

Executive Summary

Green Infrastructure Model and Strategy

Lake County Forest Preserves

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By developing a network of critical landscapes—a green infrastructure—everyone can work together to safeguard the resources and places that benefit wildlife, people, and the economy.

When people talk about infrastructure, they're most often discussing highways, energy sources, and buildings. But there is more to it. Just as planners design networks of roads, organizations can design networks of open spaces and natural resources that connect communities and regions. The latter is what we call a "green infrastructure."

Green infrastructure has emerged as a term referring to a strategically planned and managed network of natural lands, working landscapes, and other open spaces that conserves ecosystem functions and provides associated benefits to human populations.

Project Overview

In 2015, the Lake County Forest Preserve District selected The Conservation Fund to lead the development of a geographic information system (GIS) based Green Infrastructure Model and Strategy (GIMS) to guide regional and local green infrastructure planning by agencies, organizations, corporations, and citizens of Lake County, Illinois. We have developed a mapping tool to identify interconnected systems of landscapes to preserve natural habitats and protect biodiversity.

This strategy was reviewed by an advisory group and supports consistent planning and implementation efforts toward a common vision for conservation in and around Lake County.

The modeling framework will serve as a visual representation and guidance while working toward the District's [100-Year Vision for Lake County](#), including strategic directions and objectives to:

- Conserve nature at a landscape scale
- Prevent species loss
- Use data for precision conservation
- Eradicate buckthorn
- Improve water quality

Long-term Goals

The Lake County GIMS provides a framework for identifying land conservation and restoration opportunities for the county's major landscape types: woodland/forest, prairie/grassland/savanna, wetlands, and freshwater aquatic systems.

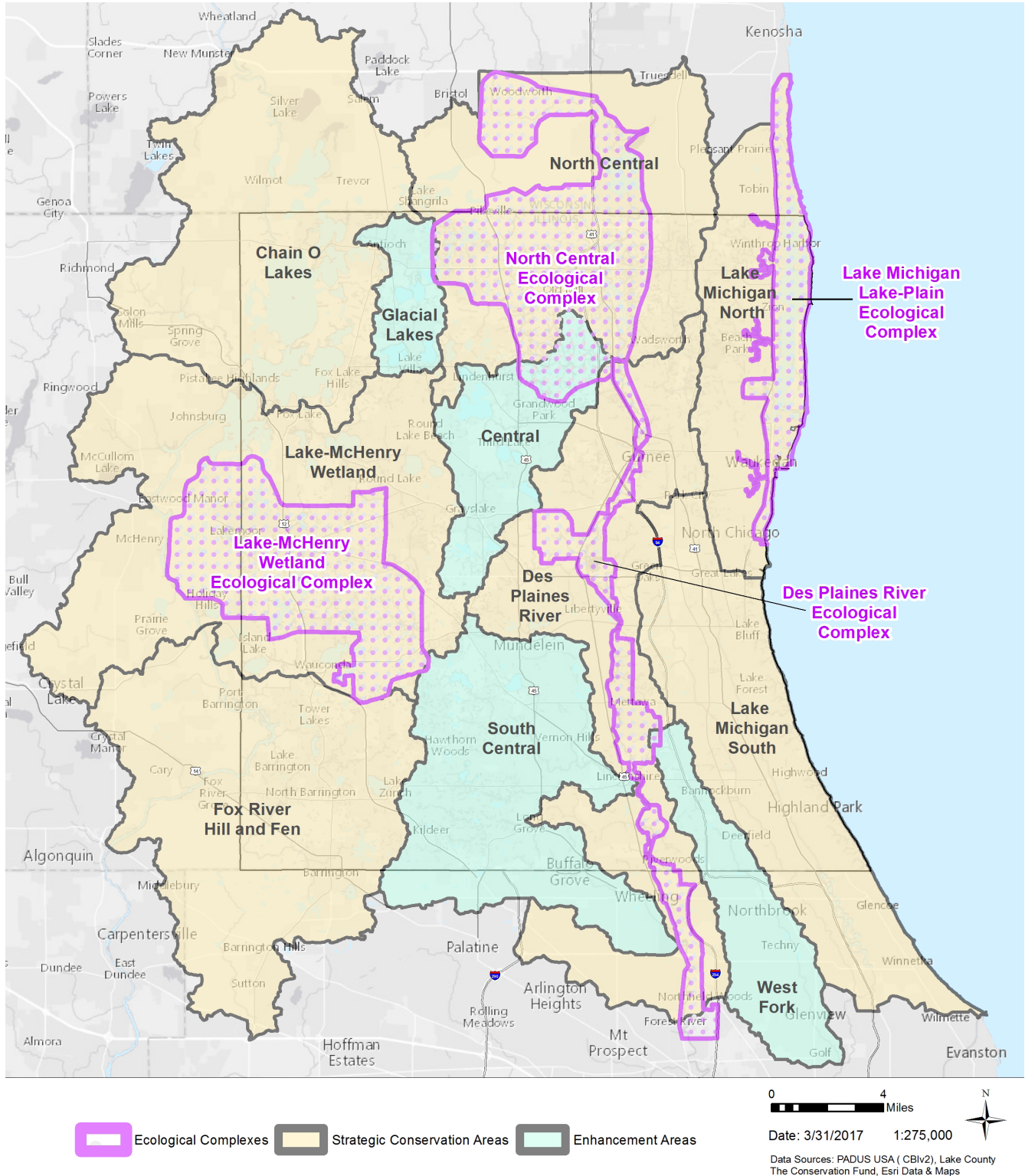
This GIS-based model provides information to make data-driven decisions about five special projects, including an assessment of:

- Potential large-scale woodland, wetland, and prairie habitat opportunity areas
- 10,000-acre ecological complexes in and around Lake County
- Water resource capabilities and groundwater recharge areas
- Lake Michigan ravine and lake plain opportunities
- Ecosystem services valuation in Lake County

Connections are Key

The District and the advisory group selected three ways to illustrate the boundaries of resources within the study area, based on GIMS data, landscape processes, watersheds, and the desire to provide habitat for Lake County's native species to ensure that no species are lost and that populations of plants and animals can expand and increase.

The map below serves as a visual representation of conservation areas that were identified by the District, the work group, and partners during development of the GIMS.



Strategic Habitat Conservation Areas

As defined by the United States Fish and Wildlife Service, Strategic Habitat Conservation Areas (SHCA) are large, landscape scale conservation areas to address challenges, such as habitat fragmentation, disease, and climate variability, which span jurisdictional boundaries.

Addressing these challenges requires planning at an ecologically appropriate scale, such as watersheds and ecological regions, rather than at small scales, such as single land management units.

The District, advisory committee, and other collaborators identified seven potential SHCA:

- Chain O'Lakes
- Fox River Hill and Fen
- Lake Michigan North
- Lake Michigan South
- Lake-McHenry Wetlands
- North Central
- Des Plaines River

Ecological Complexes

A working objective of the GIMS is to identify 10,000-acre ecological complexes within and around Lake County, Illinois. An ecological complex is a collection of core preserves (2,000–5,000 acres) within an SHCA that provides habitat and migration corridors for plant and animal species, so that they may survive and reproduce. These complexes have been identified as priority areas on which the District and other local agencies should be implementing conservation where it will have the most measurable effect.

Using data derived for the GIMS, four ecological complexes have been identified:

- Des Plaines River
- Lake-McHenry Wetland
- Lake Michigan Lake Plain
- North Central

Enhancement Areas

These are areas of the study that provide protection and habitat for species and communities, but current land uses limit further expansion or acquisition. These enhancement areas contain important ecological resources that should be protected and enhanced through community conservation.

Using data derived for the GIMS, four enhancement areas have been identified:

- Central
- Glacial Lakes
- South Central
- West Fork

This GIMS helps identify important landscapes in the region that should be preserved to:

- Foster environmental benefits, including clean air, freshwater, vibrant wildlife, and food sources.
- Conserve places that provide a high quality of life and preserve cultural values.
- Connect people with nature.
- Avoid hazard areas by using natural landscapes as buffers against storms, floods, or drought.
- Allow space for natural environments to adapt to climate variability.

Making the Values of Nature Visible

Ecosystem services are the collective benefits from an array of resources and processes that are supplied by nature. Forests, wetlands, prairies, water bodies, and other natural ecosystems support human existence. Only recently has it become possible to quantify and reliably estimate the contributions that green infrastructure makes available to human well-being, and to measure the benefits that nature provides us for free.



CARBON STORAGE

The ability for natural systems to capture carbon helps mitigate the emission of greenhouse gases, such as carbon dioxide into the atmosphere, and thereby, helps reduce future climate change.



NATIVE FLORA AND FAUNA

Natural systems provide opportunities for native vegetation and wildlife to thrive, which helps protect species diversity and maintain ecosystem functions and processes that benefit wildlife and humans.



WATER FLOW REGULATION/ FLOOD CONTROL

Maintains water flow stability and protects areas against flooding. Natural systems are the least costly and most efficient way to control flooding.



AIR PURIFICATION

Forests and urban trees can remove sulfur dioxide, nitrogen oxide, ozone, carbon monoxide, and fine particles from the air, all of which can be harmful to humans.



GROUNDWATER RECHARGE

Maintains natural rates of groundwater recharge and aquifer replenishment. Groundwater recharge is a key to adequate water supplies for people and wildlife, particularly for those municipalities that rely on groundwater aquifers for their drinking water supplies.



RECREATION AND ECOTOURISM

Natural areas not only provide a list of ecological services, they provide an array of recreational opportunities that contribute to our quality of life. These include biking, water sports, camping, fishing, hiking, birdwatching, horseback riding, cross-country skiing, and beyond.



WATER PURIFICATION

Maintains water quality for human consumption, recreation, and aquatic life. Natural systems can be an effective way to reduce nonpoint source pollution, sediment, nutrients, bacteria, and other pollutants from water supplies.



WORKING TOGETHER TO CONNECT OPEN SPACES

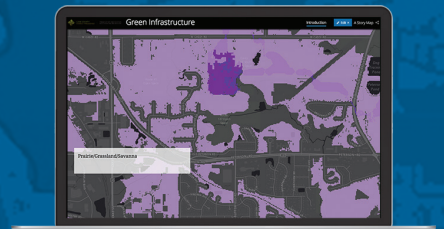
The Lake County GIMS represents several regional conservation plans and supports the following vision established and approved by the Lake County Land Preservation Partners: "To release a Lake County landscape where, by the year 2030, at least 20 percent of the county is preserved forever as natural areas, parks, trails, farmland and scenic views."

The Lake County Green Infrastructure Model and Strategy grew from the regional Chicago Wilderness Green Infrastructure Vision. Our goal was to build a more refined model with higher resolution and up-to-date GIS data specific to Lake County. The model also builds on the efforts of The Conservation Fund and Chicago Metropolitan Agency for Planning to assess ecosystem service valuation in Lake County and six other Illinois counties.

In the near future, we will provide these computer models to local groups to propel community conservation efforts. Green infrastructure planning includes methods that buffer natural areas, encourage infiltration of surface water, improve water quality, and expand native plant communities beyond the boundaries of designated natural areas.

INTERACTIVE STORY MAPS

Learn more about this strategy through our interactive story maps online at LCFPD.org/greenstrategy.



Balancing green and gray infrastructure develops sustainable communities. By creating a green infrastructure strategy, communities work together to preserve and connect open spaces, watersheds, wildlife habitat, forest preserves, and other critical landscapes.

FULL TECHNICAL REPORT AVAILABLE: [HTTP://BIT.LY/GIMSREPORT](http://bit.ly/GIMSREPORT)

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