



PEEC

Pocono Environmental
Education Center

Scenic Gorge

T R A I L G U I D E



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1 WELCOME

Welcome to the Scenic Gorge Trail at the Pocono Environmental Education Center (PEEC). Allow at least an hour to enjoy this 1.5-mile trail, which is blazed in red and is moderately difficult with a few steep sections. The trail begins next to Cabin 1, goes through an upland deciduous forest and a hemlock grove along Spackmans' Creek, ending on lower campus. This guide focuses on the differences of the two major habitats and explores several microhabitats. A habitat is the environment in which an organism lives, including climate, altitude, moisture, sunlight, and human activity. The numbered markers along the trail correspond to the explanations in this guide.

2 CREATIVE PLAYGROUND

This area was known as the Creative Playground. The numerous tree stumps and the four wood posts ahead on the left were all part of this natural playground.

3 POISON IVY

Poison ivy (*Toxicodendron radicans*) is in the family *Anacardiaceae*, the same family as cashews. Poison ivy is important here and in many other forest ecosystems. Birds and deer eat the small white berries without consequences. Unfortunately, humans are not so lucky! If you touch any part of the plant including stems, leaves, berries, or the hairy trunk, you may develop an itchy rash. Do not touch the plant any time of the year! To identify poison ivy, look for a leaf with three leaflets and a vine with red brown hair-like roots growing up the sides of trees. **If you do touch the vine, wash yourself with cold water as hot water will open the pores in your skin and let in more of the toxic oil.**



4 TREE LIFE SPAN

Trees die for many reasons: age, virus, fungus, insect manifestation, lightning, and cutting. Many insects live in dead trees, helping to break down the tree and return nutrients to the soil. Woodpeckers and other animals eat insects in dead standing trees, making standing dead trees an important part of the forest ecosystem. Owls, raccoons, porcupines, flying squirrels, and other animals raise their young in tree cavities. Moss, fungi, and lichen aid in the decomposition process. Fungi, such as mushrooms, have no chlorophyll to convert sunlight to energy. They depend on energy from organic material to survive.

5 EUROPEAN LARCH TREES

In front of you are some European larch trees (*Larix deciduas*), also called tamarack. Although these trees are conifers, they are deciduous, as their scientific name implies. Thus they drop their leaves annually. Tamarack trees are harvested for their strong, disease-resistant wood, which is used in telephone poles and railroad ties. Seeds from the 1.5 inch cones are eaten by rabbits, squirrels and ruffed grouse.



6 THE PUMP HOUSE

The building in front of you is the pump house. Water from wells around PEEC is held in tanks below the surface of the ground. The pump house, aided by gravity, disperses the water throughout PEEC. The large, grassy mound behind the pump station is a water tank storage area. Behind the pump station on your left is a septic system commonly referred to as turkey mounds.

The trail continues along the right of the mound.

7 WATER BARS

You are about to start down a steep hill. As you travel down, you'll step down wooden beams – water bars – that seem like stairs. The beams were placed there to control erosion along the path. Plants normally keep the hillside from eroding by securing the soil with their root systems. Along the path, no plants can grow, so the soil is loose and can easily wash away. The water bars help prevent significant erosion of the trail.

8 MAPLE TREES

If you look down the path, you can see several maple trees (*Acer*) lining the trail. If you look into the woods, you don't see any. Why is that? Did some crazy PEEC staff member decide to line the trail with maples? No, maples require more light. In the woods, other trees shade out the young maples. Plenty of light comes through the trail, allowing the maples to grow.



9 LICHEN

A lichen is an organism that has a symbiotic relationship between its two components, fungus and algae. A symbiotic relationship is one that is beneficial to both parties. The algae serves as the phycobiont. Algae has chlorophyll, so it can obtain energy from the sun. The fungus serves as the mycobiont. It supplies protection from adverse conditions such as drought. Notice the abundance of lichen on the trees and rocks around you. Lichen is an indicator of very clean air, so breathe deeply!

10 WHITE PINE

Notice the soft-looking pines in front of you. Which pine is this? Examine the needle bundles, or fascicles, closely. How many needles in each fascicle? Each fascicle has five needles which helps to quickly identify this tree as a white pine. Notice the word “white” also has five letters – a helpful hint! White pine (*Pinus strobus*) was named for its white sap. This pine can grow to 200 feet, making it very useful as timber during colonial times. The pine suffers from two maladies, the white pine weevil and the white pine blister rust. The weevil kills the topmost shoot of a young pine, causing the pine to grow deformed and reducing its value as timber. The blister rust is a serious fungal pest.

11 PILEATED WOODPECKERS

Look at the large holes in the trees on the right. What caused them? If you guessed a woodpecker, you're right! The pileated woodpecker (*Dryocopus pileatus*), the largest surviving woodpecker in North America, excavated these holes. Without watching the woodpecker actually make the hole, we know that the pileated is the culprit because the holes are large and rectangular. Pileated woodpeckers are about the size of a crow and have a conspicuous red crest. Holes in trees are created to search for carpenter ants, to nest in the spring, or to roost during winter. Three to six eggs are laid during May. If the hole is fresh, new sap runs down the side of the tree. Older holes have scar tissue growth around the edges. The older the hole, the more scar tissue the tree has grown.

12 CHESTNUT OAKS VS. HEMLOCKS

Look to your right, then to your left. What differences do you see? To your left is a chestnut oak forest, relatively sunny and dry. To your right is a cool, damp hemlock grove. Chestnut oaks (*Quercus prinus*) need well drained soil and much sunlight. Eastern hemlock (*Tsuga canadensis*) grows in a damp, cool environment. The gorge is an ideal environment for the hemlock. Hemlocks help increase the suitability of their habitat in two ways. First, their constant leaf cover traps moisture and blocks sunlight, making the habitat even cooler. Hemlock's root system does not travel deep into the soil, as do many other species of trees. Instead, the root system is wide, covering a large surface area. This means hemlocks can survive in as little as one to two inches of soil, making the gorge a perfectly suited habitat.



13 WHITE OAKS

This area is not very well drained and is fairly sunny, so neither chestnut oak nor hemlock can survive. The conditions here are good for white oak (*Quercus alba*). White oak has smooth lobed leaves and nearly white, thin scaled bark. The roots grow deeply, so several inches of soil are required for the oaks to survive. The acorns are sweet when boiled and Native Americans used them as food when necessary. Unlike red oaks, white oak acorns germinate in the fall, but must be buried by squirrels, or will freeze during winter. White oaks in this area have a common adaptation for survival in wet areas – the base of the trunk is considerably wider than the rest of the trunk.

14 CLIMAX FOREST

Notice the rock wall parallel to the trail. Before becoming a National Recreation Area, this land was extensively farmed. The rocky terrain made farming on the Pocono Plateau difficult. All rocks had to be removed from the field, but what did the farmer do with all the rocks? The rocks were piled on the side of the field creating a wall. Sometimes, you can see an old tree in the middle of the wall or next to a huge boulder the farmer could not move. The farmer kept the tree there since it was not in the way of the farming and provided shade in the

middle of a hot day. Eventually, the rock walls served as property boundaries. Through the process of succession, fields slowly change to forests. Succession occurs when a plant more suited to a habitat becomes dominant through competitive and reproductive adaptations. Native grasses, wildflowers, and small shrubs were the first types of vegetation to take over this field. Light-loving tree species came next. In this area, white oak (*Quercus alba*) and shagbark hickory (*Carya ovata*) came next. The climax forest, or the final stage of succession, in this area is American beech (*Fagus grandifolia*).

15 HEMLOCK RESOURCES

The hemlock grove in this gorge has retained much of its pre-European character. Most forests in the eastern US have been cleared, but this gorge remained relatively untouched. Why? The knotty wood of the hemlocks produces only low-grade lumber. Because most hemlocks are found in steep gorges, removing the trees is time-consuming and difficult, and therefore, not profitable. Hemlock has only one economic value – tannic acid. Found in the bark, it is used to tan animal hides to make leather. The resulting leather is a very reddish brown. Often, tannin from chestnut oak acorns is added to reduce the redness.

16 LOOK DOWN!

Look down at the stream. Notice how the water falls over the rocks and turns white. Here, air mixes with the water causing the water to look white. Downstream, the water is well-oxygenated. The pools below the falls have deep, well-oxygenated, cool water ideal for trout and other fish. Immature insects, such as dragonfly, fishfly, stonefly, and caddisfly nymphs, live in the streambed. Stream-dwelling insects are adapted to maneuver and obtain food in a fast current. They are well camouflaged – try to find some! Just return them to the water quickly, since they can only live out of the water for a few minutes.



17 SEDIMENTARY ROCK

Look at the rock face along the stream. This rock was created 370 million years ago during the Devonian period. At that time, this area was a shallow sea with silt deposition on the sea floor. The silt compacted and lithified – cemented together – creating the layered sedimentary rock you see. When Africa collided with North America 230 million years ago, during the Permian period, the eastern part of North America went through an orogeny, or mountain building event. Since then, this stream has been carving out the rock, exposing the layers we see today.

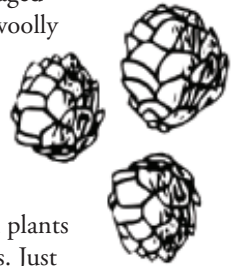
18 BLACK BIRCH

Black birch (*Betula lenta*), also called cherry birch and sweet birch, grows in areas that are damp and cool, making it one of the few deciduous trees able to grow

in a hemlock grove. Large black birches can be found hanging precariously on cliff edges, where they can obtain sunlight, an adaptation for living in a hemlock gorge. Notice the dark bark has horizontal lines called spiracles. Spiracles are visible only on birch, cherry, and tamarack trees. The black birch has hard, heavy wood; so it is often used to make furniture. The twigs and leaves contain oil of wintergreen. Taste one! Fermented sap from the twigs is used to make the drink birch beer. The ruffed grouse (*Bonasa umbellus*), Pennsylvania's state bird, eats the buds and seeds, while white tailed deer (*Odocoileus virginianus*), Pennsylvania's state mammal, and eastern cottontail rabbits (*Sylvilagus floridanus*) eat the twigs.

19 EASTERN HEMLOCKS

Eastern hemlocks (*Tsuga canadensis*) are native to North America, but are currently suffering a serious threat to their survival. A small invasive insect, the hemlock woolly adelgid (*Adelgis tsugae*), attaches itself to the base of the needles and sucks the fluids out from the needle. The needles turn brown and fall off. In a few years, the hemlock tree dies from lack of nutrients needed from the needles. Hemlock groves all over the nation have been seriously damaged and destroyed. Research is now underway to possibly introduce the woolly adelgid's natural predator to control the population.



20 GROUND WATER

Water flows from this spring all year-round. The rock layers block the horizontal flow of the groundwater and force the water to the surface. With this constant supply of slow-moving water, small green plants grow here year-round. This is also a good place to find aquatic insects. Just remember, if you do find any, return them to the water quickly.

21 AMERICAN BEECH

American beech (*Fagus grandifolia*) is a popular tree because of its smooth gray bark, sometimes called elephant skin. During the winter, the leaves turn a golden brown, but do not fall until spring. The theory behind this phenomenon is that beech and oaks were in the tropics during the last ice age. At the end of the ice age, the glaciers retreated, and beech and oak migrated north. Their leaves had to die for the trees to survive the winter, but did not drop until replaced by new growth.

22 CHESTNUT OAKS

Chestnut oaks (*Quercus prinus*) are the predominant tree in this area. The tree can be identified by its multi-lobed, smooth edged leaves, and square-shaped, deeply-grooved bark. Look on the ground. Do you see any acorns? Like all oaks, chestnut oaks drop their acorns in the fall. The fallen acorns are multi-colored, ranging from red to green. Chestnut oak acorns, like white oak acorns, start to sprout immediately, not waiting for spring. This adaptation gives the chestnut oak time to develop before it has



to compete with other saplings. On well-drained ridgetops in this part of the United States, the climax forest is made up of chestnut oaks. Before the chestnut blight, the American chestnut (*Castanea dentata*) was the dominant trees on tops of ridges. Approximately three quarters of all trees in the eastern U.S. were American chestnut, until the blight completely wiped them out.

23 TURKEY MOUND

The mounds of grass visible through the trees on the left are man-made. Notice the white pipes sticking out of the sides. The mound is made of sand, and is used to filter sewage water since the shallow, rocky soil does not clean sufficiently. The mound is called a turkey mound because wild turkeys (*Meleagris gallopavo*) can often be found on top searching for food.



This is the last marker on the trail. Head up the road to the right, then follow the main road to the right back to the main building. We hope you enjoyed the trail. Feel free to ask PEEC staff any questions you may have.

Where Learning Comes Naturally!

The Pocono Environmental Education Center (PEEC) is the perfect place for learning, exploring, getting away, and connecting. With 5 hiking trails, weekend educational programs, and summer day camp, PEEC is a great place for nature lovers, families, friends, photographers, youth and adult groups, scouts, students, and teachers. A private 501(c)(3) non-profit organization, PEEC is the education partner of the National Park Service in the Delaware Water Gap National Recreation Area. PEEC's mission is to advance environmental education, sustainable living, and appreciation for nature through hands-on experience in a national park.



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Trail Map

If you no longer have a need for this trail guide, please return it to the front desk so that it may be used again.

