

ILLNOIS DEPARTMENT OF NATURAL RESOURCES (IDNR) ADDENDUM ON GREEN INFRASTRUCTURE (draft as of 5/27/10)

INTRODUCTION

The IDNR submitted comments on the IEPA's initial draft of the Green Infrastructure Plan. The intent of those comments was to recognize the limits the legislative language placed on the IEPA effort and subsequently request the Agency allow the IDNR to present an expanded application of green infrastructure via this addendum. Despite the IDNR advocating an expanding application of green infrastructure, the IDNR recognizes the IEPA's storm water green infrastructure initiative as a commendable and critical first step.

The green infrastructure concept is a rapidly evolving field; hence, a thorough expanded application is inherently difficult and could be quite voluminous, extending beyond an addendum format. Within this addendum, the IDNR seeks to succinctly answer four basic but important questions about the scope of green infrastructure. Those questions are addressed next.

1. Why does a broader definition of green infrastructure need to be considered?

Green infrastructure, and the ecological services provided by green infrastructure, goes beyond merely storm water benefits. This point is illustrated by Benedict's & McMahon's definition:



“Green infrastructure is defined as an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations. In our view, green infrastructure is the ecological framework needed for environmental, social and economic sustainability—in short it is our nation’s natural life sustaining system. Green infrastructure differs from conventional approaches to open space planning because it looks at conservation values and actions in concert with land development, growth management and built infrastructure planning.” (Green Infrastructure: Smart Conservation for the 21st Century. Benedict, Mark and Edward McMahon. Sprawl Watch Clearinghouse Monograph Series (2001))

Nature has always served society well and is the foundation for our economic and social systems. Nature, through functions and services, furnishes a multitude of essential primary goods; our foods, fuels, materials for shelter, compounds to enhance our health and a sense of perspective important for our well being. Typically, we have only recognized these ecosystem services when the goods produced by these systems are manifested or become familiar parts of the economy.

Arguably, decision making has either routinely ignored (unless when significantly obviously disrupted) or significantly misunderstood the importance ‘of the whole’ of ecological services. Strong scientific evidence supports the conclusion that these ecological services are essential to human civilization and humans are frequently disrupting and impairing ecological services which function best as an interconnected network. (“Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems” Daily, Gretchen C., Susan Alexander, Paul R. Ehrlich, Larry Goulder, Jane Lubchenco, Pamela A. Matson, Harold A. Mooney, Sandra Postel, Stephen H. Schneider, David Tilman, George M. Woodwell. Issues in Ecology. Ecological Society of America. Washington, DC 20036)

Thus, this narrow focus, this traditional mindset and the manifested efforts to improve the quality of life of our communities by considering only investments in the physical, built infrastructure, is shortsighted and wasteful. This approach has had detrimental effects not only on the environment, but on the very issues the investments were designed to help improve – the characteristics that define a high quality of life. Society has consistently undervalued ecological services whereby a broader understanding or accounting of these services could lead to better decision making. Achieving more sustainable decisions necessitates a departure from the traditional approach to decision making to take into account the appropriate valuation of the ecological services provided by green infrastructure. (“Technologies for Envisioning Sustainable Urban Futures “ Deal, Brian, Meghna Dutta, and Tom Heavisides. The Journal of the Architectural Research Centers Consortium – (in press))

II. What are useful examples of green infrastructure?

Before providing useful examples (discussed in C), two key points need to be briefly considered. One (discussed in A) is given the complexity and vastness of the environment, what would an overall architecture for a comprehensive vision of green infrastructure look like. The second point (discussed in B) is, how to account within this vast architecture, for the fact that social/economic decisions and environmental processes are scale dependant, i.e. when/how to coordinate, local, regional, national decisions.

A. GREEN INFRASTRUCTURE ARCHITECTURE:

In order to advance a better accounting and consideration of ecosystem services in decision-making, the figure below presents an initial attempt towards a more organized method to categorize and understand ecosystems and their services.

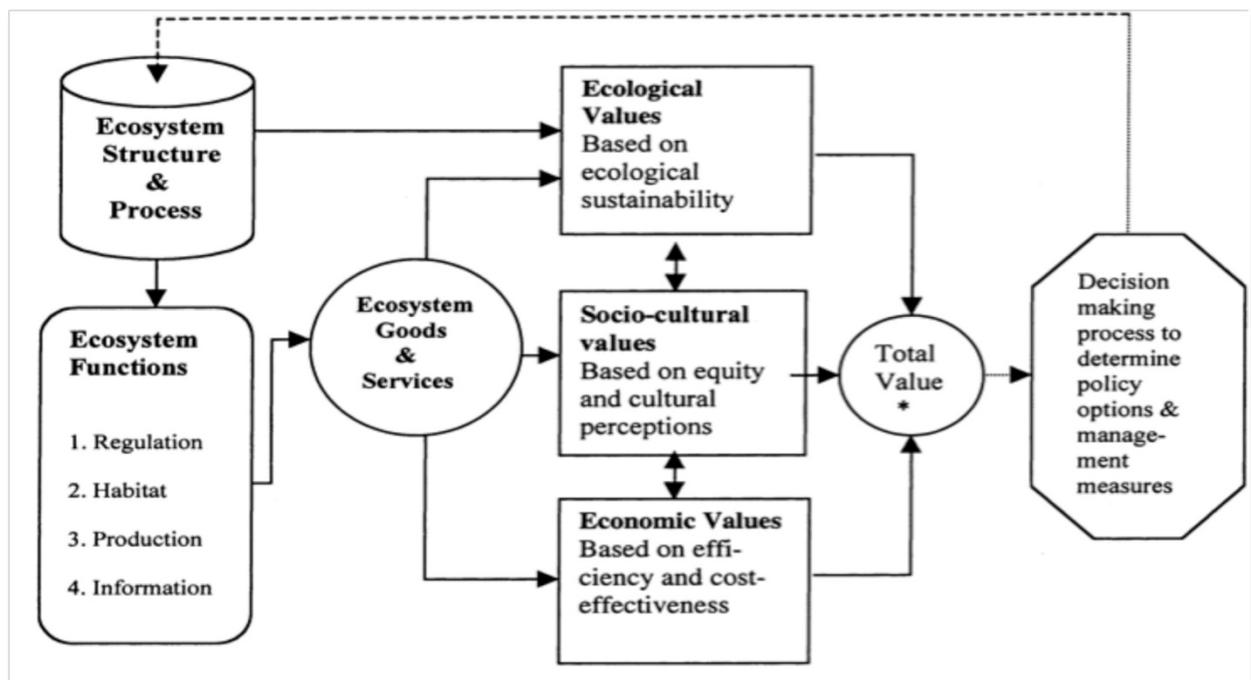


Figure 1. (“A Typology for the Classification, Description and Valuation of Ecosystem Functions, Goods and Services”. De Groot, Rudolf, Matthew Wilson, Roelof Boumans. Journal of Ecological Economics. (vol 41 2002 p 393-408))

The reference translated a wide range of ecosystem functions into four primary categories useful for better accounting of these services; (For more, see the reference article which presents 23 examples of sub- functions and corresponding examples of ecosystem services).

1. Regulation function—regulating essential ecological process and life support systems, (climate, water cycle, pollination, photosynthesis);
2. Habitat function- beyond a landscape provision of refuge and reproductive aspects for plants/animals creating a “bank” of biological and genetic diversity/evolutionary processes;
3. Production functions—system providing the carbohydrate structures for the many goods that become suitable for human consumption (also known as provisioning services, food, fresh water, fuel, fiber);
4. Information functions—natural ecosystems provide an essential ‘reference function’ that contributes to maintenance of human health (also known as cultural services such as education, heritage, as well as recreation and tourism).



B. ISSUE OF SCALE:

Green infrastructure is a complex interrelated system and functions at different scales. Likewise, the State of Illinois is a complex interrelated political system that functions at different geo-political scales, e.g. local, regional, etc. Within this complex dynamic, the State of Illinois continues to encounter unprecedented change. Some parts of the state struggled to accommodate rapidly growing urban areas; other parts struggle with declining populations and loss of businesses. Community organizations and other entities, concerned with the rapid pace of change, are raising a number of important questions: *How can we ensure access to quality education for our children? How can we balance a rapid growth (or decline) in housing with jobs? How can we encourage infill redevelopment? How does the availability of resources (water, for example) affect our community’s ability to grow?* In combination the questions seem to coalesce around the fact that a comprehensive effort is needed to help decision-makers across the state — at state, regional, county, and local levels — make better informed planning decisions and deal more effectively with the changes they face. The challenge of scale presented by the current seemingly disjointed, narrowly focused approach would be better addressed by comprehensive green infrastructure planning. USEPA speaks to the issue of scale in the Water Quality Scorecard/Green Infrastructure as such;

“Green infrastructure is a comprehensive approach to water quality protection defined by a range of natural and built systems that can occur at the regional, community, and site scales. At the larger regional or watershed scale, green infrastructure is the interconnected network of preserved or restored natural lands and waters that provide essential environmental functions. Large-scale green infrastructure may include habitat corridors and water resource protection. At the community and neighborhood scale, green infrastructure incorporates planning and design approaches such as compact, mixed-use development, parking reductions strategies and urban forestry that reduces impervious surfaces and creates walkable, attractive communities. At the site scale, green infrastructure mimics natural systems by absorbing stormwater back into the ground (infiltration), using trees and other natural vegetation to convert it to water vapor (evapotranspiration), and using rain barrels or cisterns to capture and reuse stormwater. These natural processes manage stormwater runoff in a way that maintains or restores the site’s natural hydrology.” (http://www.epa.gov/dced/pdf/2009_1208_wq_scorecard.pdf)

C. EXAMPLES OF APPLICATION OF GREEN INFRASTRUCTURE

1. Federal Initiatives

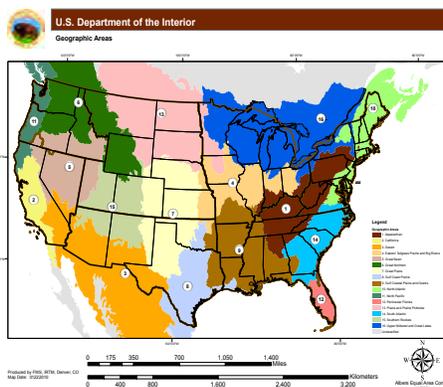
“*The Office of Environmental Markets (OEM)* is a new office created within the U.S. Department of Agriculture to catalyze the development of markets for ecosystem services. OEM has a unique role in the federal government's efforts to develop uniform standards and market infrastructure that will facilitate market-based approaches to agriculture, forest, and rangeland conservation. OEM is bringing experts and stakeholders together with government agencies to build a robust, accessible, and scientifically credible market system that will protect and enhance America's natural capital into the future.”

(<http://www.fs.fed.us/ecosystems/services/OEM/index.shtml>)

US Fish and Wildlife Service Strategic Habitat Conservation and Landscape Conservation Cooperatives: In adopting Strategic habitat conservation (SHC) the Fish and Wildlife Service describes a work plan that will requires them to set biological goals for priority species populations, make strategic work decisions, and allow FWS to constantly reassess and improve actions. They describe their actions as motivated by “landscape-scale resource threats such as development, invasive species, and water scarcity--all magnified by accelerating climate change,” as the impetus for their agency direction. The five key principles, which FWS describe as “an ongoing process that changes and evolves”, are:

- *Biological Planning (setting targets)*
- *Conservation Design (developing a plan to meet the goals)*
- *Conservation Delivery (implementing the plan)*
- *Monitoring and Adaptive Management (measuring success and improving results)*
- *Research (increasing our understanding)*

To help implement SHC, the FWS and USGS have developed a national geographic framework for implementing strategic habitat conservation at landscape scales called ***Landscape Conservation Cooperatives***. Within this framework the Service will be working with “partners to connect project- and site-specific efforts to larger biological goals and outcomes across the continent.” This framework will be used as a base geography to locate the first generation of



Landscape Conservation Cooperatives (LCCs) and in planning a second generation of LCCs during the FY 2011 budget formulation process.

“Landscape Conservation Cooperatives are management-science partnerships that inform integrated resource management actions addressing climate change and other stressors within and across landscapes. They will link science and conservation delivery. LCCs are true cooperatives, formed and directed by land, water, wildlife and cultural resource managers and interested public and private organizations.

Strategic habitat conservation is designed to meet 21st Century conservation challenges by ensuring that we accomplish the right things, in the right places, at the right times based on sound science.”

2. State/Regional examples:

Maryland Green infrastructure Assessment –

Maryland has two million acres of ecologically significant land remaining that has not been consumed by some kind of human development. Of these two million acres of green infrastructure, nearly 70% are unprotected. Through *Green Infrastructure Planning* “Maryland can ensure cleaner air and water for its citizens, safeguard habitat needed to spare native animals and plants from extinction, and preserve outdoor recreational opportunities that a large and increasing number of people enjoy.”

Maryland mapped their green infrastructure using satellite imagery, road and stream locations, biological data, and other information then brought together scientists, local government officials, and conservation groups to ground-truth the information. They identified the state's most important natural lands as those that are large and intact enough to provide a full range of environmental functions and identified these as “hubs” – “un-fragmented areas hundreds or thousands of acres in size, and are vital to maintaining the state's ecological health which “ provide habitat for native plants and animals, protect water quality and soils, regulate climate, and perform other critical functions.”

Their second step was to connect these identified hubs with "corridors" - “linear remnants of natural land such as stream valleys and mountain ridges that allow animals, seeds, and pollen to move from one area to another.” The State cited the need to establish and reserve linkages between these hubs to “ensure the long-term survival and continued diversity of Maryland's plants, wildlife, and environment.

“In 2003, Governor Ehrlich helped institutionalize the Green Infrastructure into State Land Conservation Planning by expanding the criteria used to evaluate the State’s land preservation purchases to include a comprehensive set of ecological indicators. Through this initiative, State land conservation programs such as Rural Legacy and Program Open Space will prioritize their conservation activities on areas identified as Green Infrastructure.” (<http://www.dnr.state.md.us/greenways/gi/gi.html>)

New Jersey (green infrastructure) Valuation Study –

The state of New Jersey, working with the Trust for Public Lands developed a valuation analysis of New Jersey’s green infrastructure. “New Jersey is blessed with a wealth of breathtaking and highly valuable natural resources. Our beaches, forests, wetlands and other natural resources provide countless benefits to the public. In order to make wise policy, planning, and regulatory decisions, it is important to understand the worth of these resources. This report summarizes the results of a two-year study that aims to quantify the value of these resources. As a way of expressing the value, it estimates the dollar value of the services and goods produced by New Jersey’s natural capital. Natural capital consists of components of the natural environment that provide long-term benefits to society. Many of the benefits provided by natural capital come from ecological systems or ecosystems, a dynamic complex of plant, animal, and microorganism communities and their nonliving environment, all interacting as a functional unit.” (<http://www.state.nj.us/dep/dsr/naturalcap/>)

Chicago Wilderness Green Infrastructure Vision -

In 2004, members of Chicago Wilderness came together to begin the framework for a Green Infrastructure Vision (GIV). The GIV map produced from that effort identifies 1.8 million acres for prospective protection, restoration, and thoughtful land development practices in the Chicago



Wilderness region - spanning from southeast Wisconsin, through northeast Illinois into northwest Indiana and southwest Michigan. The Vision calls for the us to carefully think about how we can live in and among natural areas in a sustainable way and to mutual benefit, by using tools such as conservation development, conservation easements, and thoughtful land use planning. The 140 Resource Protection Areas mapped by the GIV serve as opportunities to focus land acquisition, expand restoration on private land, and promote greenway connections, conservation easements, conservation design practices, agricultural preservation, protection of sensitive groundwater recharge areas, implementation of wastewater reclamation alternatives, and protection of stream and wetland buffers.

Kansas City – MetroGreen -

“The MetroGreen Action Plan provides a greenprint for a metropolitan trails system that connects urban and rural green corridors throughout seven counties in the Kansas City region. The plan is also designed to protect and improve water quality in the region for the next 100 years, conserving and enhancing the region's existing natural elements. Above all, MetroGreen exists to ensure that area residents continue to enjoy a high quality of life. MetroGreen will preserve and protect stream corridors in the seven-county Kansas City area by helping to use floodplain lands to absorb floodwaters, thus reducing economic loss. The clean water component of MetroGreen will to support the biological diversity of streams, rivers and lakes through:

- Specifying waterways to be used for recreational purposes
- Offering watershed strategies for flood control and for protecting natural stream corridors
- Recommending local adoption of streamside buffer zones
- Restoring native habitat for indigenous plants and animals”

(<http://www.marc.org/metrogreen/>)

3. Local /County /Municipal scale:

McHenry County Conservation Design Ordinance “LAND FIRST” -

Under a campaign called “Land First” McHenry County IL recently adopted a countywide conservation design ordinance with a stated purpose to “preserve and enhance the community character and natural resources of the County while providing for a high quality of life for the residents of McHenry County now and for future generations.” They cite among their reasons the need to protect groundwater resources, streams and natural areas, quality of life and a healthy, sustainable economy. This neighborhood-scale Green Infrastructure practice calls for an initial site analysis to determine highest priority for preservation and restoration and when completed will identify the least environmentally sensitive areas that are most suitable for development. Resources that must be included in the Natural Resource Inventory are: topography, water bodies, wetlands, floodplain, field tiles, designated natural areas, threatened and endangered species, vegetation communities, tree inventory, soil suitability, groundwater recharge potential, farmland, and historical sites. (Under “Ordinances” at: <http://www.co.mchenry.il.us/departments/planninganddevelopment/Pages/index.aspx>)

Other Efforts –

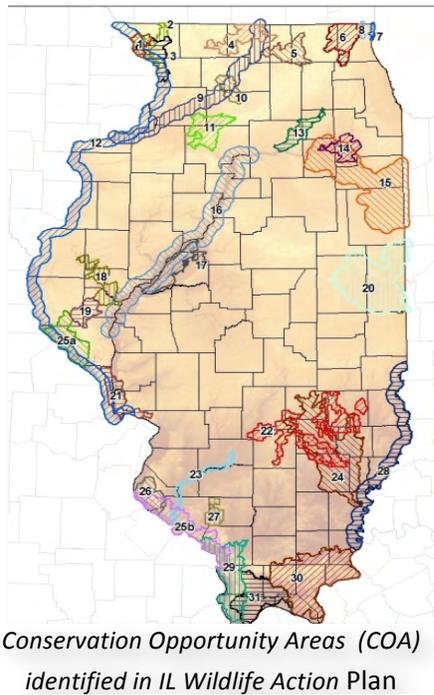
There are numerous examples of green infrastructure, at various scales, that were not identified or described at length within this addendum. These practices range from landscape linkages, habitat restoration, stream buffers, to plantings for carbon sequestration. Examples of these efforts throughout the state include: Forest Preserve and Conservation Districts in northern Illinois, through successful passage of more than \$1.3 Billion in Open Space referenda, have been seriously engaged in acquisition and restoration of natural areas. Their strategies include “landscape-scale conservation”, “core and hub linkages” and stream buffering and protection such as Lake County Forest Preserve District has assembled along the Des Plaines River corridor. Other efforts include: Peoria Ravine Overland protection; coordinated trail efforts in the Metro East; and multiple partners’ efforts to restore the Cache River in southern Illinois.

III. What DNR programs policies and/or authorities are relevant to green infrastructure? (see <http://www.dnr.state.il.us/> for Section III)

The Department of Natural Resource has a variety of programs, policies and authorities related to natural resources functions and ecological services. Below are examples of some of the significant programs; however no attempt has been made to neither capture all efforts, nor at this time present an integrated application of the green infrastructure concept.

A. WILDLIFE ACTION PLAN (ILWAP)

In the early 2000’s, Congress asked each state to develop a wildlife action plan, known technically as a comprehensive wildlife conservation strategy. These proactive plans examine the health of wildlife and prescribe actions to conserve wildlife and vital habitat before they become rarer and more costly to protect. Illinois Plan, adopted in 2005, delineated seven “campaigns” designed to achieve the Plan’s goals - the Farmland & Prairie, Forest, Wetlands, Streams, Invasive Species, Land and Water Stewardship and the Green Cities.



For all “campaigns,” the Plan lists the following challenges to achieving the stated goals:

1. Increase the percentage of Illinois’ lands which are not plowed, paved, drained, or landscaped.
2. Increase the quality of Illinois’ natural lands as measured by their ability to support robust (abundance and richness) communities of native plants and animals.
3. Improve the capacities of Illinois’ agricultural and urban lands to support populations of native fish and wildlife. Increase access to Illinois’ lands and waters for outdoor recreation purposes.
4. Meet or exceed recreational and commercial demands upon Illinois’ plant and animal populations.
5. Restore populations of plant and animal species that have become rare or are declining.
6. Eradicate, control, and prevent the introduction of invasive exotic species.

To achieve these actions ILWAP calls for “coordination among federal and state agencies and private groups with county and local units of government, citizens and stakeholders to develop strategic plans for smart growth, redevelopment, and infrastructure projects that protect or enhance important habitats, provide adequate green space and green infrastructure (i.e. for flood protection), minimize the need for additional infrastructure and minimize loss of agricultural lands, yet allow for economic development and human population growth” and the need to “mitigate loss, degradation and fragmentation of important wildlife habitats lost to development.” (<http://dnr.state.il.us/orc/Wildliferesources/theplan/>)

B. PRIVATE LANDS INITIATIVES

Private interests own the vast majority of land in the state. IDNR has developed programs often in cooperation with federal agencies to assist landowners with protection and enhancement of ecosystem functions and services. Some examples of those programs include:

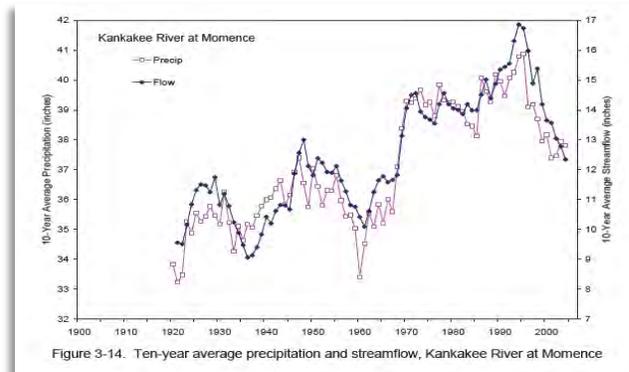
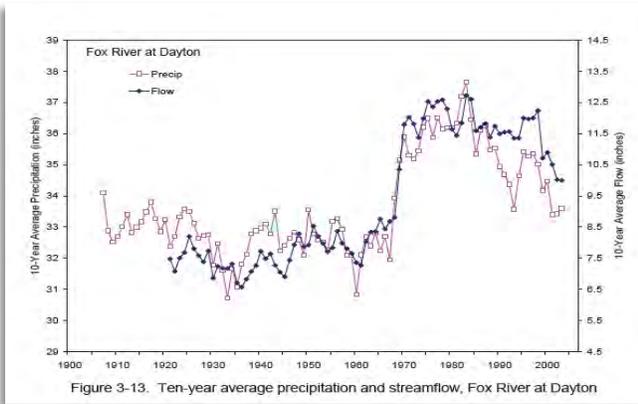
1. Conservation Reserve Enhancement Program (CREP)

The Illinois River Conservation Reserve Enhancement Program (CREP) was initiated as a joint federal/state program with the goal of improving water quality and wildlife habitat in the Illinois River basin. Based on numerous research and long-term data, the two main causes of water quality and habitat degradations in and along the Illinois River were known to be related to sedimentation and nutrient loads. Based on this understanding, the two main objectives of the Illinois River CREP were stated as follows:

- Reduce the amount of silt and sediment entering the main stem of the Illinois River by 20 percent.
- Reduce the amount of phosphorous and nitrogen loadings to the Illinois River by 10 percent.

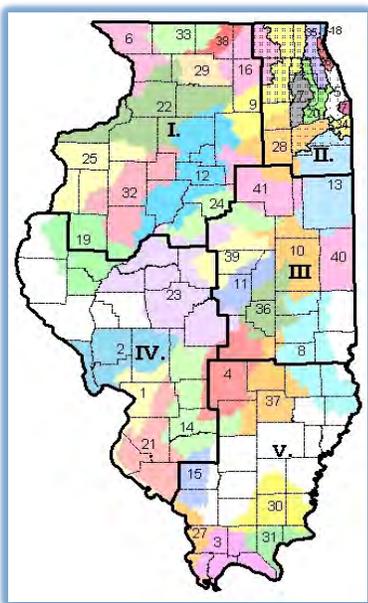


Illinois CREP is a voluntary, incentive-based approach to water quality and habitat issues. CREP utilizes Federal, State, and Local resources to retire frequently flooded and environmentally sensitive cropland through conservation easement and to achieve restoration and long-term protection benefits. The goal is to establish conservation practices to reduce sedimentation and nutrients in the Illinois River while enhancing habitat to increase fish and wildlife populations. The entire Illinois River Basin is targeted with an emphasis on the 100 year floodplain. There has been a significant increase in the implementation of conservation practices in Illinois in recent years with CREP making a major contribution.

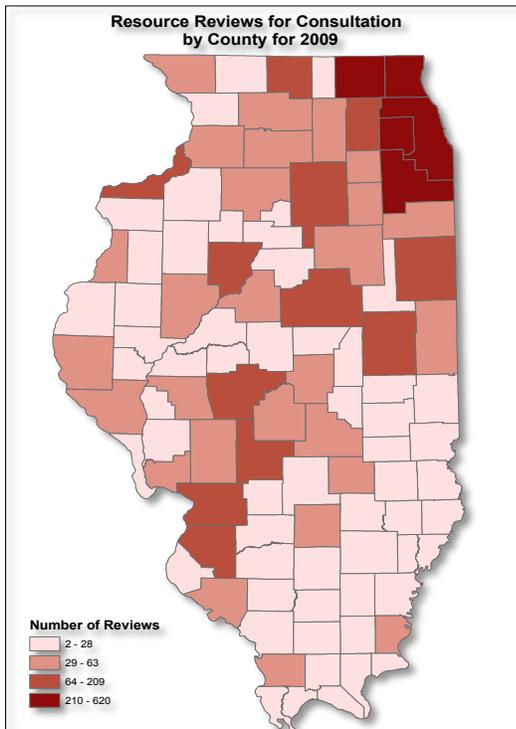


Data in trends in precipitation and streams flow vary across the Illinois River watershed. Increasing trends are particularly evident in the Upper Illinois River watershed and its two primary tributaries, the Fox and Kankakee River. The Green infrastructure Study specifically addresses the urban areas, and the Illinois River Watershed is the recipient of much of the increase of stream flow and precipitation from the rapidly expanding urban area located at the top of this watershed. CREP is a both a viable and practical example of how the concept of green infrastructure can be expanded into non-urban areas.

2. Partners for Conservation (Formerly C2000):



Conservation 2000 (C2000) was renamed Partners for Conservation and extended until 2021. This multi-agency, multimillion dollar comprehensive program is designed to take a holistic, long-term approach to protecting and managing Illinois' natural resources. The Illinois Department of Natural Resources administers the Ecosystems Program and the Critical Trends Assessment Program (CTAP), a statewide ecosystem assessment and monitoring program. This program is a systematic effort to assess the condition of Illinois' ecosystems (i.e. functions). The Ecosystems Program consists of an extensive network of local volunteers working to leverage technical and financial resources to promote ecosystem based management, i.e. restoration or protection of ecosystems, primarily on private lands. Ecosystem Partnerships are formed to develop plans and projects on a watershed scale with an ecosystem-based approach.



C. RESOURCE REVIEWS, ASSESSMENTS AND RESTORATION

The IDNR has programs established by state and federal laws that attempt to protect existing natural resource functions and their services as well as restore those resources that have been inappropriately impacted. An example of those programs include:

1. Consultation Process

State agencies and units of local government are required by law to consult with the Department about proposed actions that they will authorize, fund or perform *in order to see whether those actions will adversely impact protected natural resources such as threatened/endangered species and natural areas (i.e., Illinois Natural Area Inventory Sites or Nature Preserves)*. Private parties do not have to consult, but they are liable for prohibited taking of state-listed

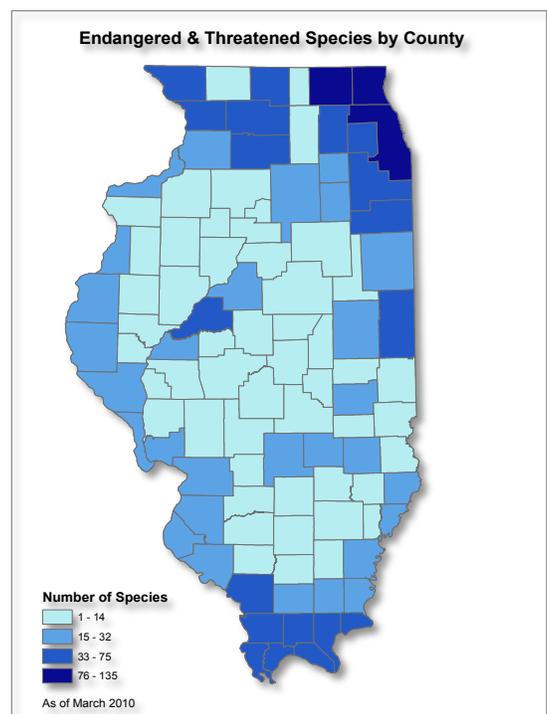
plants or animals or for adversely modifying a Nature Preserve or a Land & Water Reserve. Based on the nature of the proposed action and the nature and location(s) of the protected resource(s), IDNR staff will assess the character of the potential adverse impacts and whether an adverse impact to the resource is likely. *Staff then recommends measures that will avoid or minimize potential impacts to resources in the vicinity of the development project. There appears to be a direct correlation between increased Green Infrastructure measures during and after construction and decreased adverse impacts to area resources.* For listed species, the assessment is based on the life requirements of the species. The assessment for Natural Areas and Nature Preserves is much broader, based on potential impacts to natural communities and the unique features of the Site or Preserve.

The review addresses the following policies and legislation:

[Illinois Endangered Species Protection Act](#)
[520 ILCS 10/11(b)]

[Illinois Natural Areas Preservation Act](#)
[525 ILCS 30/17] as set forth in procedures under
[Title 17 Ill. Admin. Code Part 1075.](#)

[Interagency Wetland Policy Act of 1989](#)
[20 ILCS 830] as set forth in procedures under
[Title 17 Ill. Admin. Code Part 1090](#) must be met.



2. *Natural Resource Damages Assessment and Restoration*

Environmental contamination affecting Illinois land and water often results in the loss of valuable natural resources such as clean water, wildlife habitat, natural areas, and the services natural resources provide for Illinois residents, wildlife, and visitors. Federal law requires the designation of federal and state officials to act as trustees to protect public interest in natural resources and the services they provide. The Director's of the IDNR and IEPA are designated as a natural resource co-trustees and have the regulatory authority to assess damages to natural resources and to undertake restoration of those injured natural resources and/or associated service losses. The restoration efforts typically focus on those ecological services that were lost or injured and are targeted in the region of impact.

D. PRESERVATION, CONSERVATION, ACQUISITION AND/OR RECREATION RELATED ECOLOGICAL PROGRAMS

One of the IDNR's primary missions is to enhance natural resources for variety of uses. Examples below demonstrate relevant programs / policies and potentially highlight the importance of comprehensive consideration of green infrastructure.

- **Conservation of Natural Resources:** Conservation of the state's significant natural resources, through acquisition, development, enhancement, management, and stewardship, continues to be the single-most important action to ensure a legacy of quality outdoor recreation opportunities for future generations of Illinoisans. This also includes protection and enhancement of high quality areas, such as the Illinois Natural Areas Inventory, and protection of threatened or endangered species.
- **State Parks:** Illinois state parks, national forests and wildlife refuges, and federal reservoirs are important destinations for citizens, offering nature discovery, direct recreation opportunity, and relaxation.



- **Greenways and Trails:** Greenways – linear ribbons of open space are effective means of preserving green spaces in urban and suburban areas especially as development occurs at the urban fringe. Greenways protect green corridors that provide and connect open space and often protect waterways and provide and connect wildlife habitat. Trails are linear recreation facilities that serve various purposes, including alternative transportation within and between communities. Trails: provide long-distance trails in new locations and connect and improve existing trails.
- **Acquisition:** responsible for acquiring all real estate used by the Department for parks, recreation areas, bikeways, natural areas, wildlife habitat, waterfowl, greenways and open space programs. Also complimenting acquisition is the related activities, such as outdoor recreation planning, program administration and project planning/coordination, for the above applications.

- **Open Space:** Program focuses on basic, close-to home outdoor recreation, including land for parks and outdoor recreation facilities such as ball fields and playgrounds. It provides funding for new and existing outdoor recreational projects including the renovation of existing outdoor recreation facilities.



- **Water Resources:** Rivers, streams, and lakes are important for many popular outdoor activities. Conservation and protection of water resources is necessary to maintain and expand water-based recreation. Further, the state acquires lands and develops facilities that expand and improve public recreational access to the state’s rivers, streams, and lakes.
- **Fishing** – Illinois’ water resources provide the basis for recreational opportunities associated with fishing.

- **Hunting** – Illinois’ landscape provides Illinois hunters the opportunities to pursue white-tailed deer, turkey, small game, migratory waterfowl, doves and more through various coordinated state programs that provide economic benefits to the state.



- **Nature Preserves & Land and Water Reserves**–The Illinois Nature Preserves Commission assists private and public landowners in protecting high quality natural areas and habitats of endangered and threatened species in perpetuity, through voluntary dedication or registration of such lands into the Illinois Nature Preserves System. These sites range in size from 1 acre to over 2,000 acres and protect tall grass prairies, oak groves, sandstone bluffs, wetlands, forests, fens and bogs and more than 20% of all Illinois endangered species are in state dedicated nature preserves.

- **Illinois Natural Areas Inventory Sites** - completed in 1978, designates the state’s most rare nature areas. It serves as a guide for the Illinois Nature Preserves Commission when determining the eligibility of lands for protection. Currently there are only 654 high-quality, undisturbed natural communities in the state. Approximately half of these areas are unprotected. The INAI is undergoing a comprehensive update to identify new high quality sites and existing sites are being re-evaluated. The update will include a Sustainable Natural Areas Plan with green infrastructure playing a role.

IV. How can a more comprehensive application of Green infrastructure be organized (including stakeholders) to better improve resource management decisions?

The addendum serves to provide sufficient evidence that a variety of national, state, regional and local interests recognize and have developed viable applications of ‘Green Infrastructure’ as a comprehensive concept. Towards that end, the IDNR would support a more formal organized effort in regards to: 1) complementing IEPA’s storm-water/GI initiative and; 2) work with other public agencies and private interests to enhance a comprehensive Green Infrastructure initiative. The primary elements that need further development include:

- How to provide technical assistance
- How to increase and better direct funding
- How to advance ecological service valuation methods and applications
- Can state agencies better serve/ coordinate among various jurisdictions, by providing information and a technological framework via multi-jurisdictional planning structure
(See illustration below)

MULTI-JURISDICTIONAL GREEN INFRASTRUCTURE PLANNING FRAMEWORK

- State agencies can identify possible conflicts with broad agency plans and comprehensively assess ‘best management practices.’
- Regional agencies can foster regional thinking by demonstrating how actions in one part of the region can have effects in another part or at another time in the future.
- County planning organizations can look at regionally based plans and activities to identify potential conflicts and opportunities. They can also provide more relevant data sets for local planning within their jurisdictional borders.
- Local planning entities can make more informed decisions based on the long-term implications of plans and actions.

