RAVINIA

An Advocate for Community Resources

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Ferns in the Ravines of Central Ohio *by Brian D. Gara*

This issue continues an article on ferns found within Central Ohio ravines. Part One appeared in the Fall 2004/Winter 2005 issue of RAVINIA. I began the research in 2002 and will continue in an effort to create a comprehensive database of fern locations throughout central Ohio. Part One included basic information on fern ecology and the geology of central Ohio, as well as the results of fern surveys of ravines along the Scioto River in western Franklin County. The exposed bedrock in those ravines is predominantly Columbus and Delaware limestone. Part Two describes ravines along the Olentangy River, where characteristic bedrock exposures are composed primarily of Ohio and Olentangy Shale. As might be expected, fern species found growing on and around the shale exposures of the Olentangy River ravines are markedly different from those observed in the limestone ravines.

Shale Ravines

Glen Echo Park

In Clintonville, just north of The Ohio State University campus, Glen Echo Park is a prime example of an area that has been highly modified, even though the shale cliffs are still somewhat intact. Residential housing has been built almost to the edge of the cliffs, and some landowners are using the convenience of this location to dispose of yard waste and downspout runoff. Obviously, the city has viewed the streambed as the most efficient conduit for routing storm water runoff into the Olentangy River: several neighborhood storm sewers drain directly into its main channel, leading to a tremendous flow velocity during and immediately after heavy rains. This increased flow has gouged out an unnaturally deep channel, as well as creating a significant source of physical and chemical pollution into the stream. Also, a sanitary sewer line has been built directly beneath the center of the stream, further altering the natural hydrology of the ravine. As might be expected, these conditions have led to a depauperate (impoverished) fern flora in this ravine. On the one trip that I made to this site, I observed no ferns. Unless conditions along this ravine improve dramatically, it appears unlikely that any of the shale-loving fern species could be re-established successfully.

Overbrook Drive Adena Brook

Located farther north into Clintonville, this ravine lies between rows of residential houses that have caused a fair amount of physical erosion to the cliffs still present along Adena Brook stream. The hydrology of the watercourse itself, however, is in much better shape than in Glen Echo Ravine, as the stream appears to be perennial, with lesser amounts of channel modification and obvious pollution. Certain stretches of the cliffs appear to be in reasonable shape, and a few areas of healthy populations of ferns were found. Lowden collected Hayscented Fern from this location in 1990 as a new record for Franklin County (Lowden, 1997). I identified several individuals of this species growing directly on the shale cliffs during 2003 (Photo 7). Other species present in much smaller numbers on these bedrock exposures included Marginal Wood Fern *(Dryopteris marginalis)*, Spinulose Wood Fern *(Dryopteris carthusiana)*, and Lowland Fragile Fern *(Cystopteris protrusa)*. The City of Columbus owns portions of this ravine, which suggests it will continue to be protected from excessive disturbance. Removal of invasive non-indigenous vegetation and reduction in the amount of physical erosion to the cliffs would significantly enhance this area as habitat for shale-loving fern species.

Whetstone Park

Across High Street and further downstream along Adena Brook, the steep shale cliffs continue along a short stretch of Whetstone Park before the landscape levels out close to the Olentangy River floodplain. These cliffs are heavily eroded due to removal of vegetation at the top of the bluff as well as to the extensive foot traffic in a heavily used park. One small population of Christmas Fern was identified

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FROM THE CHAIR OF THE BOARD

In the fall of 2004 Friends of the Ravines published the *Guide to Protecting Urban Ravines.* With the help of three interns from the Ohio State University's Department of Natural Resources who each gave 15 volunteer hours to Friends of the Ravines, the distribution of the guides began. The EPA's Ohio Environmental Education Fund paid for the layout and printing, and a generous donation from Optimum Print Solutions boosted the total published by 500 additional copies at no charge.

In October, the Franklin County Greenways Committee and residents of Glen Echo neighborhood met at the site of the stream restoration in Glen Echo Park. Brad Westall from Columbus Recreation and Parks Department and Steve Phillips, director of OxBow Stream and River Restoration Incorporated, were the featured speakers. A representative from Friends of the Ravines talked about the slope restoration, which is now in its final stages. The 50 people who attended enjoyed a beautiful, sunny fall day in Glen Echo Park. Friends of the Ravines' model slope restoration project has been made possible through grants from United Way's Neighborhood Empowerment Grant and The Columbus Foundation's Conservation Fund.

In November a group of artists organized an Art Sale for the benefit of Friends of the Ravines, which generated several new supporting memberships and funds to pay for a banner for Friends of the Ravines to display at public events.

A grant from NiSource Environmental Challenge Fund is paying for three interpretive signs designed through the Industrial Science Department at Columbus College of Arts and Designs. In January 2005, the FOR Board of Trustees chose from three designs, and the interpretive signage project is now in the pricing stage. Interpretive signage should be completed and installed in Glen Echo Park by the fall of 2005.

In February 2005, OxBow Stream and River Restoration Inc. unearthed a huge red granite boulder while excavating an overflow drain at the western bridge over Glen Echo Run. The boulder was removed from the creek bed and has been placed beside the stream, where it adds a unique geological feature to the educational aspects of Glen Echo Park.

Friends of the Ravines is grateful to all of you for your support and ongoing interest. Your comments, feedback, and supporting memberships are a mainstay.

Martha Harter Buckalew, Chair, Board of Trustees

NEWS FROM THE RAVINES

ADENA BROOK COMMUNITY planted trees and shrubs in an area that had been cleared for a Capital Improvement Project on E. Schreyer in November and is promoting a program called Adopt-a-House. With a $50 donation, a nesting house with a plaque with the donor's name on it will be installed in the Adena Brook woodland. Contact Susan Michael Barrett at barrettsmb@aol.com to adopt and monitor a nesting house for bats, owls, flickers, woodpeckers or screech or saw-whet owls.

FLINT RAVINE has been designated an Ohio Natural Landmark. This site is recognized by the Ohio Department of Natural Resources as an outstanding example of a wooded, shale ravine and possesses exceptional value in illustrating the natural heritage of Ohio. As an Ohio Natural Landmark, this area will have its natural integrity preserved through the interest and concern of the Godman Guild Association.

RUSH RUN PROPERTY OWNERS recently opposed extending the Olentangy's scenic river designation south of Wilson Bridge Road for more than five miles. The Ohio Department of Natural Resources has designated the Olentangy a scenic river from the Delaware Dam to Wilson Bridge Road. Such a designation means that communities may have an advantage when applying for grants for river projects, that there will be a citizen's advisory council, and that the ODNR can review publicly funded projects that affect the river. Residents feared that extending the scenic designation south would have a negative impact on properties abutting the Olentangy River.

WALHALLA RAVINE RESIDENTS are concerned about the number of lost or abandoned pets found in the ravine. If you are missing a pet, you can send an email to info@walhallaravine.org to ask that a message be posted to our e-mail list, which also connects people interested in preserving the wooded ravine environments.

Our Thanks:

Fall 2004 Art Sale Participants
- *Alice Kelly*
- *Rebecca Morton*
- *Dawn McCombs*
- *Andrea Gorzitze*
- *Gail Burholder*
- *Bonnie Moseley*
- *Susann Moeller*

Fall 2004 Art Sale Space
- *Euroclassics*

Printing Assistance
- *Optimum Print Solutions*

Funding for Glen Echo Restoration
- *The Columbus Foundation*
- *United Way's Neighborhood Empowerment Grant*

Funding for Focus on Ferns
- *Keep Franklin County Beautiful*

Technical Support
- *Clintonville-Beechwold Community Resources*

The Woody Plantings Glen Echo Stream Restoration

The Glen Echo Stream Restoration is a project of the Columbus Department of Recreation and Parks, in partnership with Friends of the Lower Olentangy Watershed (FLOW), Friends of the Ravines (FOR), Columbus Division of Sewers and Drains (DOSD), and Friends of the Ravines on Glen Echo (FORGE). The contractor is Oxbow River and Stream Restoration, Inc.

Physical and biological improvement of the stream way in Glen Echo Park is well under way. The stream channel is starting to show a more natural pool and riffle pattern. Stream banks have been graded into more natural shapes, with gentle slopes replacing rock gabions. Native trees and shrubs were planted along the length of the park in early December of 2004. Establishing high quality woody vegetation is important to stabilize banks once armored with concrete walls and gabions. Soil will be anchored by large trees, small understory trees, and shrubs, all of which have ornamental or wildlife value. These woody plants are native to Ohio, meaning they grew naturally in the state. Later this spring, Oxbow will add about 30 more trees, including Tulip Poplars.

LARGE TREES

Swamp White Oak
Quercus bicolor

A magnificent canopy tree, the Swamp White Oak can grow in many soils and tolerates poor drainage. Its shallow fibrous root system will help prevent erosion. It is one of the faster growing oaks. It has very high wildlife value.

Canadian Hemlock
Tsuga Canadensis

An evergreen tree native to the eastern half of Ohio, the Hemlock grows best on north and east shaded slopes with acid soil. It also has a shallow fibrous root system. When healthy, it is a beautiful evergreen that provides bird habitat.

SMALLER UNDERSTORY TREES TO 35 FEET

Eastern Redbud
Cercis canadensis

Redbud is common on local ravine slopes, and its shallow fibrous root system can help hold soil in place. It tolerates a wide range of conditions. It can supply its own nitrogen. Beautiful pink blossoms emerge in early spring before the leaves.

Washington Hawthorn
Cratageus phaenopyrum

The Hawthorn can tolerate a range of soil conditions but prefers sun to shade. It can be recognized by the distinctive red-brown twigs armed with slender thorns. The red berries have wildlife value.

Carolina Silverbell
Halesia carolina

This small tree has multiple trunks and a deep, thick root system that secures the soil. It prefers sheltered moist north and east slopes with acid soil. The bell-shaped spring flowers and fall fruit are very attractive.

Nannyberry Viburnum
Viburnum lentago

Nannyberry tolerates a range of soil conditions. It has a shallow root system. It grows fast and is very cold hardy. The white spring flowers are strongly scented and the berries have high wildlife value.

The Greenways Steering Committee hosted a field trip for the public to learn about the Glen Echo Stream Restoration on site. Steve Phillips (Far Right) is the owner of Oxbow River and Stream Restoration, Inc.

SHRUBS TO 15 FEET

Red Osier Dogwood
Cornus sericea

Stream slopes have rows of twiggy shrubs buried in the soil that will take root to form bank thickets. This distinctively colored dogwood can tolerate wet conditions with its fibrous root systems.

Newly planted Swamp White Oaks (Quercus bicolor) will stabalize the sloping banks of Glen Echo Run.

Spicebush
Lindera benzoin

This aromatic shrub tolerates shade and is often found in wet areas. It prefers acid soil. It has a strong, fibrous root system. The beautiful red berries have high wildlife value.

Ninebark
Physocarpus opulifolius

The colorful layers of scaly bark of this shrub is distinctive. It tolerates a wide range of soils and can be found growing in wet areas. It has a fibrous, shallow root system.

Fragrant Sumac
Rhus aromatica

This dense shrub can form thickets on well-drained slopes. It has red berries and high wildlife value. It has three leaves but is not poisonous.

growing along the north-facing cliff located directly behind the Clintonville Women's Club parking lot. No other ferns were found in Whetstone Park. Prevention of continuous physical erosion through the establishment of a clearly defined trail system should be a high priority for any plan to improve the habitat for additional fern growth in this ravine.

Bill Moose Run

This ravine nestles between the Ohio School for the Blind and the Ohio School for the Deaf on the east side of North High Street. Both of these institutions were established more than 150 years ago, so the ravine has remained relatively protected from development. Because the watershed surrounding this ravine is smaller than in some of the other Columbus ravines, the volume of water has not been great enough to create the shale exposures present elsewhere. Therefore, even though the ravine is still in a reasonably natural condition, no significant shale cliff habitat exists for the establishment of ferns at this site. Only one small population of Christmas Fern was recorded during the single visit made to this site.

Camp Mary Orton

Owned by the Godman Guild Association, Camp Mary Orton consists of a substantial forested area adjacent to the east side of the Olentangy River and just north of the Josephinum Pontifical College on Route 23. Running through this forest is a very deep shale ravine, with cliffs dozens of feet high in some areas. The surrounding forest is used heavily for youth summer camps and corporate team-building activities. The shale cliffs are relatively undisturbed and contain significant fern populations in several areas. One of the most common species is Hayscented Fern, which can be found growing in dense clusters along the exposed shale. This ravine contains the largest population of this species I have found to date in Central Ohio. Two more species, Christmas Fern and Marginal Wood Fern, were found growing in fairly large numbers on the ravine embankments. Also present in smaller numbers was the Spinulose Wood Fern. I encountered a few individuals of Lowland Fragile Fern on moist stream terraces in the ravine, but they could be present in greater numbers, as this species is typically much more common earlier in the growing season than when I visited in late summer. Camp Mary Orton is one of the least disturbed ravine areas of central Ohio and is probably second only to the next area in sheer numbers of ferns present.

Highbanks Metro Park

North of Camp Mary Orton and running along the Olentangy River all the way to Powell Road is Highbanks Metro Park. The sheer size of this park, especially compared with the other ravines included in this study, created a bit of a quandary as to how to adequately survey the entire area for ferns. I requested and received an off-trail permit from the Metro Parks, which allowed me to search all areas of the park. The Metro Parks staff gave me a list of fern species recorded at Highbanks during an earlier survey, which proved to be a very valuable reference. Next, a map was generated that identified all of the major east-west ravines draining into the Olentangy River. I then systematically searched each of these ravines, starting from the one farthest north in the park and working gradually towards the southern boundary. In all, I made nine trips

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during 2003, in which I identified 426 ferns from 15 different species and entered this information into the database.

Virtually every ravine in this park had significant numbers and diversity of ferns. Along the shale exposures, the most common species were Christmas Fern (Photo 8) and Marginal Wood Fern (Photo 9). I found Hayscented Fern on the larger cliffs, but not in the numbers found in similar habitats at Camp Mary Orton. I also encountered Spinulose Wood Fern sporadically on these steep shale cliffs. Along moist stream terraces and wooded slopes of the park, several species not identified elsewhere in the central Ohio shale ravines were present, including the Maidenhair Fern *(Adiantum pedatum)*, Silvery Spleenwort *(Deparia acrostichoides)*, Lady Fern *(Atheryium felix-femina)*, and Glade Fern *(Diplazium pycnocarpon)* (Photo 10). All of these typically were found in areas somewhat isolated from the major trails in the park. One additional species of note, which grows in the drier hilltop woodlands, is Broad Beach Fern *(Phegopteris hexagonoptera)* (Photo 11). This plant was not recorded from the earlier Metro Park survey, but was present in fairly large numbers at

	Limestone Ravines				Shale Ravines					
Fern Species	Hayden Falls	Indian Run	OCLC	Hayden Run at Riverside Drive	Highbanks Metro Park	Camp Mary Orton	Ohio School for the Blind	Overbrook Drive	Whetstone Park	Gl Ecl
Broad Beech Fern (*Phegopteris hexagonoptera*)					x					
Bulblet Bladder Fern (*Cystopteris bulbifera*)	x	x	x	x						
Christmas Fern (*Polystichum acrostichoides*)					x	x	x		x	
Dissected Grape Fern (*Botrichium dissectum*)					x					
Ebony Spleenwort (*Asplenium platyneuron*)	x				x					
Hay-Scented Fern (*Dennstaedtia punctilobula*)					x	x		x		
Lowland Fragile Fern (*Cystopteris protrusa*)					x	x		x		
Maidenhair Fern (*Adiantum pedatum*)					x					
Marginal Shield Fern (*Dryopteris marginalis*)					x	x		x		
Narrow-Leaved Glade Fern (*Diplazium pycnocarpon*)					x					
New York Fern (*Thelypteris noveboracensis*)					x					
Northern Lady Fern (*Atherium felix-femina*)					x					
Rattlesnake Fern (*Botrychium virginianum*)					x					
Sensitive Fern (*Onoclea sensibilis*)					x					
Silvery Spleenwort (*Deparia acrostichoides*)					x					
Smooth Cliffbrake (*Pellaea glabella*)	x	x	x							
Spinulose Wood Fern (*Dryopteris carthusiana*)					x	x		x		
Walking Fern (*Asplenium rhizophyllum*)		x								
Total Species	3	3	2	1	15	5	1	4	1	

Table: Species recorded from Central Ohio limestone and shale ravines during 2003 fern inventory

Fern photos by Brian D. Gara

several different park locations during 2003. Highbanks Metro Park illustrates the critical importance of appropriate management practices for protection of these fragile shale ravine environments. The density of fern growth in and around the shale ravines of this park is a direct result of a well-thought-out management plan implemented by Metro Parks. The trail system has been built to accommodate a very high volume of park visitors each year, with all trails being very wide, flat, and well maintained. Educational signs and tastefully designed wooden fences reinforce the importance of staying on the trails. In the steep areas that are sensitive to high erosion from excessive foot traffic, boardwalks and stairs make navigation very easy for park visitors, while minimizing damage to the shale exposures. Furthermore, several substantial ravines are invisible to park visitors, as they are isolated from the main trail system and are therefore allowed to develop with a minimum of human disturbance of any kind. Finally, protection of the watershed areas draining into each of the ravines has allowed the streams to maintain a much more natural flow of water than that typically found in other central Ohio ravines. Valuable lessons can be learned from the ability of Metro Parks to allow significant numbers of people to enjoy this park while at the same time protecting a very sensitive resource from damage.

CONCLUSIONS AND FUTURE RESEARCH

Several interesting observations can be made from this study. When the table of species recorded from each of the ravines is analyzed (Table), there appears to be an obvious affinity for almost all of these species with the type of underlying bedrock present. Only four species were recorded from the limestone ravines and three of them, Walking Fern, Smooth Cliffbrake, and Bulblet Bladder Fern, were not present in any of the shale ravines. Of the 15 species identified in shale ravines, several were located only within Highbanks Metro Park (e.g., Glade Fern, Broad Beech Fern, Maidenhair Fern, and Silvery Spleenwort). Since this park is the only ravine in the study containing a substantial area of mature deciduous forest, it is possible that this factor and the overall natural condition of the ravines themselves are the predominant basis for the continued occurrence of these species. There are some ferns, however, that do occur in more than one of the shale ravines, growing directly on the cliffs or embankments of the Olentangy River tributaries. These are Christmas Fern, Marginal Wood Fern, Hayscented Fern, and Spinulose Wood Fern. None of these species was encountered in any of the limestone ravines associated with the Scioto River.

Also of note is the apparent relationship between fern diversity and the disturbance level in a given ravine. Although the limestone ravines generally had fewer species than the shale ravines, the least disturbed of these was Indian Run in Dublin, which had significantly more fern plants than any of the other limestone ravines, along with the rare (for Central Ohio) Walking Fern. Moreover, of the shale ravines, Highbanks Metro Park is clearly the least influenced by anthropogenic disturbance. The high diversity and large numbers of thriving fern populations must be attributed, at least in part, to the pristine state of many ravines located within this park. In contrast, Glen Echo Park in Clintonville, while still spectacular geologically, has been so drastically altered by human development that it now contains no evidence of fern growth whatsoever. Some of the possible management practices that can be implemented in these urban ravines in order to improve the conditions for fern growth are:

- creation of clearly defined trails system, including stairs and boardwalks, to prevent erosion in the steepest areas
- educational signs and brochures indicating the fragile nature of these areas and the critical importance of staying within the identified trail boundaries for the overall survival of the sensitive species, including ferns, that grow within the ravines
- improved watershed management practices to re-establish a more natural hydrologic regime within the stream channels, which may include re-routing of storm water and sanitary sewer lines to prevent the high-flow velocities created by such systems in an urban setting
- removal of physical pollution and reduction or elimination of erosion caused by residential yard waste and trash disposal occurring along some of the slopes in the more highly developed ravine areas
- restoration of adequate forest area, both within and surrounding the ravines
- removal of invasive, non-indigenous vegetation (e.g., shrub honeysuckle, garlic mustard) that typically thrive in urban forest "edge" environments

It is my intention to continue surveying all known ravine areas within central Ohio in order to create as complete a picture as possible of the existing fern species distributions. Several less-accessible limestone and shale ravines occur in the region, and I would very much like to study these if the appropriate permissions for access can be obtained. As more information is recorded, a much better understanding of the factors that dictate the distribution of fern species will emerge. Understanding these relationships is the key to the development of appropriate management plans targeting the re-establishment of fern species within ravine habitats in central Ohio.

A listing of all references cited in this article can be obtained by sending a stamped, self-addressed envelope to

FRIENDS OF THE RAVINES
P.O. Box 82021, Columbus, Ohio 43202

It is time to take responsibility for the rain that falls in your watershed

Americans like all the rights that go with owning land and love the old saying "They're not making any more of it." But in a way, we have been making more land in Ohio for a long time, more developable land that is. We have been filling in wetlands, shorelines, and flood plains since the pioneer days, and although there are regulations to stop this practice, some still find ways around them. The more that a few are allowed cut and fill to build close to lakes and streams, the less healthy it is for everyone. In Columbus, the Scioto and Olentangy watersheds have reached the hydrologic tipping point as a result of increased suburban development.

Remember last year's storm over the 2004 Christmas holiday. Central Ohio received about five inches of precipitation in the form of rain and snow. As a result there was a lot of flooding, and the Scioto River crested south of Columbus at about the same elevation as it had during the floods of 1912 and 1959. In 1913, Central Ohio had received 18 inches of precipitation. Why did it require only 30 percent of the precipitation last year to create the same volume of water south of town? The short answer is that now the combined watersheds of the Olentangy and the Scioto rivers have significantly less capacity to absorb, delay, or slow water during a major storm event. This is in spite of the Delaware Reservoir's capacity to hold back flood water.

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Brief Biography of Ben Hayes

Ben Hayes (1912-1989), graduate of The Ohio State University School of Journalism, joined the staff of the *Columbus Citizen* as a reporter and feature writer in 1941. The merger of the *Columbus Citizen* and the *Ohio State Journal* created the *Columbus Citizen-Journal* in 1959. In 1970, Governor James A. Rhodes cited Hayes for his role the advancement of the prestige of Ohio. Two years later he was recognized by the Franklin County Historical Society for making local history come alive and for his role in the growth of German Village as an historical restoration. After his retirement in 1978 he worked on material for *Ohio Magazine* and *The Fabulous Short North*. On July 28, 1989, the story of this beloved Columbus writer ended. Ben Hayes' files are available at the Ohio Historical Society.

Ravines *By Ben Hayes*

It wasn't easy—a bright little stream named Doe Run once flowed along Spring-st from the East Side to the Scioto River, and hiding it was a sweaty task. When with stone and mortar a conduit had been arched across it, the flowing spring water was covered with wagonloads of fill. Then downtown Columbus could be flat.

Farther north other streams have cut their way from the highlands down to the Olentangy plain resulting in beautiful wooded ravines. On the North Side and in Clintonville there are Iuka, Glen Echo, Walhalla and Overbrook.

This time of year these irregularities twisting through the residential city are georgous assets. Persons living on the brink of the gorges now look across a sea of blooming trees.

Big dark boulders and soaring sycamores seemed the feature of the Iuka gouge as I strolled through it Wednesday. The hollow is unexpected; it begins in "fraternity city" east of the Ohio State campus and runs to Smith Skating Rink on the east side of Fourth-st. The stream, now hidden, must have flowed across High-st and down through Mirror Lake Hollow behind the Ohio Union.

Farther north, behind North High School, is a genuine canyon. It is Glen Echo. Long ago, in its wide gulch between the Olentangy and High-st, Pat Murnan, the Irish overlord of gambling once had a casino. And it was called Cripple Creek. East from High-st the stream has cut through the shale leaving high cliffs. (One street is Cliffside.) It's a dangerous gorge, also trashy. People throw rubbish into Glen Echo. Farther east, it widens and on the valley floor there is a city park. It is a beautiful place.

The wildness of Walhalla attracted Mat Armbruster, the scenic painter; he bought the forested, uneven land. Al G. Field, his No. 1 customer, told him he was a fool.

Armbruster broke his land into lots and gave streets romantic names from Wagnerian opera. He made so much money Field turned green with envy.

Beeches and oaks grow tall in Walhalla, and I saw many squirrels and red birds. It is the haunt of opossums and raccoons. Persons living on Clinton Heights, the ravine's north lip, feed coons regularly.

Walhalla is marred by trash and debris at High-st but it soon becomes cleanly rustic. With its branches and ramifications it gives pleasure to hundreds of residents. One wonders about the man who insisted that a roadway be run through it. A bridle path or Indian trail would have been enough. Without the street, the stream could bicker all the way down the valley.

Overbrook's stream, being still farther north, carries the water from the Indian Springs to the Olentangy. Old timers of the North Side cherish the Indian Springs section. Rand Hollenback, Clintonville publisher, recalls tapping big maple trees.

I like the wild cowparsnips that bloom in the ravine in Whetstone Park. Their huge creamy heads always open by Memorial Day.

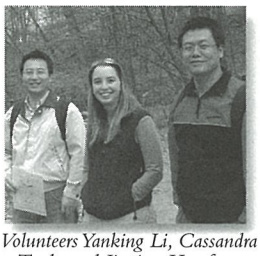
This article appeared in the *Columbus Citizen-Journal* on April 27, 1962. It is reprinted with permission from the *Columbus Dispatch*.

It is time to take responsibility, *continued from page 6*

At the time of statehood, Ohio's watersheds were covered with forest. It is hard to imagine the immensity of the ancient deciduous forest, let alone its capacity to store water, but it is probable that this capacity, combined with that of natural streams and wetlands, was sufficient to prevent flooding. However, by 1912, most of the watershed was in cultivation and lowlands were being artificially drained for more productive farming. Yet most of the watershed was rural and the amount of impervious surface areas in the watersheds was insignificant. Most streams still meandered in the ravines and valleys, with currents slowed by fallen trees and protected by wooded canopies.

Today much of the watershed has been converted to urban and suburban development or intensive farming. This has dramatically increased the amount of land with impervious surfaces and has led to many miles of stream being placed in open ditches or large storm pipes. Most of the rain that falls on roofs, streets, and parking areas is immediately channeled into storm ditches or sewers. These engineered devices quickly deliver water away from buildings and streets into tributaries or directly into the rivers. Most "green space," whether public or private, is planted in grass and landscaped to drain quickly. Little forest cover exists to break the fall of heavy downpours. Thus, more storms have a greater probability of causing flood damage to property and devastation to stream ecology as a greater percentage of rain becomes runoff that reaches the Scioto in a shorter period of time.

Standards for suburban development require that retention basins be constructed to hold runoff on-site. For a limited time these basins delay the discharge of water into storm sewers or open streams. It is evident that continued low-density, auto dependent development will soon sufficiently increase runoff and accelerate the rate at which water reaches the Olentangy and Scioto to cause major flooding in Columbus. Another flood control reservoir is not the answer.



Volunteers Yanking Li, Cassandra Tuttle, and Jianjun Hao from OSU's Department of Natural Resources helped distribute ***Guide to Protecting Urban Ravines****.*

Now is the time when we must recognize watersheds' natural ability to absorb and slow the movement of rainwater and partner with it to prevent flooding. The first step toward achieving this goal is to educate every resident about the smallest watershed they live or work in and how it relates to the larger watersheds that make up the river system. Neighborhood organizations and property owners should no longer describe their boundaries by streets or streams. Rather boundaries should be redrawn to encompass watersheds by identifying the ridge lines that determine which way the water runs after it falls as precipitation.

For example, the Clintonville area has numerous deep ravines with significant topography. Each ravine is a watershed with a stream flowing directly into the Olentangy River, and each is part of a larger watershed. Residents who live on property on both sides of each ravine should be organized, and the boundaries of the larger community organizations should respect and enclose entire watershed boundaries rather than attempt to divide them. Until this basic change in political representation occurs, members of a given area will continue to find it easy to avoid responsibility for the rain that falls in their watershed. Everyone on Earth lives in a watershed, but those who live in watersheds with steep topography are the most important. They may have the most to gain by protecting the view from their ridgeline property.

YES! I WANT TO BE A SUPPORTING MEMBER OF FRIENDS OF THE RAVINES.

Name_____ E-Mail_____ Phone (____)_____

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Indicate any special instructions for listing of your name in the Roster of Supporting Members._____

Membership Category *(Make check payable to Friends of the Ravines.)*

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___ Contributor: $25 ___ Household: $40 ___ Patron: $100 ___ Corporate (Over $100) _____

Indicate Shirt size: ___ M ___ L ___ XL *Anyone contributing $100 or more will receive TWO T-Shirts!!*

I want to volunteer to help Friends of the Ravines carry out its mission to protect ravine areas and educate the public. I can help by:

___ Distributing *Ravinia* ___ Writing Articles for *Ravinia* ___ Preparing Mailings
___ Maintaining the Website ___ Giving Computer Advice ___ Helping with Ravine Clean-ups
___ Planning Community Forums ___ Removing Invasive Plants in Ravines ___ Becoming an On-Call Volunteer

My special area of expertise is _____ My favorite ravine is _____

Friends of the Ravines, PO Box 82021, Columbus, Ohio 43202

Guide to Protecting Urban Ravines Feedback

"What an exciting publication! I found it to be informative and clearly written."

Friends of the Ravines had an 8% return on the survey questionnaires distributed with the *Guide to Protecting Urban Ravines*. This is what we learned from you. You liked it! You gave high marks for general appearance, clarity of text, and the scope of information. In the evaluations of content, the section "Working with Invasive Plants" was considered the most useful. It was followed by the sections "Working with Geology and Soils," "Native Plants," "Resource List," and "Maintaining Ravine Property," in that order.

The guides were distributed through local libraries, condominium associations, environmental groups, and ravine associations. Locations where free guides could be obtained were listed in the media, and FOR received requests for guides from residents of Grove City, Worthington, and Columbus. When this issue of *Ravinia* went to press, about 4000 copies of the guide had been distributed throughout Franklin County.

"Thank you for sending me a copy of your guide. It will simplify my efforts to maintain my ravine."

New Supporting Memberships:

Dennis R. Cebul, M.D.
Bonnie H. Davis
Greg Denby
Susan and James Edison
Kari Gunderson
Jeremy and Jane Harris
Barbara Hunt
Jennifer Jasmin
E. Gail and Jeffrey Kalbus
Susan Carrol Keister
Rebecca Lineberger
Paul and Margery Love
Dr. Alan Magnuson
Bernard Master
Robert and Evelyn Mauck
Cynthia Nemeth
Ildi Pallos
Nancy Rudd and Bob Gold

The Columbus Foundation and Keep Franklin County Beautiful Fund Friends of the Ravines' Activities

The Columbus Foundation has awarded FOR a conservation grant of $10,855 for the slope restoration of Glen Echo Ravine. The award, authorized from the Dr. Thelma I. Schoonover Fund, will also help purchase native plant species for the southern slope of Glen Echo Ravine and purchase split rail fencing to install on the southern ridge to control pedestrian foot traffic.

Keep Franklin County Beautiful has awarded $1000 for outreach activities to educate Franklin County residents about the ferns in the ravines of central Ohio. Focus on Ferns activities include a public forum and a photograph display for Riverfest on May 21 at Northbank Park and will culminate in reintroducing native ferns to the newly restored slopes of Glen Echo Ravine Park.

Ravinia is the official publication of Friends of the Ravines.

CONTRIBUTORS

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Submissions and suggestions are welcome.

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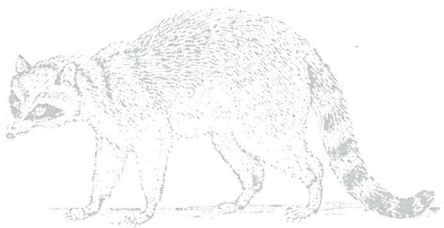

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