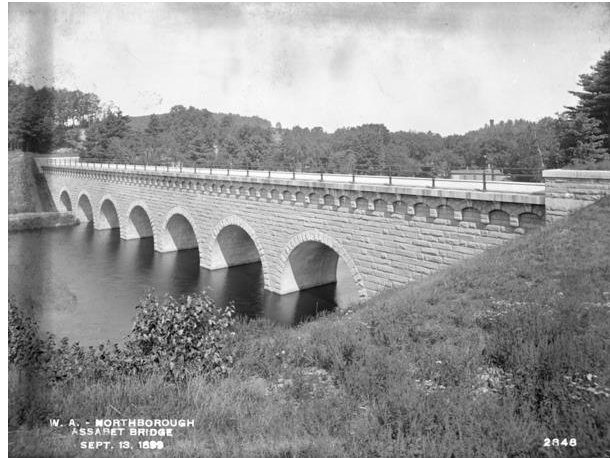
STATION 1 Wachusett Aqueduct

The Wachusett Aqueduct was constructed during the late 1890's to transport water from Wachusett Reservoir in Clinton, Massachusetts, to the Boston metropolitan area. The masonry-lined aqueduct is currently inactive but will continue to serve as a backup for the nearby Cosgrove tunnel that was constructed in the 1960's.

Wachusett Aqueduct, Assabet Bridge, Northborough, MA



Jun. 28, 1897



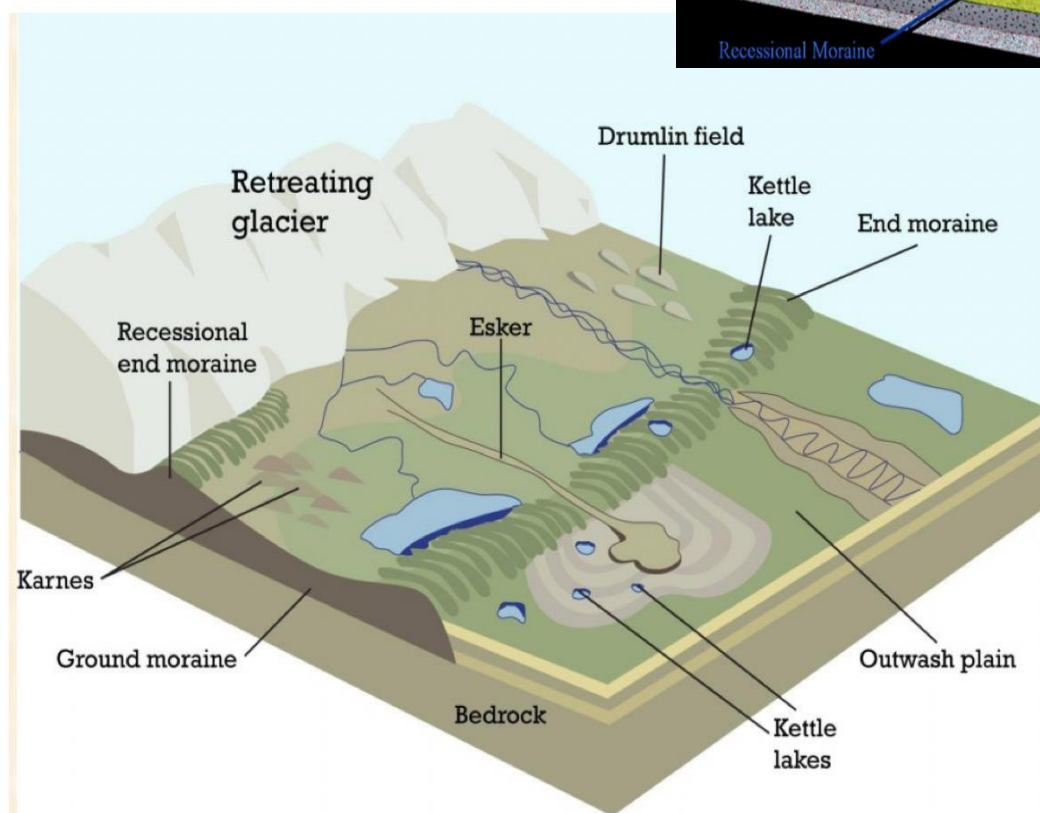
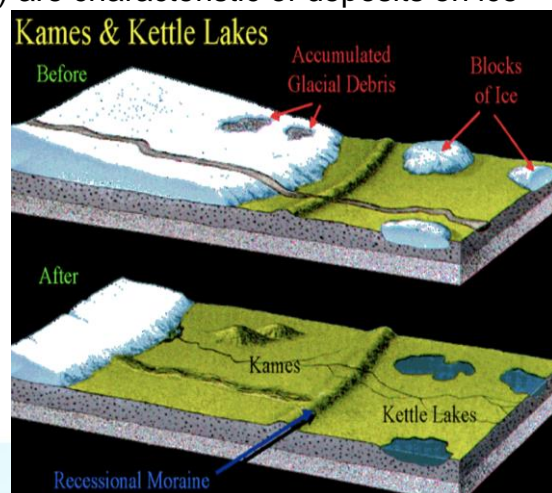
Sep. 13, 1899



Source: <https://www.digitalcommonwealth.org/search/commonwealth:br86b425x>

STATION 2 Glacial End Moraine and Oak/Hickory Forest

Glacial end moraine consists mainly of sand and gravel deposited on or very near melting ice. The many hills and depressions (kames and kettles) are characteristic of deposits on ice that later melted. The Oak/Hickory Forest in this area is typical of the New England Central Forest Region and is characterized by a wide variety of trees, predominantly hardwoods. The larger trees are about 80 to 100 feet tall and will not grow much taller.



Source: Department of Geography and Environmental Science, Hunter College, CUNY

http://www.geo.hunter.cuny.edu/~fbuon/GEOL_231/Lectures/Glacial%20Landforms.pdf

STATION 3 Vernal Pool

This vernal pool occupies a glacial kettle where sediments once covered glacial ice that later melted. The pool typically holds water during the winter and spring seasons and is a breeding habitat for amphibians, including frogs and salamanders.



Photo by Bill Byrne

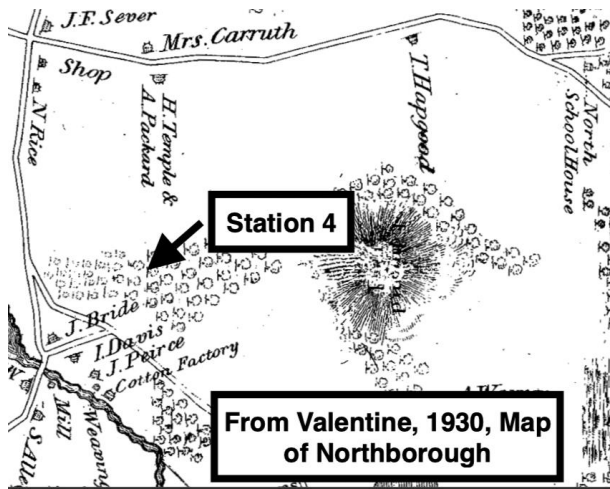


STATION 4 Harvested Trees and American Chestnut

The multiple trunks on this tree near the marker and others in this location indicate that the area was once logged for lumber or firewood. A few stump sprouts survived to form a mature tree cluster. On the opposite side of the trail are sprouts of American chestnut. Chestnut was the dominant hardwood in New England forests until the early 1900's when blight killed all of the mature trees. Chestnut trees continue to sprout from existing roots and commonly reach diameters of several inches before the blight fungus infects the bark and sapwood. The presence of American chestnut here indicates that this area has been forested since at least the early 1900's. Chestnut sprouts are common on Edmund Hill.



American Chestnut Source: Wikipedia; Author: [Rbreidbrown](#)



A map of Northborough prepared in 1830 shows this as a wooded area when about 70 percent of the town was cleared. The terrain was probably best suited for a woodlot rather than for plowed fields and pastures.

STATION 5 Farm Path, Mill Dam, and Perennial Stream

This man-made path across a stream provided access to former pastures on Edmund Hill. A rock-lined culvert spans the stream. This unnamed perennial stream (a stream that flows year-round) receives water from ground-water sources in glacial sediments upstream. The dam may have been built to impound water for the Davis Cotton Mill built in 1832 on this stream near Hudson Street, although the current streamflow seems to be too small to support a mill. A possible additional source of water for the pond is discussed at Station 17.

STATION 6 Wave-Cut Beach?

The subtle change in slope of the hillside is at the approximate maximum level of Glacial Lake Assabet that covered the region for several centuries during glacial retreat and before the current Assabet River opened and drained the lake. Perhaps wave action caused the flattening of the slope.

STATION 7 Beech Trees and Age-dating White Pine trees

Beech trees generate small nuts that are eaten by a variety of wildlife, including deer, squirrels, chipmunks, mice, and blue jays. The trees are tolerant of shaded conditions and typically sprout in forested areas, often

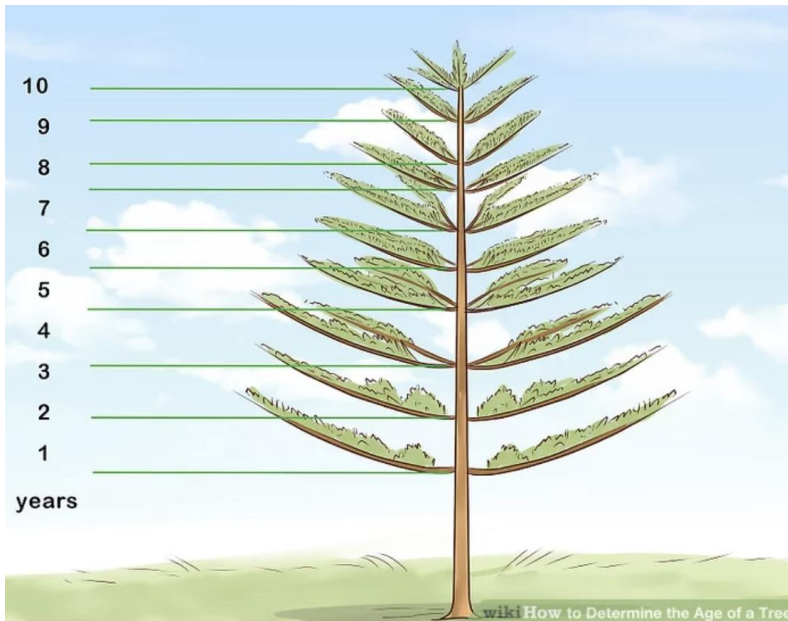


Treehugger / Hilary Allison



in clusters. Unfortunately, the smooth bark of the Beech Tree invites vandalism in the form of carving out images/words, leaving the tree vulnerable to infection, especially by beech bark disease (BBD), which can kill the tree.

Eastern white pines form a whorl of limbs during each growing season. The whorls can be counted to estimate the age of a tree – each whorl represents one year.



STATION 8 Sassafras Trees

Sassafras trees are not common in Edmund Woods but have grown in a small cluster here.

All parts of the plant are fragrant. The leaves and bark smell somewhat citrusy, and the roots have a distinctive root beer scent, and, in fact, early colonists used the roots to make root beer.

Sassafras tea is steeped from the bark.

Sassafras has been used for a variety of medicinal purposes, including as an astringent, a stimulant, a pain reliever, and a salve for skin eruptions.

Leaves of three shapes, including the distinctive mitten shape, can be found on a single tree.



Sassafras albidum

STATION 9 Tree-Throw Mound

This uprooted tree will leave a small mound or tree throw after the wood decays. Mounds in this and many forested areas are evidence of former natural tree falls, typically caused by strong winds. The hole left behind from where the roots are ripped from the ground is called a “cradle.” As the roots and tree trunk decay, the stones and dirt that were enmeshed with the roots form a pile, called a “pillow.”

STATION 10 Drumlin

Edmund Hill is a drumlin, an elongate hill formed by glacial action. The long axis is typically in the direction of glacial flow during the last Ice Age. Geologists have found that many drumlins have a core of glacial till left by glaciers that predate the last one. Drumlins are common in eastern Massachusetts. Examples in Northborough include Assabet Hill and Cedar Hill.



Buck spotted at the top of Edmund Hill (2021)

STATION 11 Sliding Boulders and Glacial Erratics

The deep uphill groove and the mound of dirt in front (downhill side) indicate that this huge boulder has slid downhill. Did it happen all at once or was it a gradual process during freeze/thaw cycles? This huge boulder was transported by glaciers and left on the hillside as the ice melted. Stones transported by glaciers are called glacial erratics.



STATION 12 Stone wall

Stone walls were built by farmers to dispose of stones removed from cultivated fields and/or



to contain livestock. The walls often mark a property boundary. A man and team of oxen reportedly could build about 30 feet of wall in a day. The original height was about chest-high, but natural processes such as freeze/thaw cycles and tree falls have lowered the heights. Most stonewalls in the region were built in the late 1700's and early 1800's.

STATION 13 Former Fishing Ponds and Northborough Senior Center

These two connected ponds were part of the former Northborough Fish and Game Club. While active from 1948 to 2002, the Club would stock the ponds with fish. The ponds are no longer stocked but some fish regenerate naturally. Water in the ponds is derived partly from groundwater seepage on the Edmund Hill side. The ponds form a scenic view from the Northborough Senior Center that opened in 2010.



Aerial Photo of the Senior Center on 9/15/2020 (Photo Credit: Michael Roman)

STATION 14 Reclaimed Area

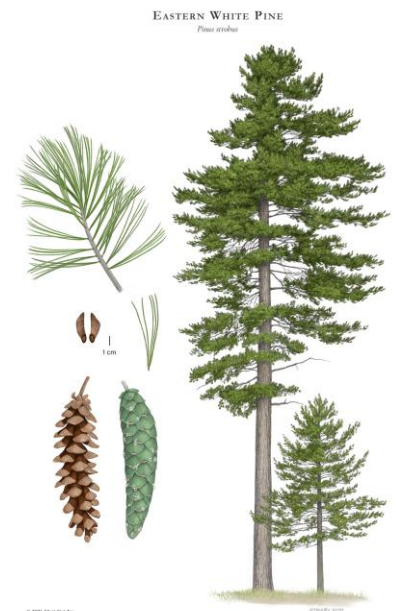
After the Town of Northborough purchased the land of the former Fish and Game Club in 2002, analysis of soil samples detected high concentrations of lead and arsenic along a former skeet shooting range and to a lesser extent in a rifle firing range. In 2010, 1 to 3 feet of soil was removed and replaced with uncontaminated topsoil. Pine trees and red maple trees were planted as part of the land reclamation.



Red maple and white pines were planted as part of the reclamation of contaminated soil.

STATION 15 Former Plowed Field

This pine grove, partly bordered by a stone wall, may have been a plowed field at one time. The width of the stone wall, a pile of stones in one corner and the obvious absence of stones on the surface all indicate that stones had have been removed. White pines often grow in abandoned fields, another indication that the area was cultivated.



STATION 16 Gypsy Moth Caterpillar Damage

The many dead oak trees in this area resulted from an infestation of gypsy moth caterpillars from 2016-2019. Region-wide infestations by the caterpillars occur cyclically; the previous one was in the early 1980's. A fungus and virus killed most the caterpillars in this area almost instantaneously in June 2019.

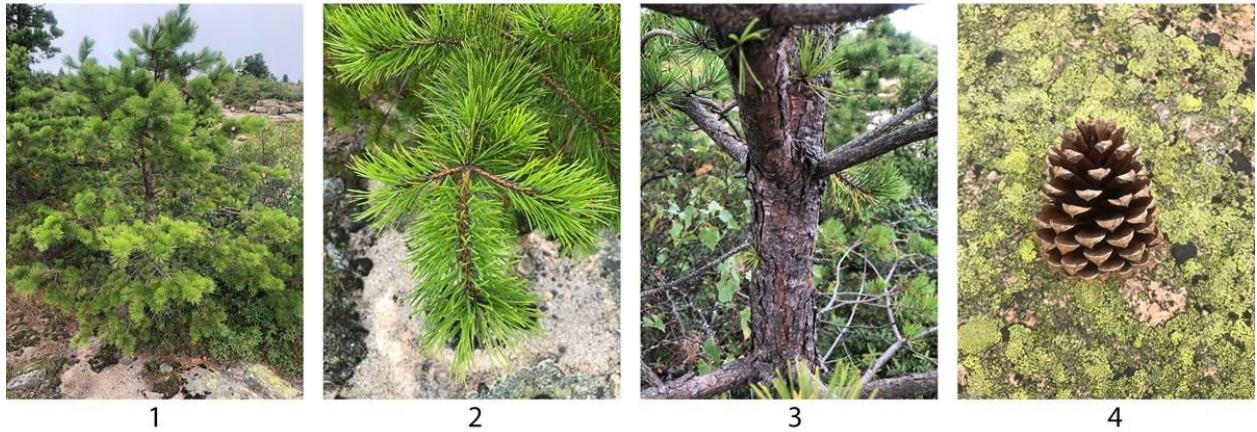


STATION 17 Abandoned Channel

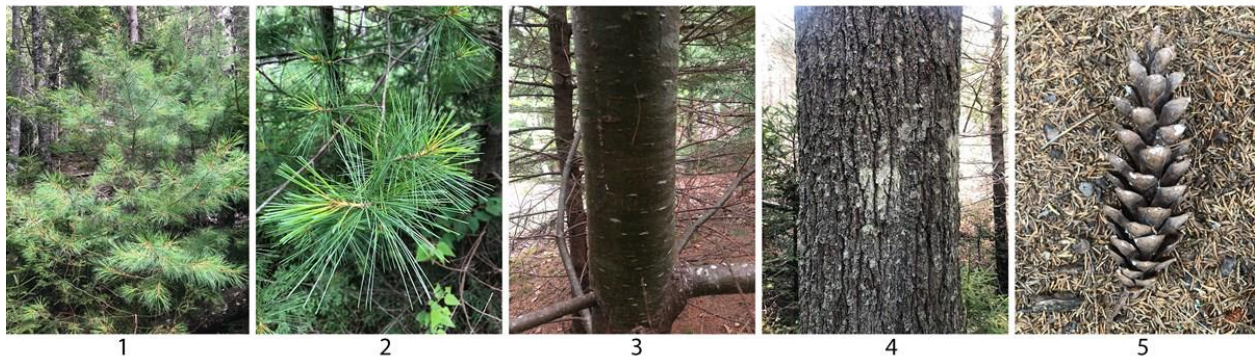
The depth and width of this channel indicate that much more water was carried at some time in the past. The channel does not appear to be man-made. A large wetland to the northwest may have drained through this channel until headward erosion or ditching of wetlands and intentional rechanneling of Barefoot Brook diverted drainage to the north. A trickle of water indicates that groundwater discharges slowly into the channel.

STATION 18 White Pine Forest

This white pine forest claimed abandoned fields starting in the late 1800's. The stone-free soils that formed on lake-bottom sediments support a dense stand of 100-foot-tall trees. Drought-tolerant pitch pines also are present and were early seedlings after farming ceased on these sandy soils. They are gradually being shaded out by the taller white pines.



Pitch Pine (National Park Service)



White Pine (NPS)

STATION 19 Agricultural Branch Railroad and Livestock Tunnel

A railroad from Northborough to Sterling, MA, was constructed in the 1860's to provide transportation of agricultural products to city markets. The original Agricultural Branch Railroad connected to Fitchburg and later became the Old Colony Line. Later still, it became part of the New Haven Railroad system. The railroad, now CSX, transports freight to Leominster frequently. This large culvert was probably constructed to allow passage of livestock to and from a nearby farm.



1902

A view of Edmund Hill Woods from the same angle
(see boulder on left & RR tracks in center in both photos)

2020

STATION 20 Spring-Fed Wetland

The wet area seen from this station receives water from many seeps and springs. Much of the precipitation that falls on the sandy soils east and west of the wetland recharges a groundwater reservoir that discharges to the area year-round, even during extended dry periods.

STATION 21 Invasives

Several types of vegetation not native to New England have invaded this area. The English Ivy has engulfed the full height of some trees and threatens to shade them out. The ivy is not considered invasive in New England but several other plants in this patch are classified as invasive. These include bittersweet vine, burning bush, Japanese barberry, and Norway maple. Disposed yard wastes may have been the source of these plants. Fortunately, invasive plants are largely absent throughout most of Edmund Woods. Note that the ivy has been trimmed by deer to a height of about 5-6 feet on tree trunks.



Oriental bittersweet foliage - Photo by Chris Evans; University of Illinois



Japanese barberry, foliage in April - Photo by James H. Miller; USDA, Forest Service



James H. Miller, USDA Forest Service



Burning Bush



Norway Maple



Oriental Bittersweet



Norway Maple

STATION 22 Gravel Pit

This excavation indicates a former source of sand and gravel. The excavated materials may have been used for construction of nearby farm paths, or maybe for construction of the nearby railroad in the 1860's. Excavation probably predated the use of power machinery.



STATION 23 Edge of Delta and Hurricane-Damaged Tree

The abrupt change in slope marks the edge of a delta deposited by a stream that flowed into Glacial lake Assabet during a waning stage when the lake level was gradually falling. The nearby stone wall marks the edge of a former cultivated field. A bend in the large white pine along the sloping path may indicate damage from the hurricane of 1938 that devastated forests in much of New England, including Northborough.



Hurricane of 1938



Forest Impact from the 1938 Hurricane in New England



A stand of pine trees looks like they snapped like toothpicks due to wind damage from the Hurricane of 1938. Photo credit courtesy the NH Division of Forests and Lands.

STATION 24 Ditched Wetland and Uprooted Tree

The ditch near the marker is one of several in this wetland area dug by farmers to lower the water table and provide access for farming. Organic-rich wetlands were common sources of hay for cattle in many parts of New England. Ditched wetlands can be found in several areas in Northborough. At least three bridges made of large flat stones provided access for draft animals pulling hay wagons. A large felled white pine nearby was uprooted during Hurricane Irene in August 2011. A soil mound at the root base will persist after the tree roots totally decay, which may take decades.

STATION 25 Manmade Pond

This circular pond and the surrounding mounds of dirt were formed by earth-moving equipment during construction of nearby homes in the 1950's and 60's. Former residents report that the pond was constructed for skating.

STATION 26 Cucumber Magnolia Tree

The tall straight tree is a Cucumber Magnolia. This tree is common in the southern Appalachian Mountains but rarely grows naturally in New England. Several cucumber magnolia trees are present in Edmund Woods, however. Seeds may have dispersed from a tree or trees planted as ornamentals. For example, one that was planted in the early 1900's at the gravesite of Cyrus Gale II in the nearby Howard Street Cemetery was a possible source for seeds. That tree was cut down in about 2017 after it had largely succumbed to disease and maybe old age.



Town of Northborough
Edmund Hill Trails

