

# **Protecting Nature in Your Community**

## *INDIANA ADDENDUM*

**A Guidebook Directed Toward Local Government Audiences  
for Preserving and Enhancing Biodiversity**

prepared by the

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**Chicago Region Biodiversity Council**

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### **Project Scope**

This project builds upon the work of Chicago Wilderness Smith Fellow to provide comprehensive service to local governments in the Chicago Wilderness region, specifically northwest Indiana. This service communicates the recommendations of the Biodiversity Recovery Plan to municipalities and governments, counties, part districts and waste water authorities in our region, while challenging local governments to take action. Opportunities for assistance will be provided in response to requests from our local governments. The Indiana Addendum of Chicago Wilderness' *Protecting Nature in Your Community* is tailored to address northwest Indiana's codes, ordinances and grant programs, and provides technical assistance to support the region in implementing recommendations of the Biodiversity Recovery Plan.

For further information, please contact Reggie Korthals of the Northwestern Indiana Regional Planning Commission at (219) 763-6060.

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Please note the nonsequential numbering of the chapters in this edition.*

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*Imagine a region . . .*

*filled with life . . .*

*Where the evening air is rich with bird calls  
and the scent of flowers . . .*

*Where children splash and play in clean creeks,  
and peer below the surface of the water at fish  
and other aquatic creatures . . .*

*Where people learn to gently and respectfully  
enter back into a positive relationship with  
the nature that surrounds them . . .*

*And where rare plants, animals and natural communities  
are nurtured back to health  
and offered a permanent home next to our own —  
to the benefit of our health and our economy —  
in preserves large enough to sustain them forever.*

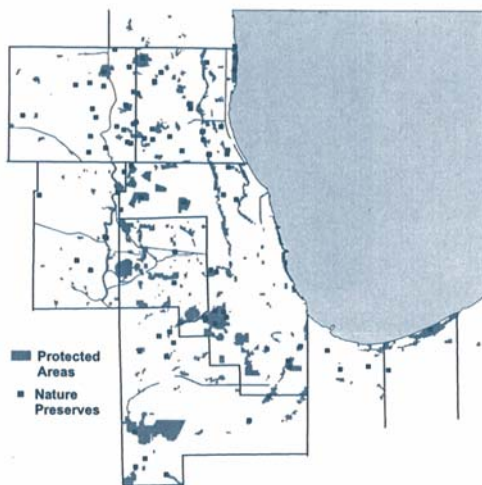
*-Chicago Wilderness, Biodiversity Recovery Plan*

- ❖ Before reading this guidebook, it is strongly encouraged that you read the EPA report, “Conservation of Biological Diversity in the Great Lakes Basin Ecosystem: Issues and Opportunities.” This study details the history and current issues pertaining to biodiversity in the Great Lakes region which complement the content of the guidebook. It can be found online at <http://www.epa.gov/ecopage/gkbd/issues/intro.html>

# 1 INTRODUCTION

## Purpose and Objectives of this Guidebook

The Chicago Region Biodiversity Council, through its Biodiversity Recovery Plan, has identified an essential role for local governments, including municipalities, counties, and park districts, in protecting and enhancing regional biodiversity. Consequently, the goal of this guidebook is to help communities minimize adverse effects of future development on regional biodiversity and areas of high quality habitat, and to accomplish localized restoration of developed landscapes and degraded natural areas. The first objective of the guidebook is to share information with local government entities regarding the relevance and importance of natural areas within and surrounding their communities. The second objective is to identify tools to enable protection and restoration within existing and newly developing urban areas. Appropriate tools span the realm of planning, regulation, acquisition, and educational initiatives.



The geographic area of the regional bioreserve called the "Chicago Wilderness"

## The Natural Landscape of the Region

Thousands of acres of protected woodlands, wetlands, prairies, dunes, and streams in the northwest Indiana region provide refuge to thousands of plants and animal species, many of them rare, threatened, or endangered. Privately owned lands, including our own backyards, provide additional habitat for wildlife, such as migrating birds. This diversity of native plants and animals, or *biodiversity*, reflects the unique blend of landscapes that were formed around the southern end of Lake Michigan by the forces of glaciers, wind, and wildfires. The resultant ecosystems are so rare that they have been labeled "globally significant" by ecologists.

While of clear scientific interest and importance, biodiversity and natural areas are increasingly valued by the region's residents for their aesthetic, recreational, and educational values. Just as residents of other regions appreciate their mountains, seacoasts, and forests, our more subtle and diverse landscapes provide a rich sense of place. Preserved natural areas provide a valuable reminder of times when vast prairies, mingled with woodlands and wetlands, spread across the horizon.

*"In all my life, I never saw or dreamed of so beautiful a sight as the rolling prairies. Nothing can equal the surpassing beauty of the rounded swells and the sunny hollows, the brilliant green of the grass, the numberless varieties and splendid hues of multitudes of flowers. I gazed in admiration too strong for words." -Ellen Bigelow, 1835.*

## Ongoing Threats

While thousands of acres of natural lands have been preserved from destruction by urban or agricultural development, this represents less than ten percent of the total landscape. Further, many of the preserved lands have been substantially degraded due to four principal causes:

- fragmentation of natural areas into smaller, isolated parcels;
- elimination of fire from the landscape;
- introduction of invasive non-native species; and
- disruption of natural water flow, or hydrology.

Certain ecological communities have been particularly damaged. For example, less than one-tenth of one percent of the original Midwestern prairie remains today.

Urban growth further threatens the remaining natural landscape and its diversity of plants and animals. In the northwest Indiana region, population is projected to increase by six percent by the year 2030. In the collar counties, where some of the most critical natural areas and habitats remain, population increases are projected to increase even more substantially.

In response to these threats, an initiative called *Chicago Wilderness* has begun. Comprising more than ninety organizations, most of them responsible for natural land management, restoration, public education, and/or research, Chicago Wilderness is dedicated to protecting the natural communities of the Chicago region (including northwest Indiana), restoring them to long-term viability, and raising public awareness. To assist in this effort, *Chicago Wilderness* has produced the *Biodiversity*

*Recovery Plan*, which encourages the types of techniques described in this guidebook. The Plan reports that although the region is rich in biodiversity, this quality is being lost to development and other threats, and *decisive action is needed*.

## Why is this Directed Toward Local Governments?

While many natural areas are or will be protected through acquisition by forest preserve and conservation districts, federal and state agencies, and the numerous other initiatives of *Chicago Wilderness*, the actions of local governments—counties, municipalities, and park districts—will be critical to accomplishing natural preservation objectives. Achievement of the goals of *Chicago Wilderness* will depend, to a large degree, on the actions of local government entities to control and manage growth in a sensitive manner. In particular, there is a need for public policies, strategies, and regulations to protect and enhance biodiversity, such as land use planning, compatible zoning, setbacks and buffers, natural landscaping, local parks acquisition, natural area management, and watershed management.

Local government programs are especially critical to the protection and restoration of streams, lakes, and wetlands that are dependent on water inputs from their surrounding watersheds. Past experience indicates that if the watersheds are not well protected the biodiversity of existing high quality streams, lakes, and wetlands almost surely will be lost.



# Why Protect Nature?

## 1. Quality of Life, Recreation, and Aesthetics

Natural areas enhance the quality of life for people, and they help define community identity by connecting residents to the natural landscape in which they live. A recent national survey of home buyers found that natural open space, walking and bicycle paths, and gardens with native plants were the three most desirable amenities for residential areas. Hiking, bird-watching, fishing, and photography are some of the more common activities enjoyed by many of the region's residents who utilize natural areas or even just reside near them.

*“Natural areas, parks and open space create a high quality of life that attracts tax-paying businesses and residents to communities.” -The Trust for Public Land, 1999.*

These areas make the region an attractive place to live and work, and enhance the economic and development value of the region. Healthy, functional natural areas, rather than degraded ones, are what people in the region are seeking for recreation. Clean water, healthy streams, and wildlife can enhance the paddling experience for water trail users.

*“Survival of world-class biodiversity in the midst of development is the most interesting feature of this region. Our destiny is to amaze the world with our capacity to restore and preserve our unique natural heritage and economic capacity into the future.”*

-Lee Botts, Indiana Dunes Learning Center

## 2. Public Support

Surveys indicate that the public supports initiatives to protect our land and waters. As noted below, this has been demonstrated recently by the passage of four county referenda and the state allocating public funds for land acquisition and management. A 1998 American Farmland Trust survey found that residents of Kane, McHenry, and DeKalb counties support protecting open space from development to preserve or enhance natural ecosystems and wildlife habitat. Furthermore, a survey by *Chicago Wilderness* indicates a willingness by residents to pay up to \$19.67 per household per year in additional property taxes (\$59 million per year) for new wilderness restoration and expansion activities.



### 3. Economic Value

A number of studies have shown that parks, open space and natural areas enhance the economic value of an area. Not only does the preservation of open land cost less in services than other uses, it has been found that some types of development, especially residential, cost more in community services than they generate in taxes. A pair of 1998 studies by The Trust for Public Land found that while land conservation projects caused a short term rise in local property taxes, over the long term communities that had protected the most land enjoyed the lowest property tax rates. This may be because less development means less public expenditures for roads, schools and infrastructure (The Trust for Public Land, 1999). Furthermore, owing to the increasing desire of people to have access to open space and natural areas, proximity of natural areas to residences may enhance property values. (See also *The Value of Open Space Preservation* in chapter 8.) Recreational opportunities also generate income and economic activity for communities through local businesses that profit from increased recreational traffic and tourism.

- Approximately \$85 billion is generated for the U.S. economy each year by people who feed birds or observe and photograph wildlife;
  - Sport fishing alone boosted the nation's economy by \$108 billion in 1996, supporting 1.2 million jobs and generating household income of \$28 billion;
  - Across the nation, parks, protected rivers, scenic lands, wildlife habitat, and recreational open space help support a \$502-billion tourism industry. At present rates of growth, the tourism industry will soon become a leading U.S. industry.
- Source: The Trust for Public Land, 1999.

### 4. Environmental Benefits

*“Estimated value of all economic benefits generated by a single acre of wetland: \$150,000 to \$200,000.”*  
 -The Trust for Public Land, 1999.

Naturally vegetated landscapes—including prairies, woodlands, and wetlands—provide a number of services that are highly beneficial to humans and ecosystems. They control erosion, help retain stormwater, help clean the air of pollutants, mitigate global warming by absorbing carbon dioxide and other greenhouse gases, and help shelter and cool our homes (The Trust for Public Land, 1999). Most importantly, these services are provided absolutely free. Research has shown that these services depend on properly functioning ecosystems, which in turn depend on the diversity of plants and animals—biodiversity—that make up those ecosystems. The major consequence of losing these ecosystem services and replacing them with human-made substitutes is the enormous cost of designing, building, maintaining and improving our own services. Add to this the likely risk of never attaining the efficiency with which nature provides them. A more complete list of environmental benefits follows.

- A variety of microorganisms break down plant and animal matter to create healthy, nutrient-rich soil.
- Native plants help conserve soil and water by preventing erosion, maintaining air moisture near the earth's surface, and storing water.
- A multitude of insects, birds, bats, and other animals pollinate the majority of crops and other plants on the planet, many of which are pollinated by only one species.

- Natural landscapes moderate climate extremes by absorbing carbon dioxide and other greenhouse gases, trapping heat in the winter, and providing shade in the summer.
- Native plants improve air quality by continually absorbing gases and particles from the atmosphere and producing clean, essential oxygen.
- A diversity of plants and animals preserves genetic diversity, which helps maintain evolutionary processes and store genes with potentially beneficial human uses.
- Native plants help protect water quality by filtering and cleansing water, while microorganisms break down some pollutants and contaminants.
- Native plants and their extensive root systems promote the infiltration of rain and stormwater into the ground where it can help replenish the groundwater table and maintain baseflows into wetlands and streams.
- Natural areas naturally absorb precipitation and thereby reduce flood damage (see below.)

## *Natural Areas Can Reduce Expensive Flood Damages*

Natural areas that provide floodwater detention during high flows, such as wetlands and floodplains, can lower flood stages and thereby prevent floodwaters from impacting property.

The Wetlands Initiative completed an 18-month study, “Flood Damage Reduction in the Upper Mississippi River Basin: An Ecological Means.” The study revealed that restoring the 100-year flood zone of the Upper Mississippi five-state watershed could store 39 million acre-feet of floodwater, the volume that caused the Great Flood of 1993. Restoring the flood zone before 1993 would have *saved more than \$16 billion* in projected damage costs (U.S. EPA).

Do you think that northwest Indiana does not suffer from significant floods? Think again! From October 9-10, 1954, flooding occurred in the Kankakee River basin due to 6.21 inches of rain that fell in the Chicagoland/Northwest Indiana area. The Yellow River, a tributary of the Kankakee, was particularly hard hit (Source: NOAA). At Plymouth, Indiana, the Yellow River crested at 17.13 feet on October 12, *5.13 feet* above flood state, forcing numerous families out of their homes. A flood similar to the one in 1954 was predicted to return to the area between 5-100 years of its original occurrence (Source: USGS). The area is due again soon! The Streibel Arm Flood Control Project in Michigan City, Indiana, was completed in May 2006 to eliminate flood insurance costs in the floodplain severely damaged by the 1954 deluge (see pages 29-30 in the “Local Examples” of the “Stormwater Management” section for further information about the project).

The benefits of natural areas extend beyond flood control as well. Protected floodplains that double as wildlife refuges or recreation areas may generate additional economic benefits by attracting bicyclists, hikers, bird watchers, and other tourists to a community (The Trust for Public Land, 1999). Local government officials ought to consider the application of natural areas in their own municipalities.



## 5. A Unique Opportunity

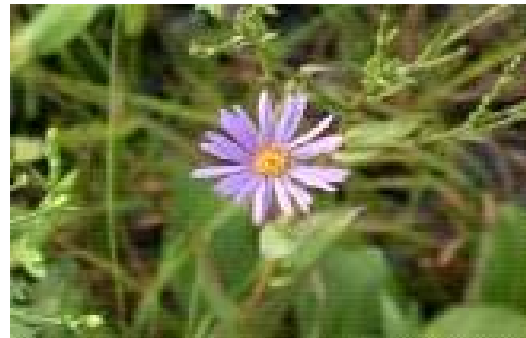
An initiative to protect biodiversity, such as that being led by Chicago Wilderness, is rare. Indeed, few regions of the country have taken such progressive steps to protect their natural heritage. By implementing some of the ideas mentioned in this guidebook, communities can contribute to this unique opportunity to become one of the first metropolitan regions in the world to undertake such a progressive and historic task. The Chicagoland and Northwest Indiana region is known for being the first and best in many things, and our environmental efforts can be added to that legacy.

While contributing to global biodiversity may seem like a lofty goal to local citizens and governments, preservation at the local level is the most effective means of protecting global biodiversity. Furthermore, communities can contribute to biodiversity protection and the preservation efforts of forest preserve districts and others without adversely affecting the way they normally operate. Slight shifts in a community's focus, minimal modifications of ordinances, and a general commitment to biodiversity protection can achieve critical results.

*“Chicago Wilderness is a tremendous repository of biodiversity. And while there are other great repositories like this—the Great Smoky Mountains, the Florida Everglades—the fact that this one is in a metropolitan area makes it unique.”*  
-John Rogner, U. S. Fish and Wildlife Service.

## 6. Spiritual Values

The mere idea of wildlife in our midst, especially when we have contributed to its protection, is valuable to many and improves the quality of life. Many people feel a moral and ethical imperative to protect wildlife and the diversity of life from the impacts of development. Reasons for this include a desire to protect other species from extinction, religious values associated with cherishing the earth and its inhabitants, and the desire to leave for future generations that which we are able to enjoy.



*“Our native landscape is our home, the little world we live in, where we are born and where we play, where we grow up and finally where we are . . . laid to eternal rest. It speaks of the distant past and carries our life into the tomorrow. To keep this pure and unadulterated is a sacred heritage, a noble task of the highest cultural value.”*  
-Jens Jensen.

# The Role of Local Governments: Counties, Municipalities, and Park Districts

It is clear that nature plays an important role in our lives and communities. The Indiana Department of Natural Resources and forest preserve and conservation districts have already done much to protect and restore natural areas in the region. This guidebook is not intended for them but instead is directed to the opportunities available to local governments to complement their previous and ongoing efforts, and to take advantage of the network of preserved areas already in place in the region. Local governments have an opportunity to help preserve and enhance nature using a wide variety of techniques that can be incorporated into their daily activities. Local officials are encouraged to take action to ensure that nature is preserved for current and future generations to enjoy.

*“What I’m trying to do in the city is to make good habitat for nature and people. We didn’t used to allow nature to exist in a small little park. But we can. I want to bring more nature into parks and boulevards so they can be habitat for trees, birds, flowers, and people. The neighborhoods and schools need to be comfortable and green.”*

-Chicago Mayor Richard M. Daley.

## *The Importance of Local Government Involvement*

Local governments are essential partners in the effort to protect nature because:

1. the majority of the land and water resources in the region (approximately 90%) are within the jurisdiction of municipalities, counties, and park districts;
2. the majority of land use planning and policy decisions are made at the local level;
3. stormwater discharges controlled by local governments can have substantial impact on downstream rivers, lakes and wetlands.

## *Recommended Actions*

The *Biodiversity Recovery Plan* recommends a number of specific actions for local government entities that are included here. Additional recommendations that are not included in the plan are shown in italics. These recommendations are followed by references to the chapters of the guidebook that describe tools and techniques that are appropriate to each type of local government action.

## *Municipalities and County Governments*

As the primary decision makers on land development, municipal and county officials and staffs can have a major impact on the conservation of biodiversity. They can:

1. Amend comprehensive county-wide plans and municipal plans to identify valuable open spaces meriting preservation and specify who should be responsible for

- protection of the land. (Chapter 8: Open Space Preservation)
2. Amend zoning ordinances, landscape ordinances and other regulations to encourage increased open space and planting of native grasses, trees and flowers on private lands. (Chapter 3: Compatible Zoning and Subdivision Regulations; Chapter 6: Natural Landscaping; Chapter 9: Natural Area Management and Restoration)

#### *Additional Recommendations*

1. *Amend subdivision codes and stormwater management regulations to reduce the amount of impervious surface area, and utilize the landscape to naturally filter and infiltrate runoff before it leaves the development site. (Chapter 4: Improved Stormwater Management)*
2. *Amend comprehensive plans and zoning and subdivision regulations to protect existing streams, lakes, wetlands, and other natural areas, and encourage restoration of natural conditions on private lands. (Chapter 5: Stream, Lake and Wetland Protection; Chapter 9: Natural Area Management and Restoration)*
3. *Educate local residents about the means and benefits of natural area preservation and management. (Chapter 10: Education)*

### **Park Districts**

Park districts and municipal parks departments tend to own the lands closest to dense concentrations of human residents. These lands have a critical role to play not only in providing habitat for native plants and animals, but also in offering urban children and adults an immediate opportunity to explore the beauty and magic of nature. Park districts can:

1. Implement specific suggestions for ecosystem management found in the Biodiversity Recovery Plan for any natural communities that may be within their ownership. (Chapter 9: Natural Area Management and Restoration)
2. Increase the amount of land within parks that can provide habitat for native plants and animals, including vegetation that provides food and shelter for migrating birds. (Chapter 6: Natural Landscaping)
3. Acquire or protect natural communities that are not yet protected and that may be too small to meet the acquisition criteria for a county or state conservation agency. (Chapter 8: Open Space Preservation)
4. Restore wetland, prairie, water, and woodland ecosystems on park holdings. (Chapter 5: Stream, Lake and Wetland Protection; Chapter 9: Natural Area Management and Restoration)
5. Educate the public about the importance of biodiversity. (Chapter 10: Education)

#### *Additional Recommendations*

6. *Coordinate with cities and counties to utilize natural areas for stormwater management, and to design and manage naturalized stormwater detention facilities to better control the quality of runoff. (Chapter 4: Improved Stormwater Management)*



## Recommended Tools and Techniques

Recognizing the importance of biodiversity to our well-being, quality of life, and economy, local authorities are encouraged to develop strategies for protecting what remains of our natural heritage. This seemingly difficult task can be eased by knowing how to undertake the process, the variety of options that are available, the community benefits of those options, and how and where these techniques are being locally utilized.

Protecting a variety of plants and animals is essentially a matter of protecting many different land and water habitats on which they depend. Thus, the tools and techniques presented in this guidebook focus on preserving and protecting natural areas and waterways.

### *Where Do You Start?*

Begin to develop a plan for preserving nature and habitat in the community by identifying the vision and values of residents regarding the future of the community. Once a consensus is established, you can begin to build a framework for achieving that future. This guidebook will help you decide which tools and techniques the community should adopt to accomplish its goals.

In many cases, the structure to accomplish biodiversity protection already exists within the community's programs and procedures. Thus, the first, and possibly easiest, step in approaching this task is to examine the community's existing programs and regulations and answer the following questions to determine what needs to be done next.

1. What are my community's natural resources and are they adequately protected?
2. Can my community's existing programs be used in their current form to accomplish biodiversity protection?
3. Can existing programs be amended to accommodate habitat and wildlife concerns?
4. Does my community need new programs and regulations to achieve biodiversity protection?

### *What Needs to Be Done*

Once a community establishes its vision to protect and manage natural areas, it should develop a strategy to coordinate with neighboring jurisdictions, such as forest preserve districts. In particular, the community should look for opportunities to coordinate in a broader regional context, such as with its neighbors in a watershed.

Though this guidebook identifies municipalities, counties, and park districts as distinct units of government, in some communities these are departments within the village or city. Coordination among these local government departments is critical if biodiversity goals are to be achieved.





## *Important Biological and Ecological Principles*

***Large, intact blocks of natural areas are most effective for protecting a diversity of habitats and wildlife and for protecting large populations of wildlife.***

While every little bit of preserved habitat contributes to the protection of biodiversity, we should aim for preserving and expanding large patches whenever possible. Where this is not possible, we should endeavor to connect the smaller patches of habitat to larger ones to facilitate the movement of species.

***Natural corridors and greenways that link larger patches of habitat are essential.***

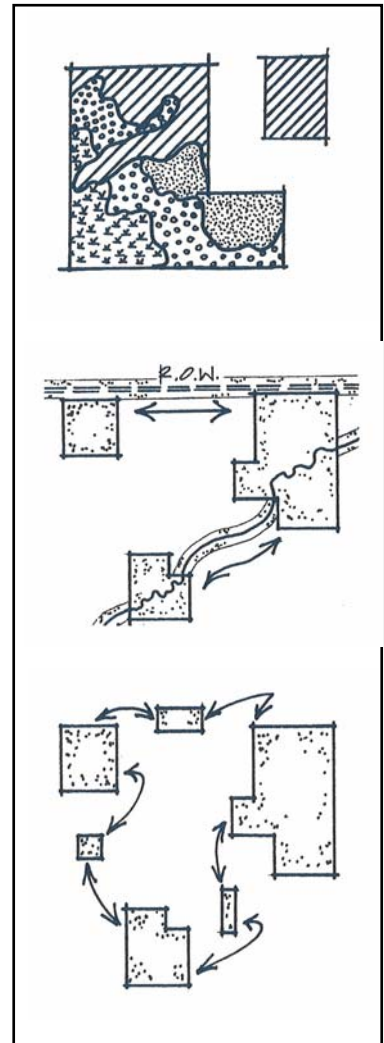
Localities should endeavor to create “greenway” linkages connecting local natural areas and areas in surrounding communities. Rivers, streams, trails, utility rights-of-way and unused railroad rights-of-way provide good linking opportunities.

***Where connections between larger natural areas are not possible, small patches can act as stepping stones for wildlife movement.***

Small patches of habitat are very helpful where breaks in the network of habitats occur. This is especially true for mobile animals, such as birds, and plants that are able to disperse over long distances via the wind or animals. For these species, patches of habitat provide refuge while moving between larger natural areas. Examples include small parks and residential lots landscaped with natural vegetation.

***Rare landscape elements, significant or unique natural features, and threatened and endangered species and habitats should be prioritized for protection.***

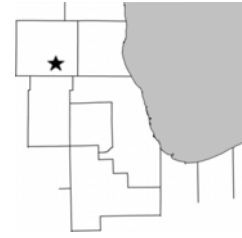
Communities should examine the natural areas within their jurisdiction, and inventory the plant and animal species found there. Communities in which rare habitats or species exist should endeavor to protect these landscape elements first, and direct development to other areas.



## *How a Commitment to Nature Works in One Community*

The City of Crystal Lake, Illinois, faces many of the same challenges as other growing municipalities. Traffic congestion and urban sprawl have become hot issues as new homes and businesses continue to be built at a rapid rate.

Through careful planning and concerted land acquisition, however, the Crystal Lake community has managed to protect over a thousand acres of park land. While the park district provides typical amenities such as ball fields for residents, much of the park district's land is left wild. Some of its holdings are Illinois nature preserves, others are landscaped with native plants. These natural lands are highly beneficial to a wide diversity of plants and animals, and residents still have quick access to nature, the reason many people choose to live in Crystal Lake in the first place.



Crystal Lake also protects the lake for which the town is named. The lake is one of the top five lakes in Illinois in terms of water quality and aquatic life. It has 23 different species of native fish, including two that are listed as threatened or endangered in the state of Illinois. The park district is currently taking major steps to protect the lake's watershed, such as purchasing several hundred acres of open space. The City has recently transformed one of the underground storm sewers into a more natural, above-ground stream, a process engineers call "daylighting." This stream meanders through a restored wetland where the natural hydrology has been reestablished. Furthermore, the City has for many years enforced an ordinance that benefits water quality by limiting the amount of impervious surface allowed in developments within the watershed. Only 20 percent of the surface area of a development can be paved surfaces or rooftops, and the remaining 80 percent remains open.

## *Suggested Reading*

*An Atlas of Biodiversity.* Chicago Wilderness. 1999. Chicago.

*Biodiversity Recovery Plan.* Chicago Wilderness. 1999. Chicago.

*Economic Benefits of Parks and Open Space.* Steve Lerner and William Poole. 1999. The Trust for Public Land: San Francisco, California.

*Northeastern Illinois Regional Water Trails Plan.* Northeastern Illinois Planning Commission. 1999. Chicago.

*The Tallgrass Restoration Handbook.* S. Packard and C. Mutel, eds. 1997. Society for Ecological Restoration. Island Press, Washington, D.C.

## *Additional Information*

*Chicago Wilderness Magazine.* (847/965-9253)

[www.chicagowildernessmag.org](http://www.chicagowildernessmag.org)

Subscriptions: \$14/year or \$24 for two years

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