

Welcome to Fernlands! Clyde and Betty Arnold donated this 21-acre forest to Green Earth in 1998. This property is a private nature preserve, open to the public year-round from dawn to dusk. This trail will lead you through several different wooded areas, including a mature hardwood forest, an upland forest, and a disturbed forest recovering from pasture use. This trail guide was developed to provide you with a better understanding of the communities, processes and interactions that exist in this natural area. Wooden posts have been installed along the trail and the numbers correspond to the information in this guide. A map is provided on the back of this guide and trail signs containing the Green Earth logo and arrow have been tacked to trees just above eye level to direct you along the trail.

1. Know the Outdoor Elements

You have entered a nature preserve. Because the primary goal of Green Earth is to preserve natural space, we develop such areas only to the extent to provide access or enhance their naturalness. As a result, you should be aware of plants and animals in this forest preserve that may adversely affect you.

Poison ivy can be seen as a small herbaceous plant on the ground, a bush, or a vine on a tree. Poison ivy can be extremely variable in form, but it almost always has three leaves. Some leaves are notched, while others are not. New leaves are shiny and somewhat reddish.

Due to the abundance of wildlife in this forest, the area is home to many ticks. Although all ticks are small, generally less than a quarter of an inch in diameter, they range in size. Some are as small as the period at the end of this sentence. Remove ticks as soon as you notice them.

2. Ferns and Wildflowers

This area was named for the abundance of ferns along the stream banks and throughout the lowland areas in this woodland. Ferns are ancient plants, one of the first to evolve vascular tissues to conduct water and nutrients. The long stem containing many small leaves (leaflets) is called a frond. On the underside of the leaflets you may see brown spots, which are spore-

bearing structures. When the spores are released, they germinate in the soil. A germinating spore develops a heart-shaped structure containing separate egg and sperm producing organs. Ferns are limited in their distribution to areas moist enough for sperm to travel to the egg-producing organs. Fertilization results in the development of a spore-forming plant or what we refer to as a "fern." This life cycle of alternating generations is very different from most plants we are familiar with that produce flowers and seeds. Two common ferns at this site include Ebony spleenwort and Christmas fern. Christmas fern fronds were commonly used for Christmas decorations. Christmas fern can be identified by its 2-3 foot long fronds and shallowly grooved stems with dense light-brown scales. The leaflets are shiny and dark green.

Spring is the best time to view wild flowers in this forest. The first flower to show here is Spring Beauty. It is a small white flower with 5 petals containing pink stripes down the center of each petal. The leaves are elongate and grass-like in appearance. May Apple is also very abundant here. May apples produce a single white flower underneath their foliage. The flowers only arise between the stems of plants with two leaves. The fruits or "apples" are edible, but all other parts of this plant are poisonous. The showiest wildflower here is Blue Phlox. It grows about 1 foot tall, and the slender stems contain clusters of pale blue to violet colored flowers. One wildflower you may not have noticed is Trillium. This member of the lily family contains a single 4-petal brown to maroon colored flower arising from the center of three leaves.

SPRING BEAUTY

MAY APPLE

BLUE PHLOX

TRILLIUM

3. Evidence of Wildlife and Humans

We often visit natural areas to get glimpses of the wildlife that live there. Unfortunately, the sounds and smells of our arrival may scare wildlife away. With close examination, evidence of their presence in the forest can be detected. Rustling noises might be from busy squirrels making nests or searching for nuts. Knocking sounds may be those of woodpeckers searching for food or preparing a place to nest. On still wet nights you can even hear earthworms consuming the forest litter layer! Now, take a minute to examine the trail ahead of you. The moist environment here can be perfect for viewing wildlife footprints. Dog-like prints may be those of a coyote. Prints appearing as five slender toes with claw marks at the end of each digit are likely that of a raccoon. Two grooved marks are characteristic of deer. You can also look at the surrounding trees for deer activity. Male deer will mark their territory by scraping young trees with their antlers. Do you see any areas where tree bark looks worn down? Other signs of wildlife include nests, burrows, droppings, and the remains of half-eaten seeds, leaves, and berries.

Along the west boundary of the property (to your right) you can see unnatural depressions in the hillside of the forest. These pits are evidence of small hand-operated excavations for coal by people long ago.

4. Streams

This is a perfect place to take in the beauty and calming effect of running water. This stream is an unnamed tributary of Little Crab Orchard Creek. Eventually, the water draining this forest will enter the Mississippi River and end up in the Gulf of Mexico. The clear water of this stream is a result of the forested state of its watershed. Minimal disturbance to the land in this forest results in little erosion, or soil loss, that can make streams turbid and appear unhealthy. The functioning of this stream is connected to the forest. Small streams draining densely wooded areas rely on forest leaf litter as the primary source of energy (or food) for microbes, invertebrates, and ultimately, fish. The inhabitants of this stream break down leaves, and the processed organic matter serves as food for other organisms downstream.

5. Mature Woodland

This area is a mature woodland. Foresters often use the measure of tree diameter at breast height to characterize forest stand age. Other clues to the age of a forest include less herbaceous plants (unless there is a gap in the overstory) and an understory of small shade tolerant trees such as paw paw and dogwood. A common tree here is sycamore, which can be identified by its peeling bark and light smooth surfaces where the bark has sloughed from the tree.

Mature woodlands are great places to look for woodpeckers. Six different species of woodpeckers are common to this area, including red-bellied, red-headed, pileated, hairy, and downy woodpeckers. The yellow-bellied sapsucker is also a common woodpecker in our region. Other birds you may see on your hike include indigo buntings, nuthatches, robins, and chickadees.

6. Natural Spring

If you take a few steps to your left, toward the stream, you will notice a deep pool with fish swimming and feeding. Look upstream (to your right) and notice that the stream is much smaller, and carrying less water than the reaches downstream of the pool. This indicates the presence of a natural underground source of water, or spring. This is an important source of water for aquatic life during the dry parts of the year.

7. Riffles and Pools

While standing on this bridge, you can observe two different habitat types in this stream. Pools are slow flowing reaches, often formed by debris dams. Riffles tend to be more rapidly flowing areas with gravel and larger stones. Each habitat supports different communities of aquatic organisms. You may notice some surface dwelling insects in the pool reach such as water striders. The sediment in the pool is also teaming with invertebrates adapted for slow moving water carrying less oxygen. A different set of aquatic invertebrates can be found underneath and on the surface of submerged rocks in the riffle area. Some insect larvae make

houses or "retreats" from rocks or detritus. Many spin nets out of silk and filter food from the water column. Varied aquatic habitats help support a high diversity of aquatic animals in a stream. The surrounding forest influences stream habitat diversity. For instance, this large sycamore supplies leaves, twigs and larger pieces of wood to the stream that aid in forming alternating riffle-pool habitats.

8. Fallen Trees and Coarse Woody Debris

Fallen trees in the forest are the source of coarse woody debris, which provides habitat for many animals and structure for streams. A decomposing log in the forest may be teeming with life. Under loose bark you may find salamanders resting in a warm moist environment and feeding on a variety of insects. Ants, termites, isopods, and beetles are also common residents of fallen trees. They aid in the decay process by eating or tunneling in the wood. Several organisms you may not see are wood decomposing fungi. Occasionally, you may see evidence of fungi from their fruiting bodies. Fungi may appear as shelves or cups protruding from the log.

Fallen trees also create gaps in the forest that change the nearby environment. When the canopy opens more sunlight becomes available and non-woody "pioneer" plants quickly colonize these areas. Forest gaps can increase diversity in the forest by providing resources for plants that would otherwise be excluded.

9. Upland Forest

Notice the forest at the top of this hill consists of different tree species than the lowland area. A primary factor responsible for the different forest communities is water availability. Soil moisture decreases with increasing elevation. Soil moisture is just one of the important abiotic (non-living) factors that influence plant and animal communities in an area. Other important abiotic influences include sunlight, temperature, soil type, slope, and aspect (direction a hill slope faces). Forest species adapted to drier conditions here include cedars, sumac, and sassafras.

10. Ancient Oak

One unique feature of Fernlands is this large red oak. Oaks live approximately 125 years, and this oak is probably in the maturing phase of its life cycle. It is unknown why this tree was left standing when the area was cleared in the past; it may have been left as a shade tree for cattle or an old homestead. Trees of this size are rare in deciduous forests in Illinois.

11. Disturbed Forest

Notice that the forest community to your left is strikingly different than that to your right. What would cause such dramatic differences in forest composition? Management history and hydrology contributed to these different forest communities. The forest community to your right was cleared for pasture use a long time ago. Cedars likely invaded when sunlight became readily available. Cedars are coniferous trees that establish before the more shade tolerant deciduous species in the process of forest succession. Disturbance also enabled an invasive non-native tree, autumn olive, to establish here.

To your left you will notice an expanse of unusually flat ground along the tributary that supports more hardwoods. This is a floodplain, formed over geologic time from natural course of water during high flow events.

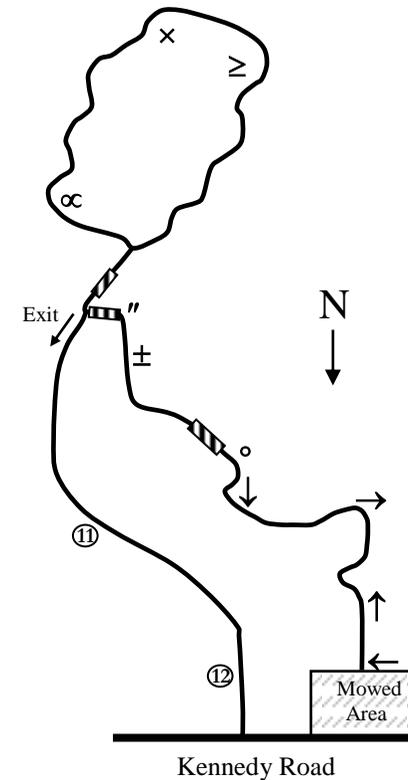
12. Giant Cane

As you exit Fernlands, you will walk over a culvert that was built to enable the stream to flow uninterrupted under the road. Along the streamside you may notice an unusual plant that resembles bamboo. This plant is a large grass called Giant Cane. Cane is native of southern Illinois, and was once common in riparian zones; you may have heard historical references to "cane breaks" in this region. Re-introducing Giant Cane in riparian zones is goal of some conservationists in southern Illinois.

Thank you for visiting Fernlands!

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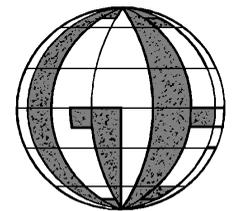
TRAIL MAP



Trail length: approximately 0.6 mi.
Time: 45 - 60 min.



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