



# PEEC

Pocono Environmental  
Education Center

## Two Ponds

### T R A I L   G U I D E



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**WWW.PEEC.ORG**

## 1 WELCOME

Welcome to the Two Ponds Trail at the Pocono Environmental Education Center. This trail is 1.4 miles long, relatively flat, and follows white blazes. It winds past two ponds and through several different habitats. A habitat is the natural environment in which an organism lives. Many factors including wildlife, climate, human activity, and sunlight affect habitats. This guide will help you to examine all of these forces and learn about different habitats on the Two Ponds Trail.



## 2 SHRUB WETLAND

You are now walking over a shrub wetland. The boardwalk helps protect this delicate area. A wetland is an area that is covered by water or has waterlogged soils during a certain portion of the year. This wetland represents a transitional area from drier upland habitat to pond. Plant and animal life are diverse here. The bird blind is a great place to view catbirds (*Dumetella carolinensis*), great blue herons (*Ardea herodias*), cedar waxwings (*Bombycilla cedrorum*), yellow warblers (*Dendroica petechia*), and blue jays (*Cyanocitta cristata*). The vegetation is primarily woody and includes arrowwood (*Viburnum dentatum*), winterberry (*Ilex verticillata*), pokeweed (*Phytolacca sp.*), jewelweed (*Impatiens sp.*), panicle dogwood (*Cornus racemosa*), and wild grape (*Vitis sp.*). Many amphibians and reptiles including garter (*Thamnophis sp.*) and water snakes (*Nerodia sipedon*), bull frogs (*Rana catesbeiana*), green frogs (*Pelophylax sp.*), and salamanders make their home here.

## 3 SUCCESSION

The open field you see here is a very different habitat from the wetland. The soil is much drier and sunlight reaches even the small plants on the ground. Sunlight allows smaller plants to colonize cleared areas. In the spring, summer, and fall, the field is alive with wildflowers, such as teasel and goldenrod. The field is mowed periodically, but if left undisturbed, small plants would be replaced over time by taller plants, shrubs, and finally trees. This gradual change in a habitat over time is called succession. Succession is beginning on the edges of the open field where small trees and shrubs are growing. Red cedar (*Juniperus virginiana*), dogwood (*Cornus sp.*), cherry (*Prunus serotina*), and gray birch trees (*Betula populifolia*) (behind the blaze) are beginning to take over and shade out smaller plants.



#### 4 TRASH GRAVEYARD

The trash graveyard was established in 1990 to demonstrate the amount of time required for commonly disposed materials to decay, decompose or break down. Please do not litter! In the natural world there are organisms called decomposers that help break down materials. They include fungi such as mushrooms, as well as bacteria, insects, and worms. As the material is broken down, the nutrients are released into the soil making a rich, dark layer called humus.

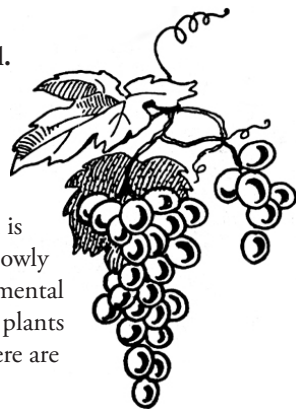
#### 5 EMERGENT WETLAND

This area is known as an emergent wetland. This wetland is dominated by green plants such as grasses, sensitive fern (*Onoclea sensibilis*), and skunk cabbage (*Symplocarpus foetidus*). Only a few shrubs are present. Black bears (*Ursus americanus*) have been seen in this meadow eating fleshy plants and the nuts of the butternut tree (*Juglans cinerea*) by the road. The bark of this tree has flattened white ridges, and the leaves are compound. Compound leaves have many leaflets (small leaves) on one leaf stem.

Please be careful as you cross the road to follow the trail.

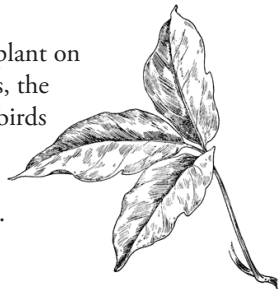
#### 6 WILD GRAPES

Wild grapes are abundant on this part of the trail. Grape vines often grow up trees and shrubs. The vines compete with the tree for sunlight and add weight to the tree which is often detrimental. Notice how some underlying trees are slowly dying because of the lack of sunlight. Also notice the ornamental plants - apples, forsythia, wisteria and mock orange. These plants are a sign of a former homestead. Look around to see if there are other signs of human habitation in this area.



#### 7 POISON IVY VINES

Another important and common vine is poison ivy (*Toxicodendron radicans*). This plant can grow as a low lying plant on the ground or as a vine on trees. While dangerous to humans, the berries of this plant are a valuable food source for migrating birds in the fall. **DO NOT TOUCH** the poison ivy, but take time to notice the characteristic hairy vine and three notched leaflets which may be green, red, or yellow, and shiny or dull. If you do come in contact with this plant, rinsing with cold water can help wash the oil off and prevent a rash.



## 8 PINUS RESINOSA

The trees in this area are growing in straight rows. These trees are called red pines (*Pinus resinosa*) and have long needles in bundles of two. Can you find any red pine needles on the ground? Approximately 80 years ago, these trees were planted to be harvested later. However, because this area is now part of the Delaware Water Gap National Recreation Area, they are protected. The trees compete with each other for sunlight and other resources. Little of the sunlight reaches the forest floor, so smaller plants have difficulty surviving. Notice the lack of seedlings. Red pine is not a native species and has limited success seeding itself in this area.



## 9 PICKEREL POND

Pickerel Pond is an ecosystem with abundant plant and animal life. Catfish (*Siluriformes*), sunfish (*Centrarchidae*), and minnows make their home here. Amphibians such as newts (*Pleurodelinae*), bull frog, and pickerel frogs (*Rana palustris*) can be seen near the shores. Insects, including the dragonfly, develop and lay their eggs in the pond. Whirligig beetles (*Gyrinidae*) and water striders (*Gerridae*) can be seen on the surface as well. Beavers (*Castor*) have been living in this pond. Their lodge is located across the pond. Evidence of beaver activity is visible around the pond - notice the gnawed stumps by this marker. Beavers can chew through a tree six inches in diameter in five minutes! Look for the beaver lodge as you hike around the pond.



*Turn left and over the bridge for a shortcut back to PEEC. Turn right to continue.*

## 10 LOOK UP!

If you look up you will notice an unnatural object in this tree. What is it? It is a house designed to attract a nursery colony of bats. Despite what many people believe, bats are not blind, do not fly into people's hair, and are responsible for fewer cases of rabies than dogs. Bats are important for maintaining balanced ecosystems because they are the only major predator of night flying insects. Our most common bat, the little brown bat (*Myotis lucifugus*), can eat up to 600 mosquitoes an hour! Unfortunately many bats are in trouble due to loss of habitat and senseless killing. Six out of Pennsylvania's eleven species are considered of "special concern" (rare, threatened, endangered, or an undetermined status) according to the EPA biological survey.

## 11 LOGGING ROAD

More evidence of human activity can be seen as this trail turns into what used to be a logging road. The nearby town of Milford was a center for the logging industry in the late eighteenth century. Trees in this region were logged and floated down the Delaware and Lehigh Rivers. As a result of intensive logging, trees older than 100 years are uncommon in this area. While on the logging road, notice the absence of small plants. Soil compaction occurred from heavy logging and stunted growth centuries after logging was completed.

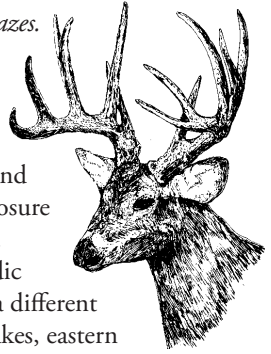
## 12 FORCE FOR GOOD

On either side of the trail here you can see the damage from Winter Storm Riley. In early March of 2018, soaking rains switched to heavy wet snow that blanketed evergreen trees. This combined with 60mph winds and microbursts dramatically destroyed some of the mature trees, creating a different habitat for plants and animals that is more natural and diverse than tree plantations. This is an example of how natural disasters can be a positive force. The availability of sunlight and the increased nutrient supply from dead trees play an important role in determining the vegetation here. Fishers, chipmunks, squirrels, and an occasional porcupine also use this area.

*The trail will take a sharp left soon. Look for the double white blazes.*

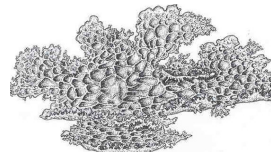
## 13 STONE ROWS

As the trail descends, look on the left side for the remains of a stone wall. During the nineteenth and twentieth centuries, homesteaders lived in this area raising crops as well as cattle and sheep. Stone walls served two purposes - they created an enclosure for animals and a depository for rocks cleared from the fields. The farmers who built these walls left this shallow, rocky, acidic soil for greener pastures long ago. Now the stone walls serve a different purpose - a home for black, milk, garter, and ring-necked snakes, eastern chipmunks, weasels, and spiders.



## 14 PIONEER SPECIES

The exposed sedimentary (layered) rock here is believed to have been formed over 360 million years ago during the Devonian Period. The “green splotches” on the rocks and trees in this area are organisms called lichens. Lichens are composed of fungi and algae growing together. The algae produces food for itself and the fungus by photosynthesis and the fungus anchors the algae to the rock or tree. The fungus also secretes an acidic chemical to help break down the rock. This breakdown, combined with the physical weathering of the rock and the accumulation of organic material as the lichen dies builds a thin soil layer. Mosses are then able to grow on the soil layer. As more soil is built up by mosses, more plants can colonize. Lichens are a pioneer species. They are the first species to colonize an area, paving the way for other species. Lichen is also an indicator species. As it absorbs water from the air it also absorbs air pollution. If there is an abundance of lichen in an area the air quality is probably quite good because they will not grow in a heavily polluted area. This is why it is rarely present along heavily traveled roads.



*The trail turns left here. Notice the Eastern hemlocks with the flattened singly attached needles. The Eastern hemlock is Pennsylvania's state tree*

## 15 WHITE PINE

In the understory of this forest you will notice many small trees beginning to grow unlike the growth in the red pine plantations seen earlier. The white pine (*Pinus strobus*) here, a tree native to this area, is seeding itself. In several decades, this forest will probably be predominantly white pine. Again, succession is at work. White pine can be identified by its long, soft needles that grow from the branch in bundles of five. Red pine (*Pinus resinosa*) and Scotch pine (*Pinus sylvestris*) were planted here as well. Red pine is typified by two long needles in a bunch and pinkish bark. Scotch pine has two short, twisted needles and butterscotch-colored bark near the top.

## 16 WATERSHEDS

The water you see here in Pickerel Pond will flow to Front Pond and eventually Alicia's Creek. The creek then flows into the Delaware River and is part of the headwaters for the river's watershed. A watershed is the land area where all water flows into a single large body of water. These headwaters are home to many organisms including crayfish, wood frogs (*Rana sylvatica*), dusky salamanders (*Desmognathus*), developing and adult insects, and small fish. Alicia's Creek is being monitored as part of a state-wide program to determine the extent of acid rain. See display in PEEC's Main Building for details.

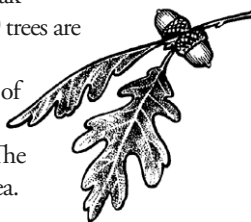
## 17 WHERE THE FERNS GROW

Ferns grow in large numbers when the conditions are right. The hayscented fern (*Dennstaedtia punctilobula*) is particularly suited to the dry, acidic soil here as well as the partial sunlight. The hayscented fern is able to out-compete other plants in an area because it releases chemicals which inhibit the growth of other plants. This competitive process is called allelopathy. Ferns are vascular plants which means they can transport water and nutrients throughout the plant allowing the plant to grow upright. Plants without vascular tissue, such as mosses, cannot grow very tall because they lack this supportive structure.

*Please note the trail will take sharp turns at the double blazes.*

## 18 MIXED FOREST

Shagbark hickories like this tree help make up this mixed oak forest. Shagbark trees provide both nuts for small mammals and shelter for bats under their peeling bark. Mixed oak forests are one of the region's most common types of forests. Chestnut oak (*Quercus prinus*), black oak (*Quercus velutina*), scrub oak (*Quercus sp.*), red oak (*Quercus rubra*), scarlet oak (*Quercus coccinea*), and white oak (*Quercus alba*) trees are growing here as well as shagbark (*Carya ovata*) and pignut hickories (*Carya glabra*) and white pines. Before 1906, the dominant tree in this type of forest was the American chestnut which made up nearly 25% of the forest. That year, a blight was introduced which virtually wiped out the chestnut. The hickories and chestnut oaks have replaced the American chestnuts in our area.



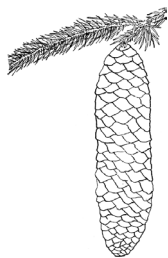
## 19 BUSY BEAVERS

Maple trees much like this one are a prime choice of beavers. As you look around the shoreline of Front Pond, note the young maples that have fallen into the pond thanks to beaver activity. Beavers will chew to sharpen their constantly growing teeth and topple trees in order to reach the young, tender branches that they consume for food. Beavers will eat the living layer of inner bark known as cambium as well as pond vegetation like the cattails in front of you. Beavers instinctively will build lodges and dams from the leftover chews, plastering the sticks together with mud they carry up from the bottom of the pond in their hand-like forepaws. As you cross over the footbridge of the spillway, take a look at our beaver baffles that are meant to allow water flow even if a beaver decides to build up the spillway. Beavers are the only other mammal besides humans known to drastically create new ecosystems by flooding streams and turning them into ponds through building dams.

*Continue across the road*

## 20 NORWAY SPRUCE

You are now standing beneath several Norway spruce trees (*Picea abies*). Notice how the branches droop? If you look on the ground you can probably find Norway spruce cones. You may also find evidence of squirrel activity. Red (*Sciurus vulgaris*) and gray squirrels (*Sciurus carolinensis*) eat cones in the same manner. First they chew the scales off at the bottom of the cone to reach the seeds underneath, then they turn the cones around, eating the seeds in an upward spiral. The squirrels differ in the way they store the cones however. Red squirrels pile their cones for storage, while gray squirrels eat the cones wherever they are found. Which kind of squirrels have been eating here? The natural world is in a constant state of change, both creating and destroying habitats. You have seen the impacts of logging, forest fires, and fallen trees. Time itself brings change. As plants and trees grow and block out the sun, plants in the understory of the forest will be replaced, and as the plants change, so does the wildlife. From bare rock to an open field, to a forest, the cycles continue.



*Continue on the trail until you reach the Main Building.*

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### 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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# PEEC

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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.*

