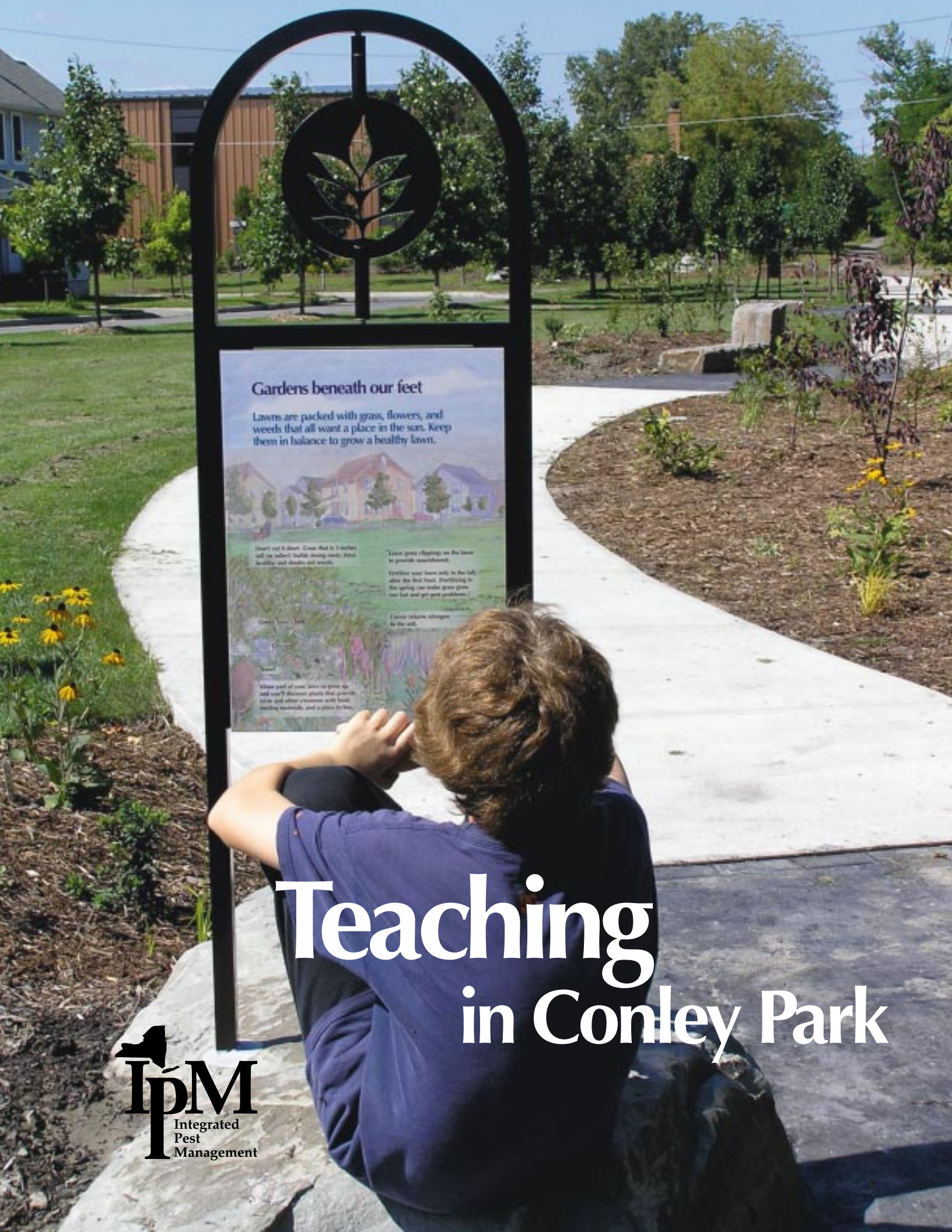


Teaching in Conley Park

IPM Integrated Pest Management

Contents

Location of interpretive signs

Conley Park is on Alice Miller Way between the P&C (212 Hancock St.) and the Sciencenter (601 First Street).The park borders Cascadilla Creek and serves more than 900 downtown residents.

From parking lot to park: the story of Conley

Years ago, Conley Park wasn't a park; it was a road. Lake Avenue continued from Hancock Street towards Cayuga Lake, and cars drove here, lit at night by the street lights that can still be seen along the creek. At one time, this parcel of land supported community gardens. When the Mutual Housing Association of Tompkins County began building their units across the street around 1996, this area was used as a parking lot and staging area for heavy equipment, which compacted the soil, destroying its usefulness as a park. That is, until the city's Department of Public Works, with guidance from Forester Andy Hillman and Cornell University, restored the area. Professors Bassuk, Trowbridge, and Rossi, plus Cornell Test Gardens staff and horticulture students deep-plowed the area, added organic amendments, and planted berms with pest-resistant shrubs, trees, and roses. One of their goals was to build a beautiful urban space that required little maintenance and few chemical pesticides. Their success inspired the NYS Integrated Pest Management Program several years later to interpret the park and its surroundings from an IPM perspective.

The City of Ithaca named the park after Edward J. Conley in 2002 to recognize his 30 years of public service as the mayor of Ithaca (1972-1980), member of Common Council (1969-1972), Tompkins County legislator, and representative on the Ithaca Town Board.

The IPM interpretive walkway—collaborators

City of Ithaca—Andy Hillman, Forester; Streets & Facilities staff
Parks Commission
New York State IPM Program, Cornell University—Carrie Koplinka-Loehr, Debra Marvin, Jennifer Grant, Claudia Coen
Mari Mitchell, Landscape Architect and Artist
Youth Employment Service (Christine Richards, supervisor and MRP candidate at Cornell; Kate Heptig, Shane Kastenburger, Jay Owens, Jack Thorsen, Kelly Peacock, Kara Brodsky, Nick Bunce-Herring)
Nina Bassuk, Cornell University, Urban Tree Specialist
Will McKenney, Eagle Scout

Special thanks to the Park Foundation, Inc., and to the New York State Department of Environmental Conservation for the grants that made this project possible.

Participating businesses:
Accufab, Inc., in particular, Mike Masters—handcrafted metalwork
Finger Lakes Stone—Local Llenroc stone
Folia Industries—Laminate signs
McPherson Builders—Stamped concrete
Nurseries: Plantasia, Bakers Acres, Harvest Hill, White Oak
SpecConsulting (Gary Bush)—Stepping stone engraving

Using the walkway

Conley Park is a small streamside green space, and the walkway was designed to reflect these surroundings. The sinous portions of the walk, with dark grey, slate-patterned stamping, reflect the creek bottom itself. The Llenroc benches, which also serve as sign footings, are also meant to evoke local streams and gorges.

At the far end of the park is the Neptune Monument, part of the Sciencenter's Planet Walk. The footer for this monument was the first structural piece of the park; the rest of the grounds were built around it.

The interpretive signs begin at the north end of the park (near the Sciencenter) and progress to the south (towards the P & C), as shown in the sidebar on the opposite page. Each frame is topped with a hand-crafted spinning disc that relates to the content of the laminated sign. The artwork for each sign is original, sketched on-site by a local artist and completed with watercolors and other media.

Each sign can be used to convey different concepts about the environment. We describe each sign briefly in this booklet and offer topics to explore, such as integrated pest management, which is mentioned in the first sign.

Hidden gem sign

As you look at the sign, to the right of you is the Statewide Living Memorial Grove. The chanticleer (callery) pear trees were planted by the City of Ithaca in honor of rescuers who lost their lives on September 11, 2001. They are a gift of the NYS Urban & Community Forestry Council, Schichtel's Nursery, and the Bartlett Tree Expert Company.

Integrated pest management

People who practice integrated pest management, or IPM, take a sustainable approach to managing pests on their gardens (or crops), flowers, trees, and lawns. Those pests might be diseases, insects, mites, weeds, or even vertebrates, such as deer. The goal is to keep risks to human health and the environnment to a minimum—yet not get too expensive, either.

Some of the methods used in an IPM approach are

- biological, such as releasing helpful mites or insects to attack pests;
- cultural, such as rotating vegetable crops in the garden so they aren't grown in the same spot each year;
- chemical, such as spraying super-strength vinegar on weeds to kill them;
- genetic; for example, selecting plants that resist diseases and insects;
- physical (e.g., placing screens on windows to prevent flies and other creatures from entering a home).

Taking an IPM approach means that you look for problems on a regular basis, properly diagnose them, and consider the alternatives for managing the pest.

Hidden gem

"Conley Park is one of the city's little gems," once remarked JoAnn Cornish, Planning Department liaison to the Parks Commission. This sign invites you to make some discoveries. Students might use a hand lens to look for insect damage on the trees and plants, for example.

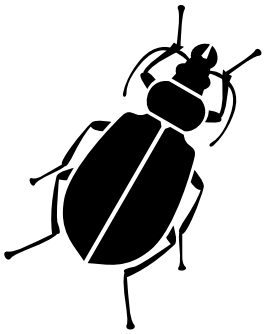
The sign's rotating metal disc shows purple coneflower, or Echinacea, which is planted in the nearby berms. Echinacea has healing properties and also keeps the soil in place. Planted behind the sign is Allegheny Serviceberry, a native tree.

Good bugs? You bet!

Some of the beneficials you can see here are a predatory fly (on the Japanese tree lilacs, upper left); a ladybird beetle and aphids (lower left); hover flies (on the purple coneflower and black-eyed susan in the foreground), and a garden spider known as the black and yellow Argiope (lower right), which creates a zig-zag on her spiral web.

The stepping stones: beneficials

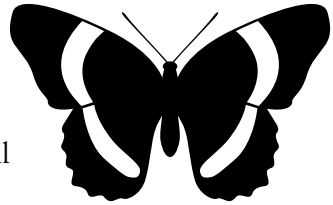
These stones represent the many thousands of kinds of insects and spiders that eat pests or help us in other ways. In fact, most insects and spiders are working on our behalf; very few are harmful.



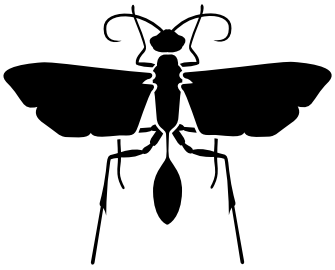
Ground Beetle

Adult length: 1/8 to 1 inch
These fast-moving predators are blue-black or dark brown and may have a metallic sheen. Commonly found in gardens and fields, they hunt at night. Favorite food: cutworms, slugs, snails, gypsy moth larvae, and root maggots.

Admiral Butterfly



Adult butterflies feed on nectar and are good pollinators. Although their larvae (caterpillars) are generally leaf-eaters, a few species will eat other insects.

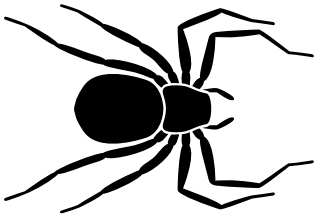


Wasp

Although a few of the large predatory wasps sting humans, none of the small, parasitoid wasps do. These wasps are the size of small ants, or even tinier. Many lay their own egg in either the egg, larva, or adult of their host (usually a pest). As the immature wasp develops, it ultimately kills the host.

Hover fly (syrphid fly)

Adult length: 3/8 to 3/4 inch
Adults resemble bees or wasps, especially if striped black and yellow, but they do not bite or sting. Hover flies feed on flower pollen and nectar. The female often lays her eggs near aphid infestations. One larva (immature) can eat up to 400 aphids throughout its development!



Spider

Common spiders in New York are jumping spiders, crab spiders, wolf spiders, and orb weavers. Some of these eat aphids, scale, and mosquitoes.

Ladybird beetle (ladybug)

Adult length: 1/8 to 5/8 inch
These can be red, yellow, orange, grey, or black, and may or may not have spots. Although a few have become pests in recent years, most ladybird beetles are helpful. Adults and larvae (which are alligator-shaped) eat aphids, scale insects, thrips, mealybugs, and mites.

Right plant, right place sign

The right plant is one that will resist pests, fit the space you have, do well in the amount of sunlight and water that is provided, and tolerate the pH of the soil. You may have already discovered that some plants in your yard do better in one spot than in another because of some of these conditions. Sometimes you can can create the "right place" if conditions aren't perfect. Here are some stories from Conley Park.

Livin' in the city: the hard life of a tree

Urban trees put up with confined areas for their roots, hard soils, harsh sunlight, poor drainage, pollution, and other troubles. How do we help them? The Urbanite ashes in a row near the P & C, are planted in a berm (the huge raised bed covered with mulch). Inside the berm is a deep layer of bank-run gravel, then a mixture of topsoil and organic material. The gravel allows for air and water movement and the soil provides nourishment. Notice that the swamp white oaks along Alice Miller Way that are closest to the berm have a wider girth and are taller than those that are planted further away from the berm (towards the Sciencenter).

Under the new walkway at the north end of the park, the City placed "Cornell structural soil," a uniformly-sized gravel mixture with a clay and hydrogel coating that stays porous even when compacted. Air and water move freely through the macropores in it and the roots of the Chanticleer pears grow through it. Without the structural soil, their roots could be blocked by the concrete.

When the roots of trees can't breathe, they suffer. Just take a look: the soil across the street next to Mutual Housing is compacted and was never amended with compost. The hackberry trees there were planted at the same time as the swamp white oaks in Conley Park. For several years now the hackberries have been stunted, while the oaks have grown well.

Gardens beneath our feet sign

Shown on the cover of this booklet, this sign suggests ways to care for lawns without too many chemicals. The lawn of Conley Park is full of many different kinds of plants besides grass—for example, clover, crabgrass, and dandelions. The City has decided that it doesn't need to be weed-free, and doesn't apply herbicides.

Sometimes weeds tell you what's wrong with your soil. For example, plantain grows where the lawn is trampled. Ground ivy moves in where the ground drains poorly. Black medic grows in soil that is low in nitrogen, and chickweed and goosegrass are indicators that the grass is being mowed too short.

Five free brochures, *Weeds in Your Lawn, Answering your questions about organic landcare, Grubs in your lawn? Weeds in your garden,* and *IPM for Homes* provide great information. Call 800-635-8356 (NYS IPM Program) for single copies or download them (www.nysipm.cornell.edu).

Right plant, right place

The rotating metal disk depicts a leaf of the Urbanite ash, chosen for its general resistance to insects and diseases; this tree is also shown in the upper right of the drawing. Despite our good choice, however, it's unlikely that Urbanite ash will withstand the emerald ash borer, a serious new pest that is destroying ash trees in Michigan and other states and may soon reach New York.

Pest-resistant trees, shrubs, and perennials in Conley Park

Common name	Scientific name	Description
Allegheny Serviceberry	*Amelanchier laevis*	Whether trained as a shrub or tree, this native offers spring flowers and edible autumn fruits. Deer-resistant; good soil stabilizer.
Ash	*Fraxinus pennsylvanica* 'Urbanite'	Vigorous, seedless urban favorite.
Blackeyed Susan	*Rudbeckia hirta* 'Goldstrum'	This native favorite is easy to care for; offers weeks of bright color.
Blazing Star	*Liatris spicata*	These prairie natives prefer well-drained soil. They attract butterflies, bees, and beneficial insects.
Blue False Indigo	*Baptisia australis*	Once established, this long-blooming native tolerates drought and either clay or sandy soils.
Blue Hyssop	*Agastache foeniculum*	Native. Tolerates drought; fragrant; long blooming; edible leaves, flowers.
Bottlebrush Buckeye	*Aesculus parviflora*	This native's spreading habit makes it a bank stabilizer, with interesting foliage and an unforgettable floral display. Prefers moist soil and full sun; provides seeds for winter wildlife.
Box Elder	*Acer negundo*	This maple provides food and shelter for birds.
Butterfly Milkweed	*Asclepias tuberosa*	Our native meadow milkweed needs well drained soil and sun to thrive. It is essential to the life cycle of the monarch butterfly.
Callery Pear	*Pyrus calleryana* 'Chanticleer'	Excellent shape and habit for cities; tolerates a wide range of soils.
Christmas Fern	*Polystichum acrostichoides*	An evergreen groundcover preferring moist soil and light shade. Ferns are being used to remove toxins from spoiled soil.
Doublefile Viburnum	*Viburnum plicatum* 'Tomentosum'	One of a large family of native shrubs, provides habitat and food for birds. Showy blooms. Resistant to the viburnum leaf beetle.
Fragrant Sumac	*Rhus aromatica* 'Gro Lo'	An excellent bank stabilizer. It tolerates moist or dry soils and its attractive leaves are deer resistant.
Fringetree	*Chionanthus virginicus*	A multi-stemmed, native shrub with showy spring foliage and fragrance. Birds love its fruits.
Gold Mound Spirea	*Spirea bumalda* 'Goldmound'	Easy to care for; colorful in spring and summer. Deer-resistant.
Goldenrod	*Solidago rugosa* 'Fireworks'	This meadow native offers excellent habitat for beneficial insects and is said to be deer resistant.
Hackberry	*Celtis occidentalis*	Popular choice in urban settings for fast growth, shade, adaptability.
Honeylocust	*Gleditsia triacanthos*	Native; popular for urban settings; hardy; provides soft shade.
Japanese Tree Lilac	*Syringa reticulata* 'Regent'	Resists powdery mildew, stabilizes the soil, and is often chosen for its mature height, which does not interfere with power lines.
New England Aster	*Aster novae-angliae* 'Hella Lacy'	Native asters like moist soil and full sun, rewarding us with late-season color. Its composite flowers attract beneficial insects.
Northern Bayberry	*Myrica pennsylvanica*	Persistant foliage; waxy berries. Desirable native landscape plant.
Pekin Lilac	*Syringa pekinensis*	Resists powdery mildew; stabilizes soil with rapid, shrubby growth.
Pinks	*Dianthus deltoides* 'Flashing Lights'	Easy-care border plant; low-matting habit. Bright color!
Purple Coneflower	*Echinacea purpurea* 'Magnus'	A colorful native. Performs beautifully in well-drained soil.
Red Chokeberry	*Aronia arbutifolia* 'Brilliant Red	Colorful, native shrub; disease resistant; offers fall fruits for wildlife.
Red Chokecherry	*Prunus virginiana* 'Canada Red'	Native. Wonderful foliage color. Birds relish its many fruits.
Red Osier Dogwood	*Cornus sericea* 'Cardinal'	Native. Great winter color; stabilizes soil. (Also called *C. stolonifera.*)
Sedge	*Carex morrowii* 'Bowles Golden'	Tolerant of sun or shade and dry, moist, or wet soil, this sedge greens up early in spring. It is often used by waterfowl as habitat in the wild.
Smokebush	*Cotinus coggygria* 'Royal Purple'	Native. Tolerates most soils; resists drought; colorful; fun texture.
Swamp White Oak	*Quercus bicolor*	Adaptable native; food source for wildlife. Matures to 60 ft.
Virginia Sweetspire	*Itea virginica* 'Henry's Garnet'	Handles very cold winters when given moist and fertile soil. It has nice fall color and offers a long fruit season.

Protecting Cascadilla Creek

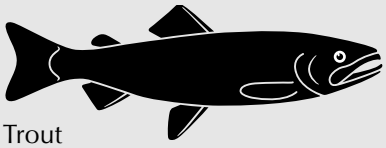
Cascadilla Creek travels through Ithaca, past Conley Park, and into Cayuga Lake. More than a dozen kinds of fish live in the creek, and many of them spawn here or near Cascadilla Falls. Most of these fish and other organisms prefer clear water. Because development and urbanization have removed the plant zones that protect water, some of the natural filters that keep water clean are gone, making it vital to re-create *riparian buffers* where possible.

What is a riparian buffer, and how does it work?

"Riparian" means "pertaining to the bank of a river, stream, or lake." A riparian buffer is a vegetation zone consisting of grasses, shrubs, and trees that stabilize soil and reduce storm-water runoff and chemical leaching. Riparian buffers improve aquatic life and water quality for us all.

Fish that frequent Cascadilla

Bass (small-mouthed and rock)
Black-nose dace
Carp
Minnow
Salmon
Sea lamprey
Smelt (rainbow)
Sunfish
Trout (brown and rainbow)
White sucker



Trout

Plant roots support the plant and take up nutrients, water, and oxygen. The roots of grass plants can quickly colonize and stabilize soil, whereas shrubs and trees enhance this effort for the long term. Plants hold soil in place and reduce surface-water runoff. In many cases, plants absorb or convert damaging substances, thereby reducing risks to ground water.

Why are riparian buffers important? Storm-water runoff from both urban and agricultural areas is the largest contributor to water pollution. Waterways such as Cascadilla Creek can become polluted with chemical and nutrient runoff, as well as silt. Turbidity (suspended silt that makes the water cloudy) in Cayuga Lake reduces water quality for drinking, swimming, and fish spawning. Phosphorus and nitrogen—ingredients in lawn and garden fertilizers—encourage algae and aquatic weeds if they reach our waterways. Toxic chemicals from cars and industries, as well as bacteria from animal wastes and sewage systems, can infiltrate the ground- and surface water. Restoring streamside plants along our creeks and streams helps them to serve as nature's filters.

How can you and your family prevent water pollution?

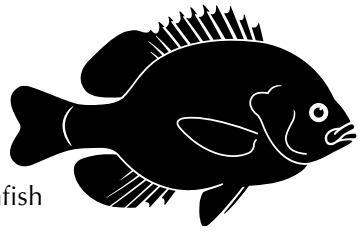
1. Keep debris out of street gutters
2. Apply lawn and garden chemicals sparingly
3. Dispose of household chemicals, paints, and petroleum products properly (Contact the Tompkins County's Household Hazardous Waste Depot, 273-4496)
4. Plant groundcovers, shrubs, and trees to reduce erosion
5. Choose plants with low requirements for fertilizers and pesticides

(Continued on p.8)

Streamside helpers

The dragonfly on the metal disc represents the many aquatic invertebrates that spend part of their lives in nearby waters. Adults are active predators, capable of flying in spurts as fast as 75 miles per hour. They eat insects that are pests (and some that are not) and are themselves eaten by birds and frogs.

Shown in the drawing are two kingfishers, which live and fish here, Japanese tree lilacs (upper right), bottlebrush buckeye (foreground, right), and native bayberry (foreground, left).



Sunfish

Resources

www.nysipm.cornell.edu
The New York State Integrated Pest Management home page

www.gardening.cornell.edu
Cornell's gardening home page

www.gardening.cornell.edu/lawn/almanac
Tips for lawn care

www.nysipm.cornell.edu/publications/waterqual.html
How you can protect water quality

www.nysipm.cornell.edu/publications/homesbro/index.html
Take care of your part of the ecosystem

http://branchingout.cornell.edu/BranchingOutHome.html
Tips for healthy landscapes

www.dec.state.ny.us/website/dow/mainpage.htm
DEC's suggestions to protect our waters

www.co.cayuga.ny.us/wqma/greenthumbs/
Green Thumbs for Blue Waters! (Includes a list of buffer plants)

www.cayugalake.org/
The Cayuga Lake Watershed

www.ipcnys.org/
Learn to avoid planting invasive species

IPM Integrated Pest Management
CORNELL
9/04 Cooperative Extension

6. Reduce blacktop and concrete areas, which collect and increase rapid runoff

Which plants create effective riparian buffers?

Conley Park's streamside plants were chosen for their hardiness, growth habits, and effective root systems. In an open setting, landowners often choose large trees where mature size is not an issue. Be sure to learn which plants are considered invasive. We suggest the use of natives and their cultivars because plants do best in areas similar to where they originated.

We've chosen the following plants as streamside helpers. Like most of Conley Park's plants, however, they do double-duty. Many are deer-resistant and drought-tolerant. They also support beneficial insects, birds, and wildlife.

Here are a few of Conley Park's streamside helpers:

Bottlebrush Buckeye (*Aesculus parviflora*). An excellent choice for bank stabilization. This native shrub, with its large and showy flowers, slowly colonizes an area with suckering growth.

Northern Bayberry (*Myrica pennsylvanica*). This northeast native is often recommended for the streamside. Its semi-evergreen leaves and fragrant berries are deer-resistant.

Gro-Lo Sumac (*Rhus aromatica*). Like its famous cousin, the staghorn sumac, Gro-Lo has outstanding fall color and colonizes uncultivated areas—but it is not as large or aggressive. It has been suggested as a replacement for burning bush.

'Cardinal Dogwood' (*Cornus sericea* or *C. stolonifera*) Dogwoods are familiar woodland plants in our area, where they colonize woodlots and wet areas. They are a great choice for streambanks. Conley Park's dogwoods offer texture and bright color in the winter landscape.

We've included Christmas Fern (*Polystichum acrostichoides*) in Conley Park to highlight the science of phyto-remediation, also called bio-remediation. More than 400 plant species are being used throughout the world to correct and improve soils with high levels of undesirable components, such as heavy metals. This process gives new life to old, unusable agricultural soils.

For a list of locally suitable plants, we suggest the following website:
http://www.co.cayuga.ny.us/wqma/greenthumbs/

For an electronic copy of this booklet:
http://www.nysipm.cornell.edu/publications/teach_conley/

For a single free paper copy:
New York State Integrated Pest Management Program, Cornell University, NYSAES, Geneva, NY 14456; 800-635-8356; 315-787-2353; nysipm@cornell.edu