magnolia family, they are common throughout our woodlands. Their beautiful large blossoms, which do resemble tulips, appear in early summer. Another tendency of these trees is to grow in tight groups, like birches, except much, much larger. Here we have a group of four massive trees essentially joined at the base.

Station 14 American Beech Community

Here at the last station on the ECO-Hike is a large group of American Beech trees. Since there are two mature trees and many young saplings, you might think that we have one female tree and one male tree. That would be reasonable, but wrong. All beech trees produce both male and female flowers. So the proliferation of saplings is not due to a happy coincidence of adjacent male and female trees. A stand such as this is more likely due to the other reproductive mechanism used by this tree: root sprouts. So what you see is an even tighter-knit family of trees than you might have first imagined. In addition, there are many beech saplings scattered more widely throughout the woodland behind you. Most are not in close proximity to a mature tree. They grew from seeds. One other observation is that beech saplings will grow in the shade of taller trees until they in turn become canopy trees. In contrast, maple trees do not grow well in the deep forest. They are more likely to be found at the edges where there is sunlight.

Epilogue

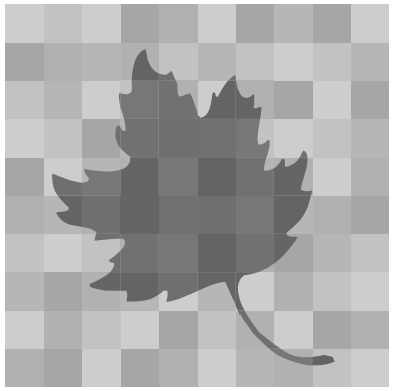
You have come to the end of this guided hike. Continue up the trail to arrive once again at the starting point. Remember that the health of the woodlands depends on the conscious stewardship of us all.

Thank you for your interest and support.

BOROUGH OF MOUNTAIN LAKES

Updated: 4/23/05

ECO-HIKE
Trail Guide



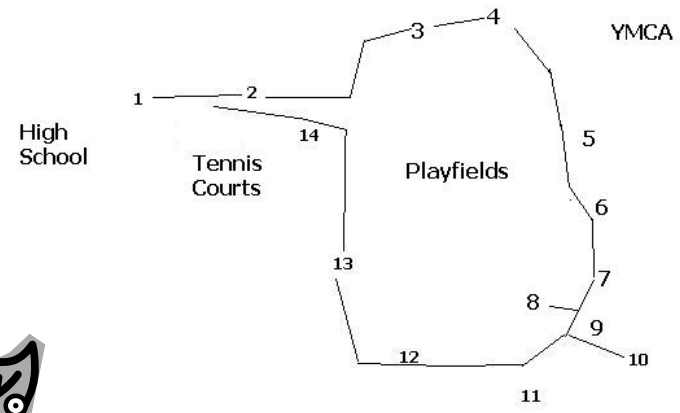
Sponsored by:

- The Environmental Commission
- The Trails Committee
- The Woodlands Management Committee

Welcome to the Mountain Lakes ECO-Hike. We hope that this guide, together with the experience of completing the tour, will enrich your appreciation for the woodlands habitat and enable you to see and appreciate aspects that otherwise may have gone unnoticed. We have set up markers at 14 viewing stations along the trail. This guide provides a narrative for each station. You will see references to the Woodlands Management Committee website. This can be found at http://www.mtnlakes.org/Borough/Woodlands/Whome.htm

And remember, "Take only pictures; leave only footprints; kill only time."

Mountain Lakes
ECO-Hike Trail Map



them constantly cut off at the ground when there is an overpopulation of deer. You can see a comparison of a heavily browsed spicebush and one which has been growing within a protected area on the Woodlands Management website. It is worth looking up and studying to gain an appreciation of the effects of an overpopulation of deer.

Station 12 AILANTHUS

Here you see the largest stand of ailanthus (tree of heaven) in town. This species is not native to North America. It comes from China. The oldest trees in this group are growing on the site of the old dump. One tree is particularly interesting because it was uprooted during the construction of the playfields. If you walk around and inspect the roots, you will see that the tree was growing in ashes, which were the by-product of residential coal furnaces at the time Mountain Lakes residents used this area as a dump. It is hard to imagine anything but an ailanthus growing in these ashes. Another interesting fact can be seen at the upper end of the tree next to the trail. Notice the new shoots springing up from the trunk. Apparently there are just enough roots still in contact with the ground to support new life. You can begin to appreciate how persistent an invader this tree actually is. Now if you look around at the trees in this area, you will see that many if not most of them are ailanthus. There are two reasons for this. First the ailanthus is a prolific producer of seeds. One tree can disperse 350,000 seeds in a season. Second, ailanthus trees tend to condition or poison the soil so that other trees find it difficult to grow.

As was mentioned at Station 2, this area is also prime habitat for garlic mustard since it was disturbed during the construction. So you see a great deal of it here, especially between the trail and the open field.

Station 13 TULIP TREES

Tulip trees are one of the tallest eastern trees. For much of this height they are straight and free of branches. This, together with the workability of the wood, makes them valuable timber trees. A member of the

woodpecker, about the size of a crow. They make the holes looking for food and for nest sites. The size of the holes makes it clear that this work was done by a pileated woodpecker.

Station 8 THE OLD OAK

This oak is likely to be the oldest tree in town. It was probably here when this area was a farm. It has seen a lot of history. As you can see, the tree sustained a major injury from a lightning strike. Still it stands, a testament to the resilience of life on a time scale beyond that of human beings.

Station 9 HORNBEAMS

American hornbeams are a common understory tree in our woodlands. Their muscular-looking trunk beneath smooth bark is unmistakable. Another name for this tree is *ironwood*—a name that can be readily appreciated if you ever try to cut one of them.

Station 10 STREAM AT THE FOOTBRIDGE

This stream flows through the park from the Hanover Road area down toward Lake Intervale in Parsippany. This spot is a perfect place to study the water quality in the stream. The presence of *macro-invertebrates*, mayfly, caddis fly, and especially stonefly nymphs, are indicators of good water quality in streams such as this.

Station 11 SPICEBUSH

Spicebush is a common shrub in low-lying wet areas such as this. Because it grows in much the same way as the more familiar lilac, it is a good indicator of the amount of deer browse in an area. The reason is that new shoots or canes emerge every year to replace the old stalks as they age and die. If there are no new shoots, the shrub eventually dies. Unfortunately for the spicebush, deer favor the young shoots and keep

Station 1 HISTORY OF AREA

The trail area has undergone transitions typical of much of this north central New Jersey. One hundred fifty years ago in the mid-19th century, this area was farmland. The farmhouse was on what is now Fanny Road, and the outbuildings were closer to Powerville Road. There were small fields in between. One hundred years ago in the early 20th century, the farm was gone and the central feature of the area was a dump which was used both by Boonton industry, especially Boonton Rubber Molding where *bakelite* was invented, and by early Mountain Lakes residents. The dump was situated below the lower playfield. Surviving artifacts, such as bottles, pots and pans and of course bakelite, can still be found in the area of the dump.

Later in the 20th century, this area lay undisturbed and became the predominantly mixed oak forest that we see today. In the late 70s, it was dedicated as a park named in honor of one of our important early mayors, Halsey Frederick.

Now we see a large segment of the park once again cleared of the forest to accommodate playfields for high school sports. Times change, needs change.

As you walk the ECO-Hike trail, you will follow around to the upper side of the fields in a part of the forest that is predominantly upland and dry. As you continue to the far side of the fields you will pass wetlands, vernal pools, and then to the lower portion of the park. Finally, you will make your way back to where you now stand.

Station 2 INVASIVES ALONG DISTURBED AREA

This area illustrates a typical growth pattern where the soil is disturbed. This area was excavated to allow access to the new playfields. Wherever there is a patch of exposed soil where grass did not take hold first, there are invasive species, usually garlic mustard in this locale. It is the most common invasive plant in our borough. It is very difficult to eradicate. The other trail area where garlic mustard is common is at Station 12, below

the playfields.

To read more about invasive species in general and garlic mustard in particular, go to the Woodlands Management Committee home page on the Mountain Lakes Borough website.

Station 3 LICHENS

Here you see the first of many patches of lichen growing along the trail. Lichen, an indicator of good air quality, is a fascinating study in itself. It is one of the most common examples of *symbiosis*: two or more organisms helping each other to survive. In the case of lichen, the two organisms are a fungus and either an algae or a cyano-bacteria. The fungus provides the water and breaks down the rock or wood on which the lichen grows; the other organism provides the food.

There are three general types of lichen. *Crustose*, which is illustrated by the example you are viewing, appears to have been painted on the rock. *Foliose*, which you may notice a little further along the trail growing on rocks and tree bark, looks a little more like vegetation. *Fruticose* is more shrublike; a common example in this area is *British soldiers,* which bears a red fruit and looks very much like moss.

Lichens are a pioneer species. They are the first species to colonize an area, followed by moss. You will see examples of this early succession as you follow the trail. Lichens will grow on a rock, break the surface down, and eventually die. The accumulation of rock debris and dead lichens then provide enough soil for moss to grow. Watch for lichens and moss growing on the same rock. Eventually, the moss dies and provides the conditions for other higher plants and, in time, the area may become a forest.

Station 4 MISSING UNDERSTORY

As you look around you in this part of the trail, you will see that an important layer of the woodland is missing. Below the canopy trees and the understory trees, there used to be a shrub layer, which included shrubs and seedling trees, and beneath the shrub layer was the herbaceous layer. Most of this vegetation, along with many species dependent on it, is missing. This absence results from browsing by an overabundant population of deer. You can read more about this on the Woodlands Management Committee website.

Station 5 REPLANTING OF TREES AT EDGE OF FIELDS

Here you see a reforestation project. An excess area was cleared for the playfields so the forest was replanted with oak and maple seedlings which will become canopy trees in another generation or two. Notice that each seedling is protected by a green cylinder. Why do you think this was done? Could it have been to protect the seedlings from the deer?

Station 6 VERNAL POOLS

The pools you see in this area typically hold water only in the spring of the year. That is why they are called *vernal* pools. It also means that fish cannot live there, which is what enables amphibians such as frogs, toads, and salamanders to breed there. Fish would eat too many of the eggs and the young so that productive breeding by amphibians would be impossible.

The most apparent sign of the breeding is the calling of the frogs. You may hear the *croak* (something like the quack of a duck) of the wood frogs in very early spring. At about the same time the spring peepers *peep* and the chorus frogs *prrreeep* (like moving your finger across a pocket comb). If you are very lucky, you may see one of several species of mole salamanders. Very secretive, they are—and surprisingly large.

Station 7 A DEAD TREE

The dead tree on your left with only the trunk remaining is anything but dead to the pileated woodpecker. Around the back side of the tree you can see the work of this bird—our largest