IDNR SMALL PROJECT GRANT

FINAL REPORT

Development of an Interpretive Trail Guide for Green Earth's Super Trail in Carbondale, Illinois

(Wildlife Preservation Fund Grant #04-015W)

June 28, 2004

Submitted by

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Executive Director
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To

Scott Ballard
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Illinois Department of Natural Resources
Office of Resource Conservation
9053 Route 148, Suite B
Marion, Illinois 62959

BACKGROUND

Green Earth, Inc. is a non-profit incorporated organization established in 1974 for "charitable and educational purposes to procure, hold title to, develop, manage and maintain lands suitable for the establishment of a system of natural areas for the people of the Carbondale, Illinois area." Green Earth currently owns and maintains five green spaces that collectively preserve over eighty acres of undeveloped land in the vicinity of Carbondale. Green Earth has encouraged public use of these properties by maintaining trails through each natural area and developing trail guides that describe points of interest and ecological features specific to each natural area. Green Earth properties are open to the public from dawn to dusk. These trails are commonly used for outdoor recreation such as hiking, wildflower identification, and wildlife observation. The local community, primary and secondary schools, and Southern Illinois University use these natural areas and interpretive guides for educational purposes on a regular basis.

In the early 1990's, Green Earth acquired approximately ten acres of floodplain along Little Crab Orchard Creek. This area was designated as Green Earth Wetlands. In 2002, with funds from a previous IDNR Small Project Grant, a trail (Super Trail) was established, connecting Green Earth Wetlands to a Green Earth Flagland on W. Sunset Dr. In 2004, Green Earth Wetlands was expanded through the acquisition of twenty acres of floodplain that lies adjacent to the Wetlands preserve. **The objective of this Small Project Grant was to expand the Super Trail to include the newly acquired property, develop an interpretive trail guide for the Super Trail, and update old trail guides and brochures to include this new property.**

PROJECT SITES

The Super Trail connects Green Earth Wetlands and Green Earth Flagland in Carbondale, Illinois. Green Earth Wetlands is located on the north side of Chautauqua St., between Emerald Lane and Tower Road. The preserve contains several acres of planted prairie grasses, succeeding bottomland forest, and a fairly mature floodplain forest in the alluvial floodplain of Little Crab Orchard Creek. Green Earth Flagland protects two city lots containing green space on the south side of Sunset Dr. adjacent to Little Crab Orchard Creek. Flagland waves an American flag year round and contains a patch of restored prairie grasses and forbs. A mature floodplain forest (owned by Southern Illinois University) and a riparian forest (owned by the Carbondale Park District) reside between the two Green Earth preserves.

INTERPRETIVE GUIDE DEVELOPMENT

The primary path for the Super Trail was marked in spring of 2002 with Green Earth trail marker signs (Attachment 1) and Super Trail signs (Attachment 2) that were designed, produced, and installed along the trail using support from a 2001 IDNR Small Project Grant. In April of 2004, the Super Trail was extended through the newly acquired property adjacent to Green Earth Wetland and marked with Green Earth trail signs. These signs were tacked to trees with

aluminum nails at approximately 20 m intervals along the length of the trail. Orange diamonds were also painted on the trees in the event that trail signs are removed. Once the primary trail was identified, the Executive Director of Green Earth, consultants from Southern Illinois University (Dr. David Gibson of Plant Biology and wetland specialist, Jack Nawrot), Green Earth board members (David Kenney, Katherine Poulos, Charles Howe, Robert Beck, and Craig Hinde), and several members from the Carbondale community identified points of interest along the trail to be detailed in the interpretive guide.

Seventeen wooden trail markers that correspond the points of interest in the interpretive guide were constructed. Ten 4"x 4" x 12' posts of treated lumber were cut in half at 45° angles. Numbers were stenciled on to each angled cut, routed, and painted (Attachment 3). Trail guide boxes were constructed from three standard mailboxes and pre-assembled mailbox posts. White adhesive lettering was affixed to each trail guide mailbox to indicate that the box contains trail guides. The trail guide boxes were installed at each entrance to the Super Trail (Attachment 3). Volunteers and Green Earth board members installed the numbered trail markers and trail guide boxes to a depth of 18 inches.

A kiosk containing the IDNR poster of Illinois Woodland Wildflowers was constructed to aid hikers in identifying wildflowers in the floodplain forest (Attachment 4). Two posters were placed back-to-back and laminated. The posters were set between 2 pieces of 1/4" thick plexiglass and framed on the top and bottom with treated wood. The plexiglass was then set into 1/2" wide and 1 1/2" deep grooves routed into two 4" x 4" x 8' posts of treated lumber. The kiosk will be placed at trail marker #5, located at the entrance to the bottomland hardwood forest.

The Executive Director designed the Super Trail interpretive guide (Attachment 5), and it was reviewed by Green Earth's Board of Directors. The trail guide notes that support for production of the guide was provided by a grant from the Illinois Department of Natural Resources' Wildlife Preservation Fund. Five hundred copies of the Super Trail guide were printed. The Super Trail will be monitored by the Executive Director of Green Earth to maintain the trail, replace trail marker signs if needed, and ensure that multiple copies of the trail guide are available to visitors.

Due to the expansion of Green Earth nature preserves over the years, a general brochure identifying the locations and brief descriptions of all the Green Earth properties was revised (Attachment 6). Two hundred copies of this brochure were printed and they will be places in the trail guide boxes at all of the sites. Additionally, trail guides developed for the first two properties obtained by Green Earth (Green Earth I and II) were updated and printed (Attachments 7 and 8).

RESULTS AND DISCUSSION

With the new addition to Green Earth Wetlands, the Super Trail now passes through more than two miles of natural area in a residential area of Carbondale. From Chautauqua St. (Green Earth

Wetlands), the Super Trail takes hikers north through a wetland planted to native prairie grasses, a mature bottomland forest, across Little Crab Orchard Creek to Green Earth Flagland, and travels down the opposite side of the creek back to Chautauqua Street. The Super Trail can be accessed from four trailheads. The interpretive guide begins at Trailhead 1, located at the east entrance to Green Earth Wetlands off Chautauqua Sreet. The Super Trail can also be accessed from the west terminus of Freeman St. (Trailhead 2), the west side of the bridge over Little Crab Orchard Creek on Sunset Dr. (Trailhead 3), or the west entrance to Green Earth Wetlands (Trailhead 4) in the newly acquired property. The trail markers that correspond to the Super Trail interpretive guide provide information on:

(1) the history of Green Earth Wetlands
(2) dominant prairie species and maintenance of the prairie community
(3) the role of elevation on plant communities in wetlands
(4) characteristic species in wetland pools
(5) common woodland wildflowers
(6) human influences on forest communities
(7) common wildlife in forested wetlands
(8) dominant species in the overstory, midstory, and understory canopy layers of the forest
(9) identification of trees by bark and fruit
(10) human impacts the hydrology of streams and limitations to floodplain restoration
(11) the role of coarse woody debris in forest and stream ecosystems
(12) channelization effects on stream bank cutting
(13) forest uptake of carbon dioxide from the atmosphere
(14) spicebush and spicebush swallowtails
(15) the role of water availability in structuring forest communities
(16) forest regeneration and
(17) exotic species.

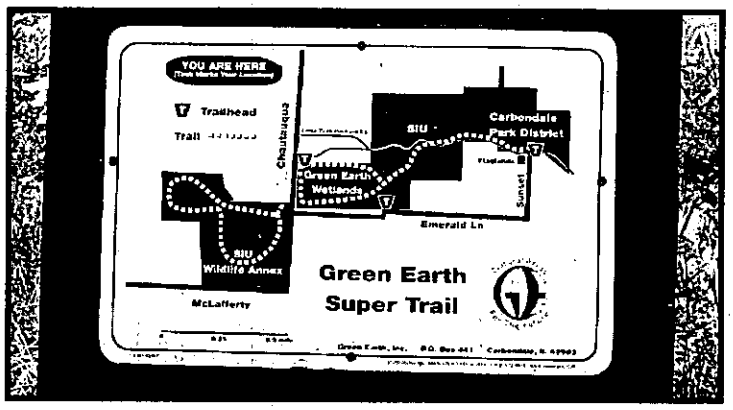
The development of the Super Trail and interpretive guide will enhance visitor awareness and appreciation of wetland services and values. This trail guide will greatly increase the educational potential of Green Earth Wetlands and Flagland for local schools and the greater community of Carbondale, Illinois. Due to its location in a residential area, the Super Trail represents one of the most frequented natural areas in Carbondale, receiving public attention from the advertisement of Green Earth's annual spring wildflower walk in celebration of Earth Day. Because the Super Trail connects natural areas preserved by Green Earth, Southern Illinois University, and the Carbondale Park District, development of the this guide demonstrates the value of partnerships among this local non-profit land trust organization and state and local government to the Carbondale community.

SUMMARY OF EXPENSES

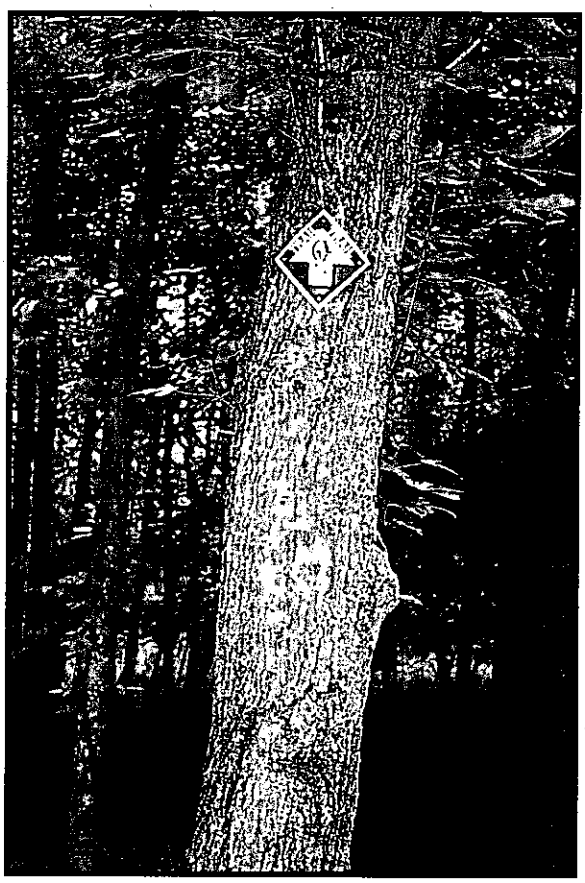
Items/Services Rendered	No.	Cost/Unit	Total
Trail guide boxes and trail markers			
Trail guide boxes (standard mailboxes)	3	$16.46	$49.38
Trail guide box mounts (wooden mailbox mounts)	3	$2.97	$8.91
Trail guide box posts (pre-assembled wooden mailbox posts)	3	$17.96	$53.88
Trail markers (4" x 4" x 10' treated lumber)	10	$9.97	$99.70
Trail guide box adhesive lettering (pkg)	2	$3.97	$7.94
Poster Display (Kiosk)			
Posts (4" x 4" x 8' treated lumber)	2	$6.97	$13.94
Plexiglass	2	$34.97	$69.94
Poster laminating	1	$48.84	$48.84
Kiosk construction (Weatherford Signs, 2 hours labor)	2	$60	$120.00
Printing			
Super Trail interpretive guide (2-sided, 2 pages, folded and stapled)	500	$0.64	$320.00
Green Earth General Brochure (2-sided, 1 page, folded)	200	$0.13	$26.00
Green Earth I Interpretive guide (2-sided, 1 page, folded)	100	$0.23	$23.00
Green Earth II Interpretive trail guide (2-sided, 3 pages, folded, stapled)	100	$0.94	$94.00
Executive Director Salary			$100.00
TOTAL EXPENSES			**$1,035.53**

Funds requested: $1000.00

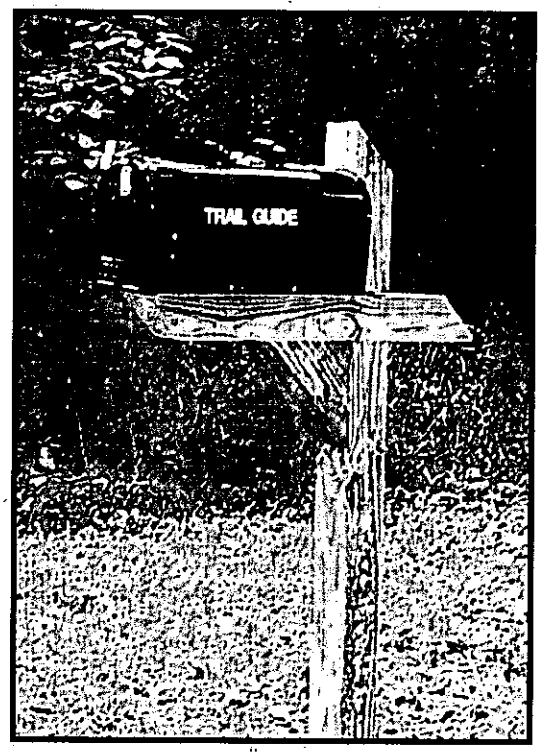
Attachment 1. Super Trail signs developed and produced from a 2001 IDNR Small Project Grant to Green Earth, Inc.



Attachment 2. Trail marker signs developed and produced from a 2001 IDNR Small Project Grant to Green Earth, Inc.



Attachment 3. Trail guide box and numbered wooden trail marker that corresponds to information in Super Trail interpretive guide.



Attachment 4. Kiosk constructed to display the IDNR Illinois Woodland Wildflower poster.

Attachment 5. Super Trail interpretive guide.

Attachment 6. General brochure about Green Earth, Inc. that includes the locations and descriptions of Green Earth nature preserves.

Attachment 7. Updated trail guide for the first property acquired by Green Earth, Inc.

Attachment 8. Updated trail guide for the second property acquired by Green Earth, Inc.

History of Green Earth, Inc.

In 1974, Green Earth was incorporated and received a grant of $102,000 from the city of Carbondale. This money came to the city through the refinancing of revenue bonds and constituted a windfall that the city was not permitted to retain under federal law. The original grant to Green Earth remains intact in a wise combination of working cash and investment accounts.

The original by-laws of Green Earth, Inc., which are still in force today, state:

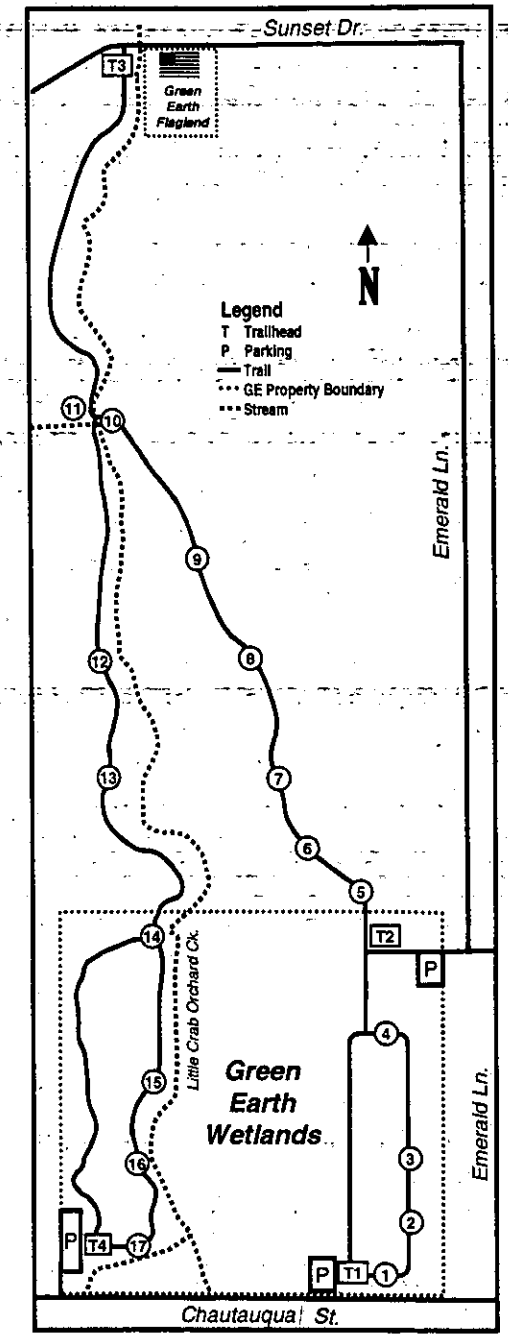
> "This corporation is organized exclusively for charitable and educational purposes to procure, hold title to, develop, manage and maintain lands suitable for the establishment of a system of natural areas for the people of Carbondale, Illinois, area."

In 1974, that was an ambitious goal and it continues to be a challenge for Green Earth today. Green Earth has protected approximately 80 acres of green space in the vicinity of Carbondale, using proceeds from investments, contributions from the community, donations from local trusts and businesses, and grants. Few organizations can lay claim to the degree of stewardship demonstrated by the numerous people who have volunteered to serve on Green Earth's Board of Directors over the past years. An Executive Director is responsible for the affairs of the Green Earth. Board Members, Executive Director contact information, newsletters, and photos of the nature preserves can be found on Green Earth's website at:

www.globaleyes.net/Community/GreenEarth/index.html

HELP US CONTINUE TO PROTECT NATURAL AREAS FOR FUTURE GENERATIONS IN CARBONDALE, ILLINOIS

Green Earth



Super Trail

Welcome to Green Earth's Super Trail!

This trail connects two natural areas preserved by Green Earth, Inc. This guide identifies points of interest between Green Earth Wetlands and Green Earth Flagland (see map on the front of this guide). Trees have been marked with orange diamonds and Green Earth trail signs have been installed to guide you along the trail. This interpretive guide begins at Trailhead 1 (T1), located at the east entrance to Green Earth Wetlands on Chautauqua St. You can enter the Super Trail from three other trailheads: the west terminus of Freeman St. (Trailhead 2, T2), west of the bridge over Little Crab Orchard Ck. on Sunset Dr. (Trailhead 3, T3), or the west entrance to Green Earth Wetlands on Chautauqua Rd (Trailhead 4, T4). The numbers in this guide correspond numbered wooden markers along the trail. Before using this guide, locate where you entered the trail (T1-T4) on the map. Refer to the map frequently during your walk, for there are several forks along the trail.

We hope you enjoy your walk through these natural areas. Keep this guide if you would like to become a *Friend of Green Earth.* If you do not wish to keep this guide, please return it to any one of the trail guide boxes located at the trailheads.

Trailhead 1 (T1): East entrance to Green Earth Wetlands, Chautauqua St.

Welcome to Green Earth's Super Trail! From this trailhead, you can complete a short loop through the prairie grass area or veer north to Green Earth Flagland or complete the entire Super Trail, which will guide you to the west entrance to Green Earth Wetlands on Chautauqua Street. (T4).

1 Wetlands come in a variety of forms, all influenced by continuous or seasonal flooding. Green Earth Wetlands is part of the alluvial floodplain of Little Crab Orchard Creek. Historically, this area was bottomland hardwood forest. In 1991, Green Earth acquired approximately 10 acres of this floodplain that was previously used as a horse pasture. The area was planted to native prairie grasses and wildflowers. Today, the prairie grasses hide, but do not eliminate, the continuous control of this wetland by water. You may notice many small trees trying to reclaim this lowland area.

16 The area across the creek is recovering from pasture use. Although many trees will re-establish naturally, desirable species, such as oaks, are often planted to hasten the recovery process. Each time you visit this trail, the recovering forest will probably look a little bit different as species sort out over time. This will be an exciting area to watch develop for decades to come.

17 Exotic species are abundant here; particularly the thorny vine called multiflora rose. Exotic species are native to somewhere else and become a serious problem when they outcompete native species for resources. When exotic plants become dominant, many other species may be affected such as insects that feed on or pollinate native plants, and birds that rely on those insects for food or the native plants for cover. Exotic species tend to thrive in disturbed areas or areas that contain a large amount of "edge" habitat, such as small nature preserves in a predominantly urban setting.

Trailhead 4 (T4): West entrance to Green Earth Wetlands, Chautauqua St.

Welcome to Green Earth's Super Trail! You can hike the loop through this floodplain forest or veer north to Green Earth Flagland and cross Little Crab Orchard Creek to follow the trail to Trailhead 1, located on the east side of the creek on Chautauqua Street. Follow the numbered information in this guide in reverse order.

This interpretive trail guide was developed with support from the Illinois Department of Natural Resources' Wildlife Preservation Fund.

If you would like to become a "Friend of Green Earth" and receive our quarterly newsletter please send your name and address to:

Green Earth, P.O. Box 441, Carbondale, IL 62903

Green Earth Flagland

This residential green space was donated to Green Earth by the late Harris Malan. In the center of this property is a patch of native prairie grasses and wildflowers. Southern Illinois once contained pockets of tallgrass prairie. Most prairies here, and in the Midwest as a whole, have been converted to cropland because the soils were easy to till and rich in nutrients for plant growth. Native prairies were quite diverse and produced an array of color across the landscape. This restored prairie patch also displays a colorful combination of wildflowers. This prairie is mowed once a year to remove the plant litter. This prairie patch is not watered or fertilized, demonstrating a low maintenance alternative to traditional landscaping that you could try in your own yard.

12 Little Crab Orchard Creek eventually meets the Big Muddy River and drains into the Mississippi River. The creek here has been cutting into the sides of the bank because it has been channelized downstream to reduce flooding. One concern about bank cutting is the increased sediment carried by the stream. Excess sediment reduces in-stream habitat quality and water quality.

13 Trees are important sources of energy in ecosystems. Plants take carbon dioxide out of the air and turn it into their tissue. Thus, protecting mature forests and reforesting disturbed areas can help offset increasing concentrations of carbon dioxide in our atmosphere from the combustion of fossil fuels.

14 Spicebush is a common shrub in this forest. In the spring, it contains many small yellow flowers at the base of each leaf. Spicebush shrubs are a sign that Spicebush swallowtail butterflies will be here in the summer. Spicebush swallowtails are mostly black with iridescent blue and white markings. Other common butterflies here include tiger swallowtails (black and yellow striped), zebra swallowtails (black and white striped), red admirals (black with red and white markings), buckeyes (brown with two eyespots on the hind wings), and commas (orange and dark brown coloration).

There is a fork in the trail here. Refer to the map to decide which trail you want to follow.

15 Forest communities are often a good indication of water availability in an area. There is a distinct stand of a flood tolerant tree species here, river birch. The river birch community surrounds an old oxbow of Little Crab Orchard Creek.

2 The prairie established here contains the warm-season grasses big bluestem (right), Indiangrass and switchgrass. In addition to these grasses, twenty-two species of legumes and composites were planted. The prairie grasses are particularly beautiful in late summer, when their flowering stalks tower up to six feet tall and their stems contain red to purple hues. It is difficult to maintain diversity in restored prairie without periodic fires or grazing. Trees are frequent invaders here because the soil and moisture conditions are conducive to the native lowland woodland species. Additionally, exotic species, such as multiflora rose and autumn olive, form dense stands in this wetland. Green Earth maintains the prairie community by mowing the area during extended dry periods and removing exotic species.

3 If you were a visiting balloonist or soaring hawk you would see distinct zones of vegetation in this area. The higher ground is covered by the prairie grasses, whereas the lower-lying ground is dominated by rushes, sedges, and dense stands of a yellow-flowering plant called "beggar-ticks" that produces many dry seeds, some of which may follow you home on your clothing. Look out across the landscape and notice the patches of colors and patterns created by the vegetation. Only slight changes in elevation can cause large differences in plant communities.

4 Wetlands are not always wet, but here lies a small depression that holds enough water to support the characteristic sounds and sights of a wetland. Frogs will breed in these ephemeral pools, as will a variety of aquatic insects, including dragonflies. Wetlands also filter nutrients and sediment from runoff, acting as a natural water purification system. Because of the numerous services and values of wetlands, conservation and restoration of these ecosystems are a high priority nationwide and throughout the world. Did you know that one-third of endangered species use wetlands to some extent?

Here the prairie community gives way to the forest. Refer to the map to decide which trail you want to follow.

Trailhead 2 (T2): Green Earth Wetlands Freeman St.

Welcome to Green Earth's Super Trail! Before starting your journey, please examine the map on the front of this guide. From this trailhead, you can go south to the planted prairie grass field or north through a lowland forest to Green Earth Flagland on Sunset Dr. There is also a loop through the forest on the west side of Little Crab Orchard Creek that can be entered from Chautauqua St.

5 This kiosk displays a poster of common woodland wildflowers in Illinois. Bottomland forests in southern Illinois can harbor a diverse array of wildflowers. Most of the species here bloom in spring. Common wildflowers on this trail include bluebells, May apple, trillium, dog-toothed violet, Dutchman's breeches, Jacob's ladder, and common phlox

6 The trees here are fairly uniform and the grassy understory is not representative of floodplain forest in southern Illinois. The forest and understory structure is different here because the topsoil was removed at one time to elevate the land for residences on Emerald Lane.

7 On the east side of the trail here you may be able to see inundated areas, especially during wet periods. These wetlands are a haven for wildlife. A large herd of deer resides in this forest and can be seen most of the year. Wood ducks nest in standing dead trees in the spring. Another common resident you may hear is the Pileated woodpecker, the largest woodpecker in North America. They call with a loud, high pitched repeated note.

8 This area is a fairly mature floodplain forest with three distinct vertical layers of vegetation. The overstory, or highest species in the canopy, contains several types of oaks, hickories, sycamore, elms, and hackberry. The midstory layer consists of much shorter trees and is dominated by paw-paw in this forest. The understory contains mostly herbaceous plants. The woodland wildflowers are understory species, as are stinging nettle and poison ivy.

9 Trees are often easiest to identify when their leaves are present. Some trees are also easy to identify from their bark, seeds, or fruit (nuts). For example, sycamore trees have smooth, pale bark that tends to peel off. Shagbark hickories have very rough and shaggy bark. Acorns on the ground are signs of oaks. Round, golf-ball sized fruit are from sycamore trees (right).

The acorns and nuts produced by oaks and hickories are important sources of food for wildlife. The mass production of fruits and nuts is called "masting" and may be a strategy to ensure that some seeds will be left to regenerate the forest even after many are removed for food.

10 Little Crab Orchard Creek has been modified directly and indirectly by humans. Downstream, the creek has been channelized to reduce flooding. This causes the water to drain faster and cut into the sides of the banks. The creek also probably receives more runoff than it used to because part of the watershed has been cleared of forest and replaced with streets and residences. These in-stream and landscape disturbances make it very difficult to restore floodplain forests.

The Super Trail continues on the other side of Little Crab Orchard Creek. Use extreme caution when crossing the creek and only cross if the creek is at low flow. Steps have been installed in each side of the streambank.

11 Fallen trees in forests and streams are tremendous sources of energy for these ecosystems. Dead trees provide food and nutrients for fungi, worms, and insects. These wood consumers are important sources of food for other animals in the forest. In streams, wood provides structure for some organisms to inhabit and a resource for others to consume. In fact, woody debris and leaves that it traps can house most of the aquatic diversity in sandy and silt bottom streams.

There is a fork in the trail here. Please refer to the map to decide which path you want to follow. Use extreme caution when crossing the creek and only cross if the creek is at low flow. Steps have been installed in each side of the streambank.

Trailhead 3 (T3): Sunset Dr.

Welcome to Green Earth's Super Trail. Before starting your journey, take a moment to visit Green Earth Flagland on the east side of the Little Crab Orchard Ck. bridge. Please examine the map on the front of this guide while you walk the trail. The first part of this trail travels through the riparian forest along Little Crab Orchard Creek. This area is owned and maintained by the Carbondale Park District. The first fork in the trail occurs at the Little Crab Orchard Creek crossing past the soccer fields. You can go straight south to Trailhead 4 or across the creek and south to Trailheads 1 and 2. Both trails will guide you to Green Earth Wetlands.

Yes, I would like to become a "Friend of Green Earth."

_____Student: $10 _____Family: $20 _____Supporting: $40 _____Sponsor: $100 _____Patron: $250
_____Corporate: $500
I would like to make a donation in the amount of $_____

Premiums:

_____$20 donation : Child size Green Earth T-shirt: 0-4 yrs 4-6 yrs 6-8 yrs 8-10 yrs (circle size)
OR _____Green Earth mug

_____$40 donation: Green Earth T-shirt, Adult (request size)

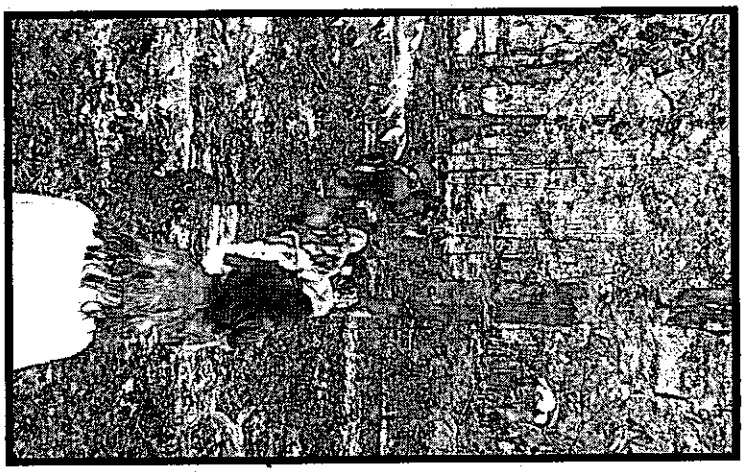
_____ $100 donation: Green Earth sweatshirt, Adult (request size)

Name _____ Address_____ Phone_____
Make check payable to **Green Earth, Inc.** and mail to **P.O. Box 441, Carbondale, IL 62903**

YOU CAN HELP

VISIT OUR WEBSITE AT
www.globaleyes.net/Community/GreenEarth/index.html

Green Earth, Inc.



Preserving natural areas for future generations in Carbondale, Illinois

Attachment 6

Green Earth, Inc.

Green Earth, Inc. is a not for profit corporation dedicated to preserving land in the vicinity of Carbondale, Illinois. Since 1974, the primary purpose of Green Earth has been to acquire, preserve, and provide public access to natural areas in Carbondale.

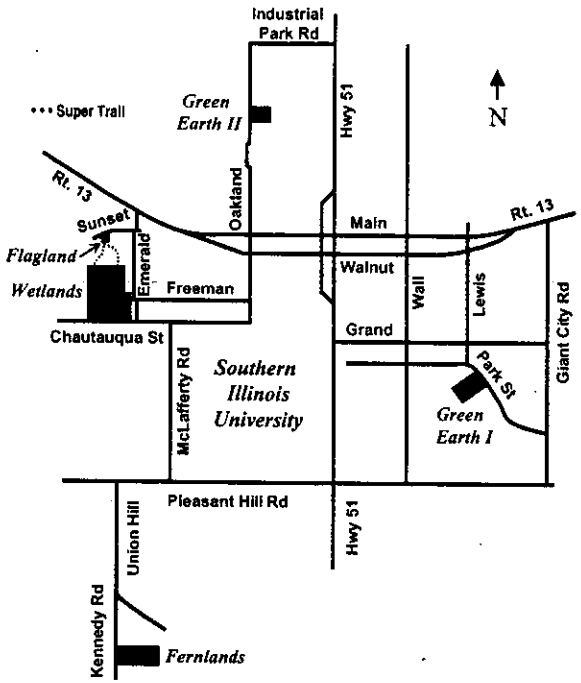
Our mission

- To enhance diversity in the human environment throughout the Carbondale area.
- To acquire areas of natural vegetation or other areas suitable for development as such within the vicinity of Carbondale.
- To develop such areas only to the extent necessary to contribute to their naturalness, enhance their native beauty and/or provide access to and protection for the areas.
- To maintain these areas in a natural or relatively undeveloped state.
- To make these areas available for the enjoyment and education of the public.
- To protect these areas from overuse and misuse.

Activities and Use

Green Earth nature preserves provide places for relaxation, contemplation, and inspiration. Scientific research, outdoor education, nature photography, bird watching, wildflower identification, hiking and any other non-destructive and non-consumptive activities are permitted and encouraged on Green Earth properties. Group activities are welcomed, however, we encourage group visits of 25 people or less. Large groups should contact the Executive Director because we are interested in the purpose of visitation and would like to provide assistance.

In order to preserve these areas for future generations, no guns, hatchets, alcohol, horses, vehicles, bicycles, or fires of any kind are allowed. Dumping, camping, or removal of any plants or animals are strictly prohibited.



Green Earth I

Herbie Beyler Trail

Green Earth I is located off Park St. This property was named as such because it was the first parcel of land acquired by Green Earth. This site preserves approximately 20 acres of forest and contains a well traveled trail that passes through many different habitats including an old clearing, upland forest, lowland forest, a seasonal pond, and a coal pit excavated by early settlers.

Green Earth II

Stan Harris Trail

Green Earth II is located off N. Oakland Ave. This property preserves approximately 9 acres of forest and prairie habitat. There is a well marked trail with 12 stations and an interpretive guide to points of interest. The trail guide identifies common prairie plants and tree species at the site. Wildlife inhabiting the area include gray and fox squirrels, rabbits, opossums, moles, raccoons, chipmunks, mice, and a variety of bird species.

Green Earth Wetlands

Green Earth Wetland is located on the north side of Chautauqua St., between Emerald Ln. and Tower Rd. Historically, this area was bottomland hardwood forest. Green Earth acquired the east third of the preserve and planted it to native prairie grasses and forbs in the early 1990's. Twenty acres to the west of the prairie grass area was acquired in 2004. The soils at the site are representative of wetlands, and indeed, the grounds are wet throughout the rainy season. This property features a desirable hardwood forest and a small grove of pine trees. A trail has been established between this property and Green Earth Flagland. The "Super Trail" has four trailheads. It can be accessed from either the east or west entrance to Green Earth Wetlands off Chautauqua Rd., the parking area located at the west terminus of Freeman St., or from Sunset Dr. west of Little Crab Orchard Creek. Please use caution when crossing Little Crab Orchard Creek.

Green Earth Fernlands

Fernland is located off Kennedy Rd. This property contains approximately 20 acres of woodland habitat. This forested watershed houses beautifully clear streams flowing between steep banks that are densely covered with mosses. The moist nature of this environment supports many ferns and a broad array of spring woodland wildflowers. An established trail will guide you through three different areas of this forest preserve.

Green Earth Flagland

Green Earth Flagland is located off W. Sunset and preserves a small green space in a residential area of of Carbondale. This property consists of two city lots that are mowed regularly. An American flag waves year round. A patch of prairie grasses and wildflowers was planted in the center of property and displays a beautiful showing of prairie blooms each summer.

Attachment 7

Green Earth, Inc.

Green Earth, Inc. is a not for profit corporation that was established in 1974 to acquire, preserve, and provide public access to natural areas in Carbondale. Scientific research, outdoor education, nature photography, bird watching, wildflower identification, hiking and any other non-destructive and non-consumptive activities are permitted and encouraged on Green Earth properties. In order to preserve these areas for future generations, no weapons, alcohol, horses, vehicles, bicycles, or fires of any kind are allowed. Dumping, camping, or removal of any plants or animals is strictly prohibited.

YOU CAN HELP PROTECT NATURAL AREAS FOR FUTURE GENERATIONS OF CARBONDALE!

Become a "Friend of Green Earth"

_____Student: $10 _____Family: $20
_____Supporting: $40 _____Sponsor: $100
_____Patron: $250 _____Corporate: $500

I would like to donate $_____

Premiums:
_____$20 donation: Child Green Earth T-shirt.
Circle size: S M L
_____$40 donation: Adult Green Earth T-shirt.
Circle size: M L XL
_____ $100 donation: Green Earth sweatshirt
Circle size: M L XL
Name _____

Address_____

_____

Pjone Number _____

☐ *Check here to receive our quarterly newsletter.*

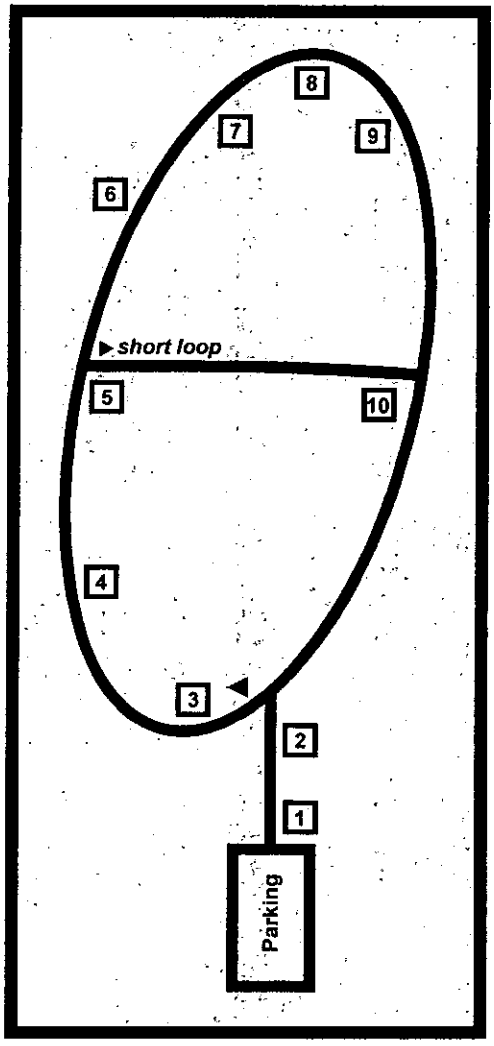
Make check payable to **Green Earth, Inc.** and mail to:

GREEN EARTH, INC.
P.O. Box 441
Carbondale, IL 62903

Visit us on the web!
www.globaleyes.net/Community/GreenEarth/index.html

Green Earth

TRAIL GUIDE



Natural Areas for the Future

Welcome to Green Earth I, the first natural area acquired by Green Earth, Inc. This is a private nature preserve open to the public year-round from dawn to dusk. We hope you enjoy your hike and that this trail guide provides you with a better understanding of the natural features, plant communities, and wildlife in this forest.

1. Trail Markers Numbered wooden posts correspond to the enumerated information in this trail guide. There are also white markings on trees to help guide you between the stations. Please note that the trail map shows two loops, the shorter loop is indicated by arrow sign in this guide (trail marker #5).

2. Deer trails The trail you are walking on was originally a deer trail. Deer use these paths to travel back and forth between feeding areas and places to bed down. Deer are very common here, but you probably cannot see them because their coats blend in with the forest. Other signs of animals include tracks, nests, burrows, droppings, and the remains of half-eaten seeds, leaves and berries.

3. Soil Erosion Many of the plants that once protected the soil on this trail are now gone. As a result, the soil on this hill will be carried by water to the creek below. To reduce the erosion of soil from this hill, waterbars have been strategically placed to reduce overland flow and capture the soil.

4. Woodpeckers Several types of woodpeckers can be found in this forest, including yellow-bellied sapsuckers, red-bellied, red-headed, pileated, hairy, and downy woodpeckers. If you look closely at the surrounding trees you will likely see small holes created by these birds while searching for wood-boring insects. Some woodpeckers also eat acorns, blackberries, dogwood berries, and other fruits of the forest. Woodpeckers are considered beneficial animals in forests because they consume wood-destroying insects and their abandoned nest cavities provide nesting sites for owls, wood ducks, and squirrels.

5. Double Harvest If a pioneer family were to discover this spot they would consider it a precious find. There are two kinds of trees here that they would have used for food. Early each spring, the pioneers would drill a hole into sugar maple trees and collect the sap. The sap would be boiled down to make maple syrup and maple sugar. In late fall, following the first frost, the pioneers would return to this spot to collect the small orange fruits of the persimmon tree. These fruits were used to make pudding, bread, and cookies. Persimmon trees can be recognized by their dark square-plated bark. (Short Loop ►)

6. Coal Removal When money was scarce during the great depression of the 1930's, local families dug their own coal to burn in their furnaces and fireplaces. The pit below this railing is where a family once extracted coal. Notice the small black stones as you walk down this hillside. These are pieces of coal from a seam of coal that lies very close to the surface here.

7. Seasonal Pond During spring, this temporary pond is teeming with wildlife. Spring peepers, leopard and gray tree frogs are the most vocal residents here. Each species' call is unique. They vocalize to find mates. Spring peepers call using a high pitched single-syllable peep. If you hear a longer trill, that is probably the call of a gray treefrog. Leopard frogs make guttural, vibrant snores or belches. The tadpoles feed on the short-lived aquatic invertebrates adapted to these seasonal wetllands. By the time this pond dries up in the summer, another generation of frogs will be produced. When autumn arrives, the frogs retreat deep into the soil to survive the cold winter months.

8. Forest Gaps Notice the vegetation here is mostly herbaceous or non-woody. This gap in the forest provides resources for plants and animals that are not available in mature stands of trees. Light is abundant here, allowing for many species of plants to persist in a forested area where they might otherwise become excluded from over time. These "pioneer" species increase the overall diversity of the forest and provide food for wildlife. There is a predicable sequence of plant communities that establish and change over time in response to forest openings and renewed resources. The succession of communities will take decades to return to the forest community that was originally present.

9. Abiotic Influences The forest community here consists of different tree species than those growing 100 yards up the hill. The primary factor responsible for the different species is water availability, which changes with elevation. Moisture is just one of the important abiotic (non-living) factors that influences plant and animal communities in an area. Other important abiotic influences include sunlight, temperature, soil type, slope, and aspect (direction a hill slope faces). Lowland forest species that thrive in moist soils include river birch, sycamore, and black willow. These species can be found growing along river and stream margins throughout southern Illinois. As you walk up this hill, you will encounter t species adapted to drier conditions such as sumac, persimmon, and sassafras.

10. Oaks and Squirrels The oaks, hickories and walnuts here were planted years ago by squirrels. Each year the squirrels bury a large supply of acorns in the soil to eat over the winter. Gray squirrels carefully bury individual nuts in the soil, whereas fox squirrels store as much as two bushels of food in a single underground hole. The nuts that do not get consumed by the squirrels remain in the soil and can potentially germinate into seedlings. Look above you to see if there are any squirrel nests in the trees. You can identify them by the large clumps of leaves and twigs nestled between the tree branches.

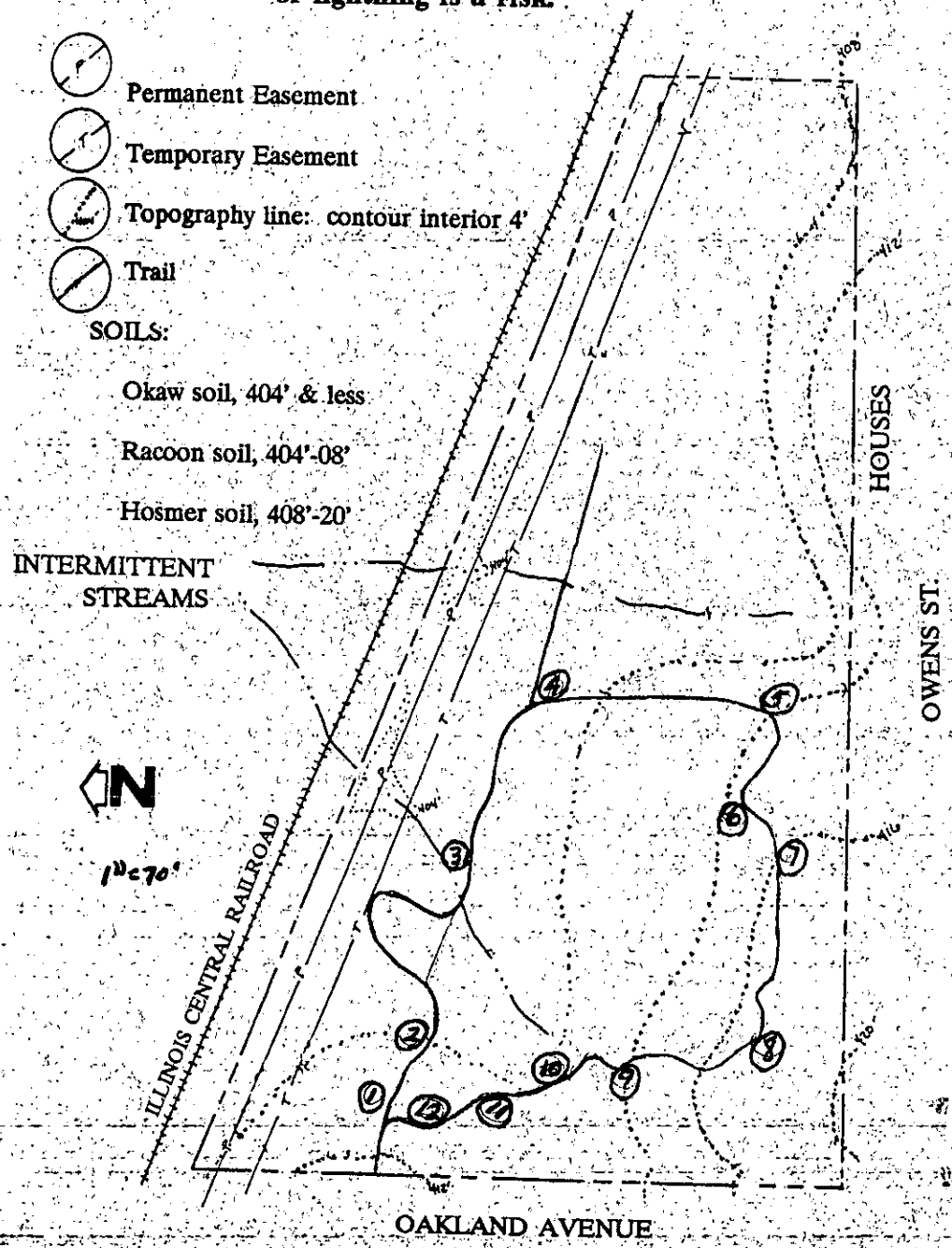
This concludes the trail. We hope you enjoyed your hike and will come back again soon. You may take this trail guide with you, otherwise please return it to the trail guide box. Contact us for more information about Green Earth, guided tours, or school field trips. Be sure to visit all of our nature preserves in Carbondale.

Attachment 8

GREEN EARTH II TRAIL GUIDE

Green Earth, Inc.
P.O. Box 441
Carbondale, IL 62903

CAUTION: Being in any wooded area during strong winds or lightning is a risk.



GREEN EARTH II - SITE ANALYSIS

leaves, but many do not believe they can become allergic to it after years of not being affected by it. Although a detriment to humans, poison ivy is an important source of food for some animals.

Poison Ivy

11.

STREAM

If it has recently rained, you will notice that the ground is wetter here than in most other areas. This is where one of the intermittent streams overflows its boundaries and causes associated plant and animal life to vacate the area. Look for opossum, raccoon, and other animal tracks here. Did you know that the opossum, a vegetarian marsupial, can have up to 14 young that would all fit in a tablespoon?!

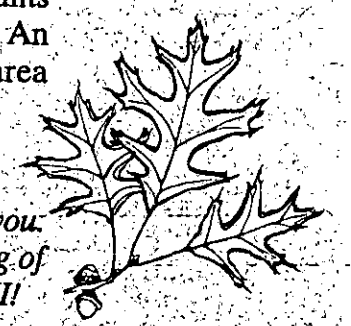
Walnut

12.

ECOTONE

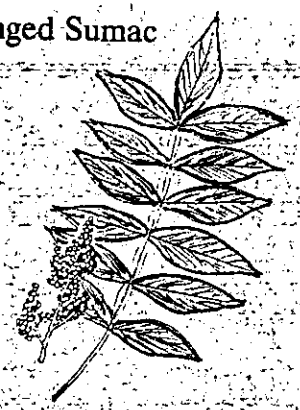
Do you feel the change in temperature as you approach the outer fringes of the forest? There are larger oaks and walnut trees growing here. Why are these trees so large? Does the term "forest edge" mean anything to you? An edge community, or ecotone, is where more than one ecosystem overlaps. This forest and grassland edge can be very beneficial to wildlife and plants that may prefer to live in both places. An ecotone is generally a very diverse and rich area within the environment.

If you like, you may take the trail guide with you. If not, please place it in the box at the beginning of the trail. Thank you for visiting Green Earth II!



Pin Oak

Winged Sumac

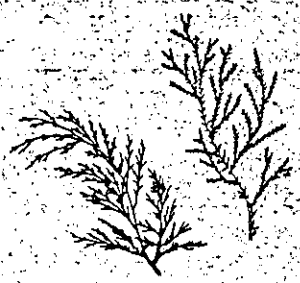


9.

ABIOTICS

Progressing farther down the trail, you will see a number of scattered red cedars, winged sumac, and multiflora rose. All three have a common abiotic need. "Abiotic" means a nonliving influence. Examples are water, sunlight, wind, soil, slope, etc. Can you name the one that greatly influences these species?

Check the cedars for cedar apple rust. The tree's two kinds of needles make it easily distinguishable. If round growths (galls) can be found on branches, this disease is present. Interestingly, apple trees must also be found somewhere around the area, since cedar apple rust requires both hosts, alternately, to survive.



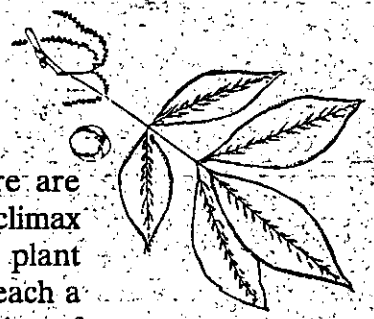
Red Cedar

10.

CLIMAX COMMUNITY

The oak and hickory trees found here are part of what may become a climax community. "Climax" means that the plant and assorted animal populations will reach a relatively permanent state after a series of different communities replace one another through self-modification. The climax community is greatly influenced by the climate of the area. Can you name any other factors which would control the outcome of the climax community?

This area also has a lot of poison ivy growing in it. Most people seem to know it has three



Hickory

White Oak

WELCOME TO GREEN EARTH . . .

History

At one time, prairie grasses covered approximately two-thirds of the State of Illinois, spanning over 22 million acres. Periodic fires set by lightning and native Americans kept the lands covered with grasses, rather than allowing trees and shrubs to take over. Once thought to be low in agricultural productivity, the early settlers soon learned the value of the prairie soils. This, in effect, hastened the demise of the majority of the prairie grasses, except for some remaining along railroad right-of-ways.

In June 1984, Green Earth, Inc., began its long awaited plan to reestablish a prairie area within the boundaries of Carbondale. Before you lies the result of that effort, which currently covers one acre.

Soil

This area consists of three soil types. Okaw and racoon are poorly drained, and hosmer is moderately well drained. This accounts for the predominantly low organic matter and wet and acidic nature of the soil.

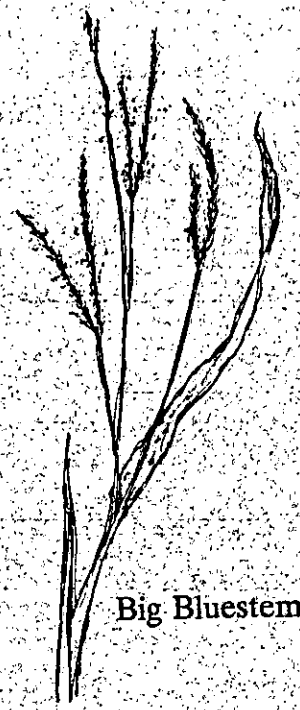
Plants and Animals

In addition to the prairie plants identified on the following pages, the wooded area includes honeysuckle, multiflora rose, sumac, elm, pin oak, sweet gun, sycamore, river birch, dogwood, eastern red cedar, poplar, and a few walnut trees. Associated animal life is varied, including grey and fox squirrels, rabbits, opossums, moles, raccoons, chipmunks, and mice, to cite a few. Bird life is also abundant, with some examples being blue jays, robins, quail, cardinals, and sparrows.

1.

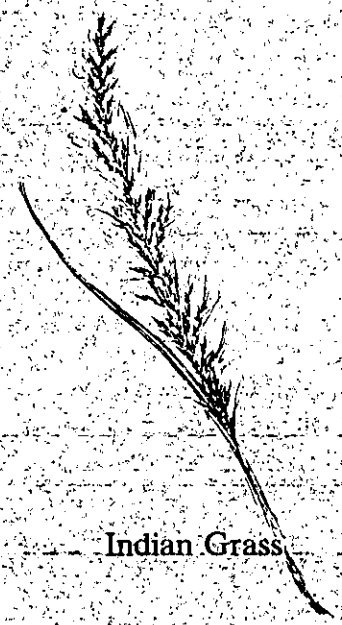
GRASSES

BIG BLUESTEM (*Andropogon gerardii*). This warm season perennial, sometimes referred to as "turkey foot," can attain heights up to 8 ft. The lower leaf cover of young growth has long hairs, and the young shoots are somewhat flattened in appearance. The flower cluster is three branched, giving the appearance of a turkey's foot. This species is a major dominant in the tall grass prairie, and prefers moist lowland soils.



Big Bluestem

INDIAN GRASS (*Sorghastrum nutans*). Indian Grass, a native species, is another warm season perennial which is important to prairie restoration. It also grows up to 8 ft., and produces yellow flowers, borne in pairs. At the junction of the leaf and stem is a notched structure known as a "ligule," which helps identify this particular grass. Indian Grass, or "wood grass," attracts a diversity of wildlife and can be found in ravines and valley bottoms, and it frequently invades disturbed dry areas.



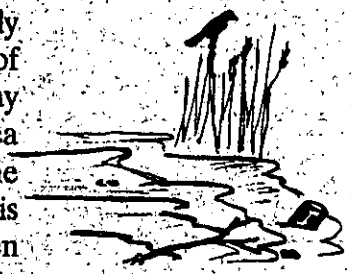
Indian Grass

SWITCHGRASS (*Panicum virgatum*). Also called "Tall Panic Grass," this warm season perennial reaches heights up to 6 ft. The seeds of this grass attract various song birds, rabbits, waterfowl, and deer. The leaves will stay with the plant longer than others during the winter, providing

6.

FLOODS

This low-lying wooded area is frequently flooded during heavy rains. Notice the lack of ground cover. If you look closely, you may find objects that have washed into the area from somewhere else. Can you tell the direction the water flows when this area is flooded? If you would help us keep Green Earth II litter free, and pick up any trash, we would really appreciate it!!



7.

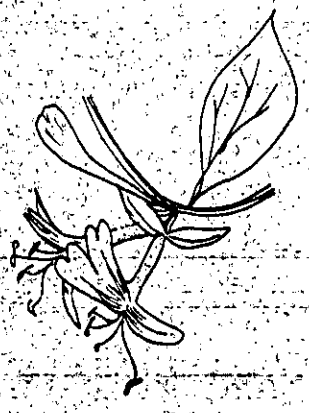
AM I LOST?!

Much of this portion of Green Earth II is still maintained as lawn by our neighbors. The orange signs show the boundary where our property ends. If this area were no longer mowed, do you think it would look like the grove of young maples?

8.

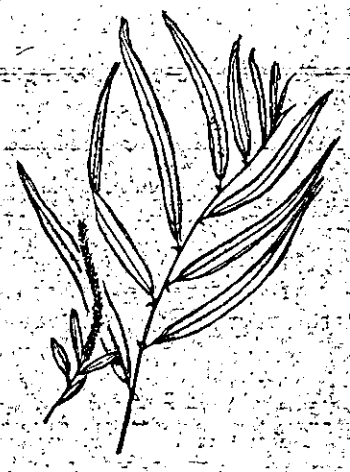
HONEYSUCKLE

As you enter into the more densely vegetated area, notice the abundance of honeysuckle that has invaded this site. As at Green Earth I on Park St., there will be a continuous battle to control this exotic, which may grow as much as 30 ft. in a single year. Honeysuckle causes trees and plants to become stunted and disfigured in growth, with many plants dying from the competition for food, water and light. Can you think of any value this plant may bring to wildlife?



Honeysuckle

As you leave the prairie, note the difference in the grasses where the prairie ends. This is an area that was cleared for an east-west sewer line in 1984. Succession, the natural progression from specific plants and animals to others, is occurring before you. In a few years, these young cottonwood, willow, and maple trees will give way to other species, as it becomes a more mature forest. Succession is just one example of the way our environment is constantly changing.

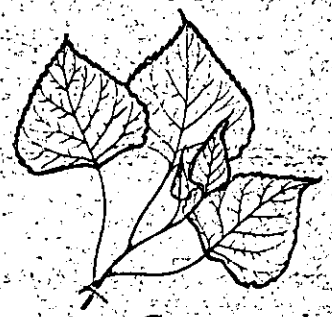


Black Willow

4.

FLOWER AND WOOD TRAILS

The spur to the left goes to an area where many beautiful wildflowers have been transplanted. As you enter the wooded trail, notice the changes in temperature and plants. What is not as easily noticed is the change in animal life from prairie to woods. Do you think the successional area you were just in will one day look like this? If so, how long do you think it will take?

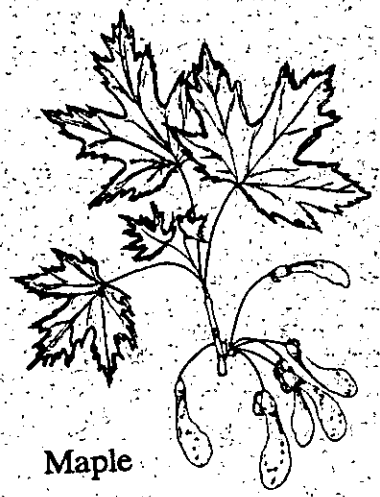


Cottonwood

5.

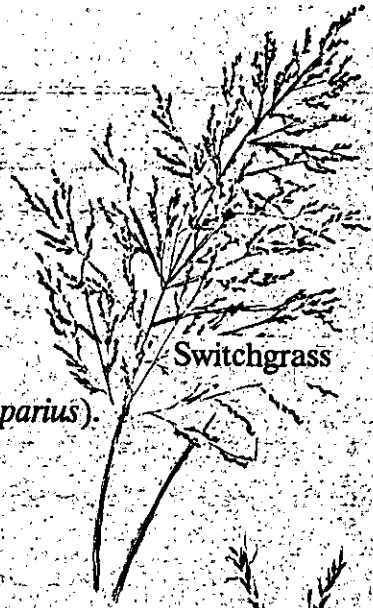
MAPLES

This area contains an abundance of young maple trees. These maples prefer wet soil types, which cover a good portion of Green Earth II. Looking around you, what do you suppose took place here, since it is so different from the area you were just in?



Maple

cover and food throughout the season. This grass is popular for reclamation work because of its speedy growth and easy establishment. It can be recognized by the patch of hairs that form an inverted "V" where the leaf meets the stem.



Switchgrass

LITTLE BLUESTEM (*Schizachyrium scoparius*). Little bluestem is a bunching grass achieving heights of about 4 ft. In the fall, both this and big bluestem color the prairie with a reddish hue. It is very adaptable because of its expansive fibrous root system, which penetrates deeply throughout either sand or rocky soils. It is found virtually throughout the U.S., and prefers upland areas. It can be identified by its leaves, which are flattened at the base, and a whitish line where the blades join the sheath. Abundant wildlife is attracted by this grass.

Little Bluestem

SIDEOATS GRAMMA (*Bouteloua curtipendula*) "Mesquite grass," as some people refer to it, is classified as a mid-grass, reaching about 3 ft. in its flowering stage. Look for it below the other grasses. "Sideoats" refers to the visual arrangement of spikelets or flower clusters along the axis of the plant. The leaves are distinguished by dead curly tips, which account for approximately 1/4 to 1/3 of the length of the blade, and have hairs which are very difficult to locate.

Sideoats Gramma

2.

MIXED PRAIRIE

As you walk through this area, you can see the five grass species represented. Along with these are some forbs, which are flowering non-grass natives of the prairie. Forbs also have deep root systems, as do the grasses, and most are perennials. Some examples for you to identify are:

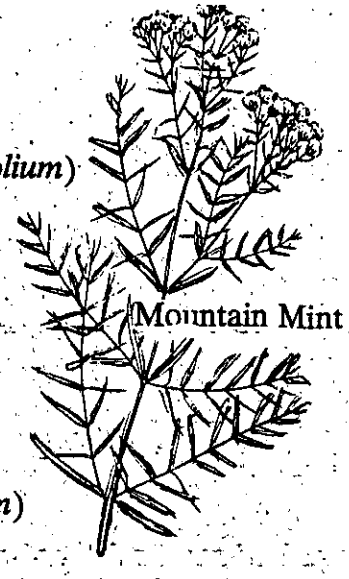
RATTLESNAKE MASTER (*Eryngium yuccifolium*)
This forb had an important historical medicinal value to native Americans and early settlers. It was believed to counteract the poison of a snake bite. The flowers are small and thistle-like, with stiff, bayonet-shaped leaves.

Rattlesnake Master

BONESET (*Eupatorium perfoliatum*)
As suggested by its name, boneset was believed to be useful in setting bones, so its leaves were wrapped with bandages, around splints. It was also believed to cure colds and fevers. It was used to induce sweating to "break the illness," with a tea made from its leaves. The white flower heads are numerous and loosely clustered. Note the opposite leaves that completely surround the stem.

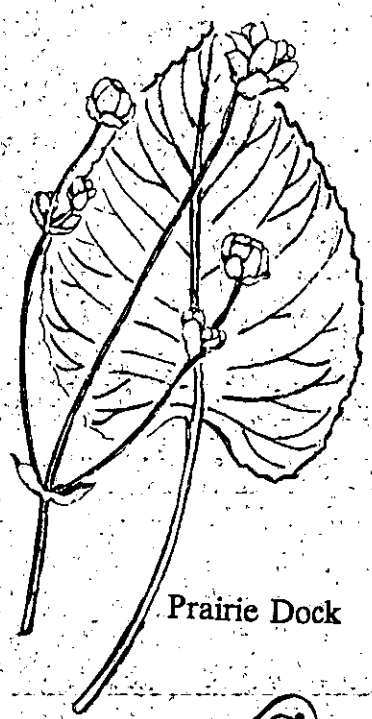
Boneset

MOUNTAIN MINT (*Pycnanthemum tenuifolium*)
Mountain mint may be used to make a tea from its leaves. It is distinguished by the square stems with leaves opposite along the stem. Crushing the leaves produces a strong mint odor. The white flowers dotted with purple bloom from July to September.



Mountain Mint

PRAIRIE DOCK (*Silphium terebinthinaceum*)
Used by early settlers, prairie dock was chewed as a gum. This large-leaved plant is a relative of the aster family. It can attain a height in excess of two meters! Look for it above all other plants. The most distinguishing feature of this yellow-flowering plant is the sandpaper-like leaves at its base.



Prairie Dock

BLACKEYED SUSAN, PARTRIDGE PEA, and TICK TREFOIL are some of the many other prairie plants that can be seen as you traverse the area.

3.

BLUEBIRDS

Look across the prairie to see one of our many bluebird boxes. The boxes were built because bluebirds were becoming scarce in the eastern U.S. due to competition for nest sites. Different from the bluejay, the eastern bluebird is bright blue with a reddish-brown breast and white belly.

Bluebird