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Foreword

Dr. Brian Anderson, Director, Illinois Natural History Survey

If you were uncomfortable when you read the title of this document, *The Sustainable Natural Areas Vision*, I understand completely.

As a conservation biologist, I have been skeptical of the “sustainability” movement. It is difficult to embrace sustainability in the midst of one of the largest extinction events in earth’s history. I have always been suspicious that business and industry have embraced the concept of sustainability because they have realized the public is not willing to accept the ongoing decline in environmental quality, so their compromise is simply to say “OK, we shouldn’t let things get any worse than they already are.” It is clear that individuals should stop despoiling their own little piece of turf, but bearing the responsibility for past damages is not something they are going to want to take responsibility for without a significant debate. I guess I would be much more enthusiastic about a “restoration” movement, but I recognize that might set off a huge debate about who the guilty parties are, and who should bear the costs of restoration. On the other hand, given what we now know about the survival of biotic resources in a fragmented landscape, significant restoration will be needed to slow the loss of Illinois’ biodiversity, and must be part of any sustainability strategy for natural resources.

My training in evolutionary biology suggests to me that change is the one real constant in the history of life on this planet. Some interpret “sustainability” to imply maintaining something into the future in its current condition, which has been the goal of the natural areas preservation movement for 30 years. However, natural systems are constantly adapting and evolving, and with emerging threats like climate change, we may have to shift our focus to sustaining the adaptive capacities of natural communities rather than individual components of those systems.

Of course, the ecologist in me also objected to the idea of sustainability as an absolute that can be achieved. But I am willing to concede we can always do better. “Sustainability” can be a laudable goal that we likely will rarely achieve.

Finally, the thorniest issue of all is the inclusion in most definitions of sustainability of the concept that it can be achieved without compromising our prosperity or quality of life. In fact, social justice advocates assert that in pursuing sustainability we must also provide for significant gains in quality of life for the world’s poor. Frankly, barring massive technological advances, and a rapid contraction in the world’s population, I cannot reconcile the balance sheet. So I was lukewarm about sustainability.

But I have changed my mind.

In June of 2008, I had the opportunity to participate in a workshop in Brazil focused on reducing greenhouse gas emissions from deforestation. The highlight of the event was the opportunity to

fly from Manaus two hours into the Amazon basin, land on a dirt airstrip carved out of the jungle, motorboat two more hours upriver to a village where I had the chance to listen to two indigenous, twelve-year old girls lecture about the importance of sustainability.

All of the contradictions inherent to the sustainability movement were still obvious as we traveled. Jungle was cleared for the airport that brought the teachers to the village to teach these youth about sustainability. And there is a possibility that the income generated by helping the indigenous Juma people identify products that can be sustainably harvested from the rainforest will encourage them to have more children than they otherwise might, potentially requiring more clearing of forest to increase the footprint of their village. But the Juma people control the destiny of over 1.5 million acres of tropical rainforest. In this case, with such high-quality natural resources at stake, those trade-offs may be acceptable.

But the real reason I have embraced the sustainability movement is two little girls in Brazil who are now part of the discussion about the future of the lands where they live, work, and play.

So, I have become an advocate for sustainability, with the caveat that our investments in sustainability should be graduated, with the greatest resources invested in sustaining resources most at risk; and there are no rarer or more at-risk resources than Illinois' natural areas. With over 79% of Illinois plowed, paved, drained, or landscaped, and most of the remaining naturally vegetated land disturbed by other land uses, invasion by exotic species, or under threat of development; Illinois' undisturbed natural communities are precious beyond comparison.

You may also ask why this work is called a "Vision" rather than a "Plan." The original Illinois Natural Areas Inventory (INAI) was followed by publication of the *Natural Areas Plan (Plan)*. The Plan was written by staff of the Illinois Department of Conservation (the predecessor of The Illinois Department of Natural Resources). The Plan laid out the way in which IDOC would approach acquiring and protecting natural areas. It was prescriptive. In this work, we hope to cast a vision for an approach to ensure that Illinois' natural areas persist into the future. We will identify a host of challenges and opportunities for helping make that happen, but with emerging global threats like climate change, this will only be achievable by engaging a much broader spectrum of organizations, political leaders, and individuals in the natural areas movement than have been active in the past. In other words, we hope, in the name of sustainability, to involve them in the discussion.

So what shape will this "vision" take? The principles of conservation biology, a discipline that did not even exist when the original INAI was done, provide guidance on some of the broad outlines. Many natural areas are too small to support effective populations of the species now using them as habitat over the long term. We know we will have to expand their effective size by adding buffer areas around them; buffers that will develop ever greater capacities to support native species as they are restored to higher natural quality. Given the nature of threats like climate change, we know we must allow both plants and animals to migrate to new areas where

the climatic conditions needed to support their populations are available. Thus, we envision complexes of buffered natural areas connected by corridors, preferentially oriented in northerly-southerly directions. Because of issues of scale, complexes of natural areas that will be more sustainable than individual natural areas should be connected to form networks of sustainable natural areas, which should in turn be even more sustainable. Continuing to increase the connectivity between networks should, in theory, provide increased probability for the sustainability of the system as a whole, as well as all of its individual parts. Of course, connecting all networks may not be feasible, though you should remember that the corridor usable by a bird may be very different from the corridor needed for a salamander.

The “Sustainable Vision” as we will refer to this document throughout its six chapters, is not a plan; it does not prescribe step-by-step, along with a timeline, which opportunities and challenges need to be addressed when, or provide much detail on the tactics to be employed in pursuing them. I suspect that as we learn more about the nature of the threats our natural areas face, about invasive species, climate change, and future land use, and learn even more about conservation biology, the vision will at times become more blurry, and at other times come into sharper focus. It is also important to point out that a plan is owned, a vision is shared. And this document illustrates just how many people must become part of the conversation, must share the vision, if Illinois’ biodiversity is to be sustained into the future.

One important point: building more sustainable networks of natural areas does not imply that all these lands need to be publicly owned. It does imply that landowners understand the natural resource benefits their lands provide, and that those landowners make a conscious decision to contribute to the effort, which brings me back to the Sustainability Movement.

So when you read the phrase “creating sustainable natural areas,” please recognize it as shorthand for “employing the best science and management available to increase the probability of sustaining the adaptive capacity of Illinois’ natural communities and the survival of Illinois’ flora and fauna into the future.”

Depending on your background, whether you are a scientist, a natural resource professional, an environmental advocate, an elected official, a suburbanite, or a farmer, you may choose to read only certain parts of this document. If you have never heard of a natural area, you might wish to read all of it. But whomever you are, no matter what caused you to pick this up, welcome to the discussion! I hope this discussion forges in you a stronger relationship with this land we call Illinois, and a willingness to accept responsibility for the stewardship of the natural resources with which she has been blessed.

Executive Summary

While the term “sustainability” was not widely used when IDNR’s Natural Areas Plan was completed in 1980, the concepts embodied in sustainability today were identified as a primary goal. There were differences, however. In 1980, the primary methods by which core natural areas were to be preserved and protected for future generations centered on acquiring them through fee simple acquisition or buying it directly, a conservation easement, or enrolling them in an Illinois Nature Preserves Commission (INPC) program. Once protected, these natural areas could then be managed to maintain their quality.

Clearly, given the many ecological and cultural changes that have occurred in the past thirty years and emerging conservation biological principles, these actions alone are not sufficient to ensure the long-term viability of many of these core natural areas. As a result, the purpose of the Sustainable Vision is to explore what actions will be necessary to ensure that core natural areas survive into the next century – or how they can become sustainable. Four specific goals of the Sustainable Vision are identified in Chapter 1:

1. Identify an implementable framework for creating a sustainable, connected system of natural areas. This goal has both a short-term and long-term perspective.
2. Identify all stakeholders and their roles in this effort.
3. Consider the many challenges inherent in creating a system of sustainable natural areas and identifying the opportunities to address these challenges.
4. In the companion document, *Resourcing the Sustainable Natural Areas Vision*, explore past natural resources funding capacity and identify the future funding and funders needed to protect and sustain natural areas.

A summary of the issues related to sustainability and other major components of the Sustainable Vision are discussed in Chapter 2 – including the Illinois Natural Areas Inventory, endangered and threatened species, the identification, protection, stewardship, defense, and adaptive management paradigms, and natural resources auditing.

The key ecological and social-cultural threats facing natural areas today are explored in Chapter 3, along with the tools that exist to address them. Some of these tools, such as buffers, corridors, stewardship, and restoration, are well known and widely used. Others, such as natural resources auditing, landowner contact programs, and assisted migration are less widely known and somewhat controversial.

In order to meet the goals of the Sustainable Vision, it is imperative that a wide range of stakeholders be engaged – some of whom are not traditional allies in this process. In Chapter 4,

four categories of stakeholders are defined and identified. Stakeholders are those agencies, organizations, or individuals possessing one or more of the following criteria:

1. Hold fee simple title to lands that can play a role in the system of sustainable natural areas
2. Involved in the protection, stewardship, or defense of natural areas
3. Possess the authority to affect natural resources or land use.

Challenges and opportunities are identified for all stakeholders in all sectors and at all levels in Chapters 4 and 5 – beginning with the governor and legislature.

Conservation of Connectivity - a New Planning and Protection Paradigm for the Future

As discussed in Chapter 6, a central theme emerged through the process of meeting with stakeholders to develop the Sustainable Vision – the need for a new planning and protection paradigm – the conservation of connectivity, where we work to connect:

- Natural areas with their surrounding landscapes.
- Conservation planning processes being done by NGOs and federal, state, and local agencies.
- Conservation organizations and agencies to become an energized and effective force in sustaining natural areas.
- People with the land.

This emphasis on connectivity is vital to the future of natural areas.

The new conservation of connectivity paradigm will require us to change how we are protecting natural areas – from an individual site protection approach to one that connects core natural areas to the landscape around them, enlarging them to sustain greater biodiversity, and resilient enough to adapt to climate change and other ecological and cultural threats.

The connectivity paradigm also requires everyone engaged in conservation to coordinate their activities to provide greater focus and unanimity – to strategize, plan, and act collaboratively to create a common voice on conservation issues. Connecting or, more accurately, re-connecting people to the land is also vital to creating and protecting natural area networks, through formal and informal education programs and fieldtrips. Connectivity is the future of conservation – without it, we will not be successful.

In Chapter 6, a set of actions was recommended for the future that will help achieve connectivity of the landscape, planning processes, among conservation organizations, and of people and the land. A summary of these actions includes:

Landscape Connections – connecting core natural areas with the surrounding landscapes.

1. *Use Preserve Design Criteria to Identify Sustainability Strategies*
Conduct a statewide assessment of all core natural areas to determine how to protect and sustain them. Basic guidelines for landscape connections need to be identified and revised as new information on genetics, connectivity requirements, plant disease transmission, and other threats are known.
2. *Develop an Initiative to Build an Effective Natural Areas Program within IDNR/INPC*
Using the information in the *Resourcing the Sustainable Natural Areas Vision* document, develop a strategy to expand the role of IDNR and strengthen the role of the INPC in protecting and sustaining natural areas.
3. *Develop Comprehensive Natural Resources Auditing Programs*
In order to evaluate the success of protecting and sustaining these important state assets, it is vital that a natural resources auditing program be established. This needs to include comprehensive auditing of each core natural area and the establishment of buffers and corridors to ensure that the preserve design strategies are working well. Where problems are identified, adjustments can be made before they become too severe to resolve.
4. *Identify Key Ecological Research Needs*
Research needs to be conducted on the many challenges facing natural areas, including the changes to natural fire regimes and hydrologic conditions, the influx of invasive and exotic species, and the most daunting of all, the threats posed by climate change. Other potential threats that warrant exploration include the effects of artificial lighting on natural communities and the potential impacts of plant diseases and viruses. There is a need for a new landscape science where guidance for connecting natural areas to the surrounding landscapes is explored.
5. *Establish a Sustainable Communities Institute to Identify Key Cultural-Social Needs for Creating Sustainable Networks of Natural Areas*
Two of the threats to the state's natural resources are incompatible urban land uses and the conflict that often occurs among natural resource protection and economic development, housing, or transportation needs. It is important to understand these problems, to explore solutions, and to educate local officials and developers in implementing more sustainable development practices that are compatible with the goals of the Sustainable Vision.

Connecting Planning Efforts across Organizations and Agencies

6. *Develop a Sustainable Natural Areas Legislative Agenda*
Create a process to review the legislative opportunities identified in the Sustainable Vision and develop the strategies needed to see them adopted.

7. *Evaluation and Sharing of the INAI*

Complete a thorough assessment of the completed Illinois Natural Areas Inventory Update. This includes the statewide assessment for new natural areas that qualify for the inventory, as well as the reassessment and remapping of existing Category I sites, both to be completed in 2011. To begin identifying strategies to protect and sustain these sites, it is vital to evaluate the ownership status of each core natural area, the geographic distribution of these sites across the state, and the acreage, location, and natural quality of specific natural community types. Upon completion of the INAI Update and the evaluation of the results, this information needs to be shared among all stakeholders.

8. *Establish a Gubernatorial Land and Water Resources Cabinet*

A Land and Water Resources Cabinet, established by the Governor, would serve as a forum for agency directors to identify common goals and resolve conflicts around land use issues, including those related to protecting and sustaining natural areas. An example of a common interest among many agencies could be biological carbon sequestration on public lands, including highway corridors. Other examples could include ensuring the production of high quality, local food for Illinois residents, the provision of outdoor recreation opportunities, protection of other natural resources assets, and improving the quality of life of all Illinois citizens. Members of this cabinet could meet to identify long-range goals of their agencies related to land use, as well as programs that could conflict with the goals of creating sustainable natural areas across the state.

Connecting Conservation Professionals and Volunteers

9. *Develop/enhance Strategic Partnerships, Including a Network of Nontraditional Allies*

Successful partnerships among stakeholders are vital for the implementation of the opportunities identified in the Sustainable Vision. Existing partnerships can be strengthened and expanded to include nontraditional partners that influence land use in some way. New partnerships are also needed in portions of the state where none now exist. Such partnerships should also include nontraditional allies.

10. *Hold an Annual Workshop for Conservation Planners*

Convene an annual workshop to bring together conservation and environmental planners, ecologists, researchers, and others involved in the effort to create sustainable networks of natural areas. These workshops would provide the forum for professionals to share successes, learn from the efforts of others, and provide the energy and momentum that is important to meeting the daunting challenge of meeting the goal of creating the sustainable networks of natural areas.

Reconnecting People with the Land

11. Establish a Comprehensive Landowner Contact Initiative

Once the ownership status is known for each core natural area, landowners can be contacted to inform them of the uniqueness of their natural area, lead them on a tour, and discuss future management needs. This is particularly important for privately held natural areas.

Landowners can be encouraged to dedicate these areas as Illinois Nature Preserves or register them as Land and Water Reserves. Management strategies can also be discussed with landowners.

12. Establish New and Support Existing Recreation and Education Programs

Richard Louv's book, *Last Child in the Woods*, sparked a national discussion regarding the need to reconnect children to nature. This concern has led to a wide range of federal, state, and not-for-profit outreach programs, in agencies and organizations such as the U.S. Fish and Wildlife Service, IDNR, and Chicago Wilderness. There are specific steps that can be taken to address the need to reconnect children (and adults) with nature. Among these are fully funding OSLAD and LAWCON grant programs and IDNR's outdoor education and recreation programs such as urban fishing, ENTICE environmental education workshops, naturalist interpreters at state parks.

Immediate Actions to Initiate

Planning for each of these 12 initiatives should be undertaken immediately in order that they are ready for implementation at the first opportunity. Those needing extensive funding may require waiting until the economy improves, but developing the plan of action now will enable action to be taken more quickly in the future. Several of the initiatives could be implemented immediately, such as the formation of the Land and Water Resources Cabinet by the Governor, the development of the legislative agenda, and the building and strengthening of partnerships.

Other of these initiatives require attention as soon as possible in order that the remaining can be started. This includes the thorough assessment of the INAI in order to develop a site-by-site strategy for creating sustainable natural areas using preserve design criteria, as well as expanding and strengthening the roles of IDNR, INPC, and the IESPB. An assessment of the many other opportunities identified in the Sustainable Vision should also be undertaken to develop a strategy for implementing them as well.

With the many challenges facing natural areas now and into the future, it is critical that all stakeholders take advantage of the opportunities identified in the Sustainable Vision or there may be precious few natural areas remaining to protect in decades to come. The time to act is now!

The Illinois Sustainable Natural Areas Vision

Chapter 1

Introduction

Background

Thirty years ago, Illinois embarked on the first statewide natural areas inventory, identifying high-quality natural communities, habitat for endangered and threatened species, and unique geologic features that remained in the state. This Illinois Natural Areas Inventory (INAI) became the cornerstone of the state's natural areas preservation efforts and continues today as the underpinning of a host of natural resources plans, regulations, and natural resource programs and inventories. Its latest focus is the *Illinois Sustainable Natural Areas Vision* (Sustainable Vision) and its goal of ensuring that the INAI is maintained and updated, and the natural areas identified are made sustainable.

George B. Fell, founder of the Natural Lands Institute and co-founder of the Natural Areas Association and The Nature Conservancy, captured the need for such an inventory:

We who work in the natural area preservation movement...have a noble cause. Almost nobody before us had seen the need or been able to set aside natural areas. And those that follow will no longer have the chance. They will only be able to care for what we leave them. (1)

The INAI was more than a simple natural resources inventory. With the creation of the Natural Areas Association in 1978, which has since become a national and even international organization, and the approval of the Illinois Natural Areas Plan by the Illinois Department of Conservation¹ in January 1980, the INAI became the foundation for the natural areas movement within the state. While the Illinois Department of Natural Resources (IDNR) and the Illinois Nature Preserves Commission (INPC) initiated the INAI 30 years ago, it has been embraced by, and continues to inform, the work of forest preserve and conservation districts, state and federal agencies, conservation organizations, land trusts, and many other stakeholders across the state.

Thirty years after the completion of the first INAI, we have learned that achieving sustainability of these high-quality sites, referred throughout this document as “core natural areas,” requires more than purchasing them and taking steps to manage them. Many of these sites are small and isolated, posing serious management challenges. The landscape has also changed dramatically in

¹ Due to an administrative reorganization in 1995, the Illinois Department of Conservation (IDOC) was merged with other agencies to become the Illinois Department of Natural Resources (IDNR). All references to IDNR include the period in which the agency was referred to as IDOC.

the past 30 years – urban development and other land uses changes have resulted in the fragmentation, loss, and degradation of many natural areas, and agricultural practices have become less accommodating to natural areas. New ecological problems have also emerged. Invasive species have become an overwhelming problem across the entire state, and the consequences of climate change are yet unknown. A new approach is clearly needed.

The need to find a new approach to protecting natural resources is supported by ecologists such as Michael L. Rosenzweig, who asserts “...conservation as we now practice it will only delay the monumental forces humanity has deployed against the world’s [biological] diversity” (2). Traditional approaches of securing and restoring individual core natural areas, while still necessary, are not sufficient to achieve sustainability. According to Rosenzweig, “traditional biological conservation rarely incorporates a dynamic view of Nature” (2). In many cases, traditional conservation practices *cannot* address the dynamism of Nature because the amount of land involved is too small and the surrounding lands are incompatibly managed.

There are also socio-cultural reasons to explore new approaches to protecting natural resources. Environmental economist Sabina Shaikh “conservation for the sake of conservation is hard to sell” to the public (3). It is critical that a message be developed that the public finds compelling. She also suggested that economists believe in the “power of incentives to predictably internalize the externalities.” As a result, new incentives must be identified for protecting natural areas in situ rather than having to restore what has been destroyed.

It is now time to look to the next 30 years and beyond. How will these sites be protected in perpetuity? How will existing management demands be met in the future? What new management challenges will emerge? What will be the consequences of climate change? Who is responsible for the protection and stewardship of these sites? How will the necessary funding be secured? And the most daunting and challenging question, how do we make these sites sustainable to ensure their survival into the twenty-second century, particularly in light of the current economic crisis?

As we discuss the issue of sustainability, there are questions that must be explored. For example, what are the qualities that will indicate sustainability has been achieved? Should our goal be to create natural areas that can adapt naturally, as changes occur, or should we be attempting to protect and maintain natural communities, as they exist today? Which natural communities are at greatest risk? How can corridors and buffers be designed to benefit core natural areas and avoid potential negative consequences? How do we increase awareness of the threats that exist to natural areas and provide the human and financial resources needed for land management and natural resources auditing? Not all of these questions have easy answers, but all must at least be considered when discussing the issue of sustainability.

Many ideas have surfaced during the preparation of the Sustainable Vision as to how natural areas might be protected and made sustainable into the future. These ideas respond to both ecological and cultural pressures upon natural areas. Examples of these ideas include:

1. Engaging citizens and increased activism, e.g., establishing “Friends of” groups.
2. Expanding natural resources educational opportunities for political and civic leaders, schoolchildren, and the public.
3. Building sustainable natural resource institutions (agencies, Non-governmental Organizations [NGOs].
4. Increasing restoration efforts.
5. Expanding management and natural resources auditing.

Before exploring the framework for working towards sustainable natural areas, it is important to recognize key plans that have been developed in the past, as well as current planning efforts that have goals complementary to the Sustainable Vision to avoid duplicating work previously done. The past plans have shaped the current social and environmental situation to which the Sustainable Vision is now responding, thus they are examined here for comparison and context.

Previous Planning Efforts

While the Sustainable Vision will be addressing a wide range of topics, there have been a number of planning efforts in the past that have addressed similar issues. Many recommendations have been made in these plans over the past 30 years, some of which have been implemented, while others were not. Some of the plans are regional in nature, such as the Chicago Wilderness *Green Infrastructure Vision* and Openlands’ *Under Pressure*. None of these plans directly address the sustainability of core natural areas, although the *Natural Areas Plan* of 1980 comes the closest.

It is important to acknowledge these worthy efforts to protect natural resources, to explore the commonality among these plans, and to develop new approaches that might succeed where past efforts have not achieved desired results. One of these is the identification of the broadest range of stakeholders, including the governor and legislature. As will be demonstrated, achieving the goals of the Sustainable Vision cannot be achieved without support from both the governor and the legislature, as well as other political bodies, such as local units of government.

The following is a summary of plans that have been developed by IDNR, the INPC, Chicago Wilderness, and Openlands to protect the natural resources of the state. These plans were selected for review because they address the range of issues that are important to meeting the goals of the Sustainable Vision, and/or were prepared by agencies or organizations that are key stakeholders to this effort.

The Illinois Natural Areas Plan – 1980
Illinois Department of Natural Resources

The Illinois Natural Areas Plan was developed in 1980 by the IDNR, following the completion of the Illinois Natural Areas Inventory (INAI) in 1978. The INAI identified the locations of many of Illinois' remaining high-quality natural areas, endangered species habitat, and other categories of natural areas, along with landowner information. Knowing land ownership allowed an assessment of which sites were publicly held versus privately owned. Sites already publicly owned were afforded greater protection and management. It was found that only one in five INAI sites were safely preserved. Thus, the Illinois Natural Areas Plan was initiated to (4):

- Present a plan of action with commitments and recommendations for the preservation of INAI sites.
- Describe the types of natural areas that exist in Illinois.
- Explain the need for management of these sites.
- Assess ownership and preservation status of INAI sites.
- Summarize programs and tools that exist to protect these sites.
- Propose ways for citizens to protect these core natural areas.

Objectives and action items were proposed for seven topical areas:

- Land Acquisition
- Uses of Land
- Public Awareness
- Incentives
- National Direction
- Cooperation
- Management

Forty-six action items were identified in this plan to achieve the above objectives. Many of these were successfully implemented and others are ongoing efforts even today. This plan was hailed as a success by many conservationists, in part, because it was the first of such plans completed within Illinois — or even the nation. A second reason that has been given for the success of this plan is that it was endorsed by then Governor James Thompson. This strengthens one of the tenets of the Sustainable Vision — support for protecting and sustaining natural areas must come from all levels, including the governor, legislature, local officials, the public, and more.

The Crisis of Wildlife Habitat in Illinois Today —1984–85
Illinois Wildlife Habitat Commission

In 1985, *Outdoor Highlights*, a publication by the former Illinois Department of Conservation (IDOC), quotes IDOC Director M.B. Witte describing this report as “a guide for future actions by the public, industry, the Executive Branch and the General Assembly” of Illinois (5). It highlights the importance and challenge of conserving a diverse array of wildlife habitat in Illinois through private landowner involvement, as well as public and legislative action. It was prepared by a commission established by the Illinois legislature.

This report includes a discussion about the need for the conservation and restoration of wildlife habitat and the problems and possible solutions in meeting them. To stem wildlife loss, it includes recommendations involving intergovernmental cooperation, ecological incentive and education program creation, land acquisition (both public and private), research, and, more specifically, adoption of a statewide wildlife habitat management plan with needed appropriations and legislative-based conservation incentives.

Programs suggested as solutions in this plan focus on (6):

- The education and financial support of private landowners in habitat conservation-related efforts.
- Acquisition and management of public lands.
- Public education in and out of the classroom, with specific mention of state acquisition or lease of INAI sites for the purpose of use as “outdoor laboratories.”
- Research on Illinois’ wildlife and management techniques.
- The collection of baseline scientific data.

The report concludes with an urgent call for legislative action and offers short- and long-term solutions as well as specific recommendations for executive action by the governor, most of which have been largely unmet. Reasons for this are difficult to ascertain, but apparently, the recommendations did not become a priority for state government.

One recommendation posed in this 1985 report was that a “wildlife habitat management plan should become an integral part” of a legally binding comprehensive natural resources management plan (6). The completion of the Illinois Wildlife Action Plan (IWAP) in July 2005 may represent completion of the wildlife habitat management plan called for in this 1985 report; however, no broader natural resources management plan has been developed, nor was the IWAP enacted into law. The IWAP, however, represents a major step forward in realizing the vision established in this plan.

Strategic Plan for the Ecological Resources of Illinois — December 1995
Illinois Department of Natural Resources — Division of Natural Heritage

The purpose of the Strategic Plan for the Ecological Resources of Illinois (SPERI) was “to challenge public and private agencies, organizations, and every Illinoisan to do their part to improve the ecological diversity of the state. This plan relies on cooperation among the public, private, and not-for-profit sectors which share responsibility for, and ownership of, the lands of Illinois” (7).

SPERI focused on the rarest plants and animals in Illinois – with an emphasis on “protecting and restoring the ecological resources of Illinois” (7). SPERI contains four sections, each addressing the protection and restoration of biological diversity at different scales – landscape, community, species, and genetic. Forty-seven tasks were identified within these four areas with the following themes:

- Increased management, restoration, and monitoring.
- Public outreach and education.
- Protection of rivers, streams, endangered species, and ecological reserves.
- Understanding the importance of genetic diversity.

Funding needs were not identified explicitly, although additional funding would have been required to implement the tasks identified. Unfortunately, few of the tasks identified were completed, although many of these remain relevant today. The reasons for not being implemented include a lack of input or support outside of IDNR for the themes or tasks, and being completed when the state was undergoing major restructuring of agencies, including IDNR, which diverted attention from the goals of this plan.

Under Pressure – Land Consumption in the Chicago Region 1998-2028 – January 1999 Openlands Project

This report was written by the Openlands Project as an assessment of the future development likely to occur in the Chicago region and the potential impacts to natural areas and critical species habitats that would result. This report found that the developed land area in the Chicago Region would double over the 30-year period of 1998–2028, and 300 natural areas and critical species habitats would be at risk of being lost. As examples, 19 of the 21 known locations of the Hine’s emerald dragonfly, 35 nesting sites for colonial nesting birds, and over 100 prairie remnants were identified as being in the path of future development (8).

Four key policy recommendations were proposed in this report, three of which would strengthen regional planning and land use decision-making by local governments. One recommendation was for the establishment of a new Metropolitan Planning Agency in the Chicago region, which occurred with the formation of the Chicago Metropolitan Agency for Planning (CMAP) in 2005. The other regional planning recommendations were far reaching, but never generated the political traction to be initiated: establishment of a State Office of Planning and Land

Conservation and creation of a Tri-State Regional Task Force to coordinate growth management efforts. The fourth involved the establishment of a State Land Preservation Program in Illinois and the provision of permanent funding for land acquisition across the state, which have not been as robust as intended. The Sustainable Vision aims to catalyze the implementation of programs and funding sources such as those recommended in the *Under Pressure* report.

Biodiversity Recovery Plan: How to Save Nature and Enrich the Quality of Life in the Chicago Region – 1999, Chicago Wilderness

This report was prepared by Chicago Wilderness, a collaborative effort of 250 organizations devoted to protecting the “Chicago Wilderness,” which consists of 360,000 acres of protected conservation land (9) as well as the “larger matrix of ...lands...that support nature in the region along with the people who protect and live compatibly with it. The geographic area covered by the Chicago Wilderness region includes northeastern Illinois, northwestern Indiana, and southeastern Wisconsin” (10). The plan addresses a wide range of conservation issues in this tri-state region.

The plan’s broad scope identifies strategies that address the social and scientific issues that are top-down and bottom-up, and use preemptive and defensive approaches to protect and provide stewardship for the land. It includes a wide variety of topics from ecological monitoring and best management practices, to economic analysis of biodiversity protection and the “essential role for local governments...in protecting and enhancing regional biodiversity” (11). The *Biodiversity Recovery Plan* focuses on areas of highest priority, and highlights the needs:

- For stewardship of existing protected natural communities through management, monitoring, and research.
- To identify and preserve natural communities vulnerable to destruction.
- To adopt local and regional development policies that reflect the need to protect and maintain biodiversity.

This report is widely used by Chicago Wilderness coalition members in their efforts to protect natural resources in northeastern Illinois and was adopted by the Northeastern Illinois Planning Commission (NIPC) the same year as the plan’s release. It is also a reference for local officials and developers interested in adopting and implementing sustainable development practices. The Biodiversity Recovery Plan may continue to prove useful in helping planners and scientists to protect and sustain natural areas.

Protecting Nature in Your Community: A Guidebook for Preserving and Enhancing Biodiversity – 2000, Northeastern Illinois Planning Commission

This guidebook was written by Jason Navota and Dennis W. Dreher of NIPC for the Chicago Regional Biodiversity Council to address the need for local governments to plan and act for the conservation of natural areas within the Chicago Wilderness region. This guidebook builds on Chicago Wilderness' Biodiversity Recovery Plan by presenting planning, regulatory, management, educational, and technical tools with which local governments can “create public policies, strategies, and regulations to protect and enhance biodiversity” (11). The report provides background information, recommended approaches, benefits, local examples, and references for more information and technical assistance on a wide range of topics:

- Comprehensive land use planning
- Compatible zoning and subdivision regulations
- Improved stormwater management
- Stream, lake, and wetland protection
- Natural landscaping
- Improved wastewater management
- Open space preservation
- Natural area management and restoration
- Education

This report, in conjunction with the Biodiversity Recovery Plan, continues to be used to inform local officials about natural resources protection through the development process. *Protecting Nature in Your Community* should be a useful resource for the public in securing stewardship for privately owned natural areas.

Common Themes and Successes

Three of the plans reviewed, the Natural Areas Plan, The Crisis of Wildlife Habitat in Illinois Today, and SPERI, covered the entire state and addressed a broad range of issues important to the preservation of natural resources.. Public involvement and education, as well as natural resources management were common issues addressed in all three plans, while land acquisition, incentives, and cooperation among stakeholders were common to at least two of three. The remaining three plans focused on northeastern Illinois, a highly urbanized and rapidly developing area, so greater attention was paid to land-use issues and strengthening regional and local planning efforts.

The top four issues common among these plans are, in order of priority:

- Natural resources management.
- Public awareness/education to recognize and value the importance of natural resources.
- Strengthening land use/regional and local planning infrastructure to better protect and sustain natural resources.

- Acquisition of natural resources and other valuable open space.

While the Sustainable Vision will address many of the issues raised in these plans over the past 30 years, it is important that new approaches be considered for long-standing problems such as funding and land acquisition. The roles of all agencies, organizations, and individuals also need to be considered, including that of the governor, legislature, and state agency directors.

Table 1: Key Issues in Six Previous Plans (1980-2000)

Issues	Natural Areas Plan 1980	Crisis of Wildlife Habitat 1985	SPERI 1995	Under Pressure 1998	Biodiversity Recovery Plan 1999	Protecting Nature in Your Community 2000
Land Acquisition	X	X		X		
Public Involvement/Education	X	X	X			X
Stakeholder Cooperation	X	X				
Incentives	X	X				X
Management	X	X	X		X	X
Research Genetic Diversity		X	X		X	
National Direction	X					
Land Use/Regional and Local Planning	X			X	X	X
Restoration			X			
Monitoring			X		X	
Rivers/Streams Protection			X			

Current Planning Initiatives

Four key natural resources plans or programs currently underway complement the Sustainable Vision's efforts to create sustainable natural areas. These include Chicago Wilderness' Green Infrastructure Vision, Grand Victoria Foundation's Vital Lands Illinois program, CMAP's Go to 2040 Plan, and IDNR's Wildlife Action Plan.

Chicago Wilderness' Green Infrastructure Vision

The Chicago Wilderness is "a regional alliance that connects people and nature" (9). Their members include over 250 organizations from the greater Chicagoland area. Many of their members and partners collaborated to develop the Green Infrastructure Vision

(GIV) plan. According to Chicago Wilderness, “The Vision is not merely a land acquisition strategy, but rather a call to carefully think about how we can live in and among natural areas in a sustainable way and to mutual benefit” (12).

The implementation of the GIV includes a regionally scaled effort to develop land-use plans that take conservation of the environment and people’s communities into account. The main product of the initiative thus far is a regional-scale map of the Chicago area’s green infrastructure (GI) and resource protection areas derived from the findings of CW’s Biodiversity Recovery Plan.

Chicago Wilderness’ definition of green infrastructure, seen in the introduction to this chapter, strongly coincides with the Sustainable Vision’s definition of sustainable natural areas networks. However, the primary focus of GI differs from that of this document. GI concentrates on creating living landscapes that provide for the needs of society (ecosystem services); whereas, the Sustainable Vision’s goal is to create natural areas that are resilient and can sustain ecosystem processes and functions. Aside from these distinctions, Chicago Wilderness’ GIV is complementary to the Sustainable Vision in many ways. Efforts to create sustainable natural areas in regions within and adjacent to the 14 counties that the GIV covers will be greatly facilitated by partnering with Chicago Wilderness’ members.

Grand Victoria Foundation’s Vital Lands Illinois

The Grand Victoria Foundation’s initiative, Vital Lands Illinois, is “intended to help ensure the permanent protection and long-term stewardship of Illinois’ most vital lands and build support for projects and conservation among public, private, and nonprofit organizations, other potential donors, and the broader public” (13). According to the foundation, the program has “an overall goal of creating a statewide, connected system of natural lands, ensuring their permanent protection and long-term stewardship, and building public support for conservation” (13). Currently, Vital Lands Illinois is empowering land trusts to collaborate on multilateral projects and is a major supporter of the Sustainable Vision. The Vital Lands Illinois initiative complements that of the Sustainable Vision. In one sense, the Vital Lands effort is broader than that of this document in that it includes lands other than INAI sites. On the other hand, it involves a narrower range of stakeholders, primarily land trusts and their direct project partners; whereas, the Sustainable Vision is attempting to engage an even broader range of constituents, many of whom are not involved in the Vital Lands effort. Both Vital Lands and the Sustainable Vision have a goal of protecting and connecting sensitive natural resources.

CMAP's GO TO 2040 Comprehensive Regional Plan – Parks and Open Space

The Chicago Metropolitan Area for Planning (CMAP) is the official regional planning organization for the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. By state and federal law, CMAP is responsible for developing a comprehensive regional plan, the *GO TO 2040* plan. This plan covers a wide range of topics, one of which is parks and open space. Creating a network of parks and open space has been the vision in the Chicago region since the Burnham Plan was released in 1909. This vision persists today and is reflected in *GO TO 2040*.

GO TO 2040 identifies three key parks and open space goals for the region:

1. Establish more parks in developed places.
2. Protect important natural areas.
3. Provide connections between parks/preserves (i.e., use the Green Infrastructure network as a design concept).

The discussion of parks and open space in *GO TO 2040* covers a broader set of open space areas than does the Sustainable Vision in that it encompasses a wider range of parks and open space. Some of these areas provide recreational opportunities unrelated to natural areas sustainability; however, two of the agency's goals parallel the goals of the Sustainable Vision perfectly – protecting important natural areas and providing connections between them.

A key idea from *GO TO 2040* is that land conservation going forward must result from a collaborative, multi-organizational, public-private partnership. That will work best, the plan suggests, if there is a common “game plan” for conservation. For northeastern Illinois, that should be the goal to create a fully connected network of green infrastructure, as described in the Chicago Wilderness Green Infrastructure Vision. There has been a great deal of planning activity for land conservation already, and *GO TO 2040* suggests that the main job now is to make sure open space funding programs and state/local policies are aligned with plan recommendations. An example of such an approach is the Grand Victoria Foundation's use of grant funds to support implementation of the Illinois Wildlife Action Plan. Furthermore, *GO TO 2040* sets what is meant to be an aggressive, but achievable, target for additional land protection in the Chicago metropolitan area—another 150,000 acres by 2040, focused within the green infrastructure network. These concepts will overlap those contained in this document, although the Sustainable Vision will include challenges and opportunities related to natural areas for a broader range of stakeholders. The two plans are complementary.

IDNR's Illinois Wildlife Action Plan

The Illinois Comprehensive Wildlife Conservation Plan and Strategy (CWCP) was developed to “set a course for stewardship of all wildlife species, with special attention given to species in greatest need of conservation” (14). The CWCP “is a comprehensive plan to manage public and private lands in the best way possible to benefit all Illinois wildlife” (15). The creation and implementation of the CWCP was required by the federal government to allow the IDNR to receive funding from the Wildlife Conservation and Restoration Program (WCRP) and the State Wildlife Grant Program (SWGP) program. The planning effort included input from over 150 agencies and organizations, all with a stake in implementing the goals of IWAP. The implementation phase began in 2006 under the direction of the IDNR. The IDNR also created the Illinois Fish and Wildlife Action Team to help guide, direct, and coordinate implementation activities on a statewide scale. The team is a committee comprising IDNR staff and other core partners, including conservation-focused NGOs, as well as hunting and fishing organizations (17). In the implementation phase, the CWCP was renamed the Illinois Wildlife Action Plan.

Efforts to implement IWAP will overlap with efforts needed to create and sustain natural areas. Items addressed in the IWAP common to the implementation needs for the Sustainable Vision include the restoration and management of Grade A and B Natural Area Inventory sites, and those related to landscape-scale habitat protection and management goals. Specific to landscape-scale, ecosystem-based land protection are the Conservation Opportunity Areas (COAs) identified as areas having high importance for conserving species in greatest need of conservation. However, not all of these species occur within this set of locations, and restricting conservation actions to these areas will not necessarily maintain viable populations or meet the objectives outlined in the Plan/Strategy. COAs were designated using scientific data and conservation partner input. As seen in Figure 6 (Chapter 3), many COAs overlap identified buffer zones between natural areas, and can serve to prioritize and rank potential alignments and locations of corridors and associated natural areas complexes.

Goals of the Sustainable Vision

While natural areas planning efforts typically have been solicited using a “bottom-up” approach, e.g., soliciting input from land managers and others directly involved with preservation efforts, what is also needed is a “top-down approach” to provide the direction and economic support for implementation of the opportunities identified. The governor and legislature, as do the heads of agencies and organizations, have responsibilities for providing the funding, incentives, and legal and administrative frameworks to allow land managers and others to create sustainable natural area complexes.. The challenges and opportunities associated with achieving sustainability will be explored throughout the Sustainable Vision.

Challenges to achieving the goals of the Sustainable Vision were identified through numerous meetings with natural resource professionals, various stakeholders, and at the Illinois Natural Areas Summit held on March 9, 2010. Opportunities for overcoming these challenges were also identified. These opportunities could require actions by the governor/legislature, state agencies, IDNR/INPC/IESPB specifically, local governments, park, conservation, and forest preserve districts, federal agencies, NGOs, the public, or private landowners. Some of these challenges and opportunities require funding, while others require legislative action. And these challenges and opportunities are responsive to both ecological and cultural pressures upon natural areas.

There are four goals of the Sustainable Vision:

- Set forth a workable, implementable framework for creating a sustainable, connected system of natural areas. This goal has short-term and a long-term perspectives. In the short term, efforts will be made to protect natural areas as they exist today, encompassing all the current ecological functions and biodiversity of these sites. In the long-term, however, efforts will be needed to create larger, resilient, connected systems that may adapt to changing environmental conditions, even if that means changes in ecological function and biodiversity.
- Identify the potential roles of all stakeholders in this effort, including the governor and legislature, federal, state, and local government agencies and officials, not-for-profit organizations, and private landowners.
- Consider the many challenges and opportunities that exist for protecting natural areas and creating sustainability, which include addressing the large-scale, current, and emerging pervasive threats to natural areas, such as invasive species, climate change, urban development, and other land-use changes.
- In a separate *Resourcing the Sustainable Natural Areas Vision*, two issues will be explored:
 - Past funding capacity for acquiring natural areas.
 - Future funding needs to protect and sustain natural areas.

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The Illinois Sustainable Natural Areas Vision

Chapter 2

Integral Components of the Sustainable Natural Areas Vision

In order to begin exploring the roles of stakeholders across the state (Chapters 4 and 5) and identifying the challenges and opportunities associated with creating sustainable natural areas, it is important to discuss three topics crucial to this plan:

1. The history and evolution of the Illinois Natural Areas Inventory.
2. Illinois' endangered and threatened species.
3. The Identification, Protection, Stewardship, and Defense paradigm, which is central to the IDNR, INPC, and the IESPB's preservation protocols, and the adaptive management paradigm, common to many federal and local agencies.

Illinois Natural Areas Inventory

Background

The first topic crucial to the Sustainable Vision is the Illinois Natural Areas Inventory (INAI), which is both a process and a product. The responsibility for maintaining both the INAI process and product is that of the Illinois Department of Natural Resources (IDNR) and the Illinois Nature Preserves Commission (INPC). As a process, the INAI is the set of procedures followed starting with identifying a potential site, documenting its characteristics, nominating it for inclusion on the INAI, and finally, approval by IDNR to be added to the INAI. As a product, the INAI is a dataset that depicts the locations and ecological characteristics of INAI sites in Illinois.

The Illinois Natural Areas Preservation Act,ⁱ first passed in 1963 and later amended, gave the authority to the INPC/IDNR to conduct inventories of natural areas and species of plants and animals. The commission has the following powers and duties:

Sec. 6.01. To compile and maintain inventories, registers and records of nature preserves, other natural areas and features, and species of plants and animals and their habitats. (1)

The Illinois Natural Areas Preservation Act also legally defines the term “natural area:”

Natural area" means an area of land in public or private ownership which, in the opinion of the Commission [INPC], either retains or has recovered to a substantial degree its original natural or primeval character, though it need not be completely undisturbed, or

ⁱ Natural Areas Preservation Act (525 ILCS 30)

has floral, faunal, ecological, geological or archaeological features of scientific, educational, scenic or esthetic interest. (1)

The original INAI was conducted between 1975-1978 by the University of Illinois at Urbana-Champaign (UIUC) and the Natural Land Institute under contract with the IDNR (then the Illinois Department of Conservation). Over 200 people participated in this first inventory, either as volunteers or staff persons.

With the completion of the INAI in 1978, 1,089 significant natural areas had been identified, 610 of which were high quality natural communities. The acreage involved represented only *seven-hundredths of one-percent* of Illinois' 35.7 million acres or 24,990 acres (Fig. 1). This means that only 0.007 of an acre of high-quality natural area was identified for every 1,000 acres!

Prior to European settlement, there were 21.6 million acres of prairie in Illinois, but in 1978 only 2,300 acres or .0106% of the original was identified as relatively undisturbed. The same was true for forests. In 1978, only 13,500 acres of forest were identified as having escaped serious disturbance, yet historically there were 13.8 million acres of forests across the state – only 0.098% was believed to remain. (2)

While it may be difficult to conceptualize the loss of Illinois' native landscape, if acres were viewed as dollars, it may help. If there had been one dollar for every acre of prairie that existed in 1820, there would have been a pot of \$21.6 million dollars. This initial capital has been squandered such that only \$2,300 was believed to remain in the "prairie" account in 1978.

It is important to understand the concepts associated with identifying *natural areas* for inclusion on the INAI. A *natural area* is defined by INAI Update team member J. White as:

A site that contains one or more "Significant Features" and meets the qualification standards that are set by the [IDNR Natural Areas Evaluation Committee] ...A Survey Feature is any ecological feature or other aspect of the landscape that needs to be examined during the process of screening potential natural areas. A Survey Site is a place where a Survey Feature occurs. In other words, the presence of a Survey Feature is the reason why the Natural Areas Inventory investigates a site. (3)

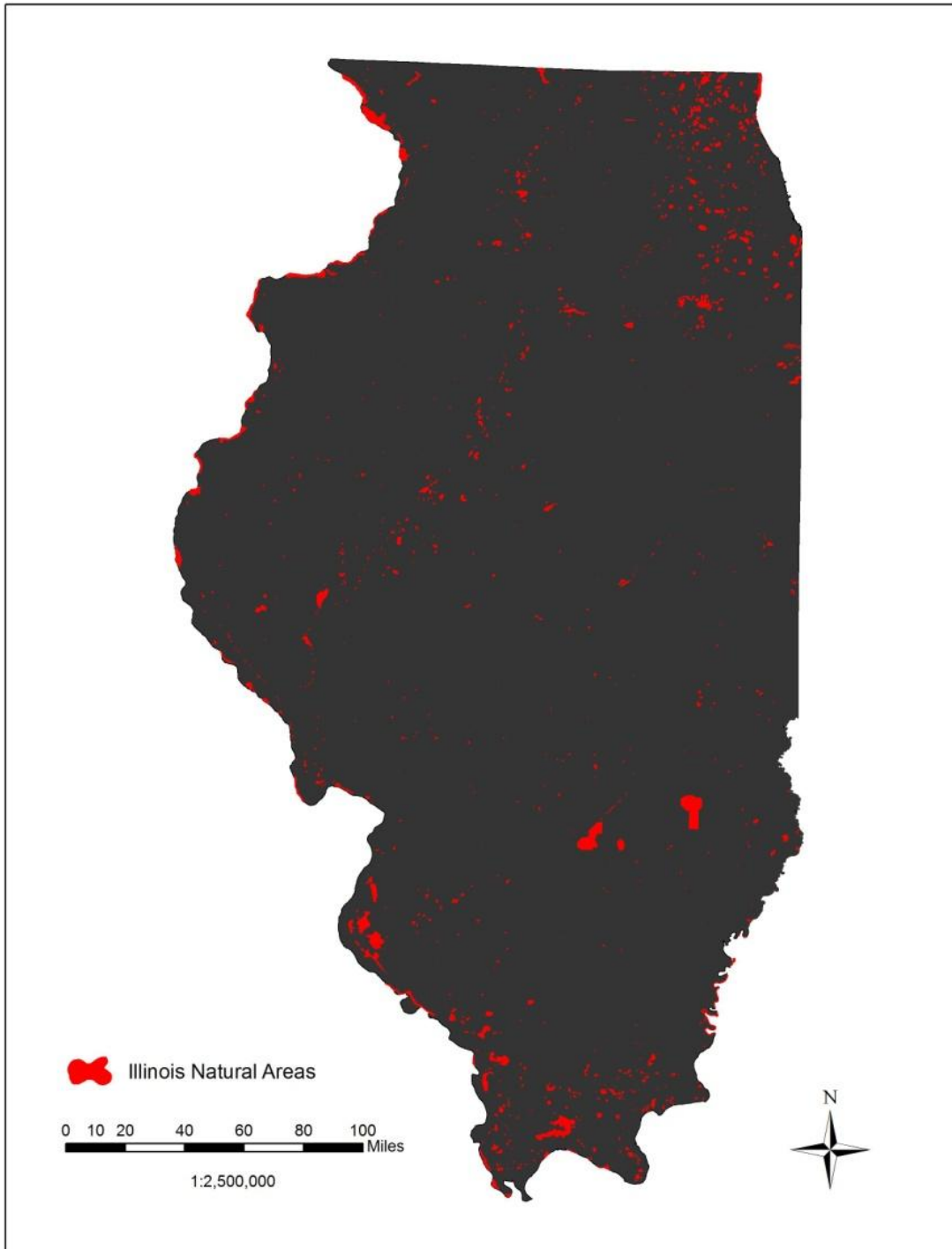


Figure 1: Remaining Core Natural Areas in Illinois (INHS, 2010)

Originally, seven categories were included on the INAI (4):

Category I: High quality terrestrial or wetland natural communities.

Category II: Habitats with endangered species.

Category III: Habitats with relict species.

Category IV: Outstanding geologic features.

Category V: Nature preserves or lands that are managed and used for natural science studies.

Category VI: Unique natural features.

Category VII: Outstanding aquatic features.

The natural quality of each site is evaluated to determine if it qualifies as an INAI site. Natural quality, according to J. White, refers to “the measure of the effects of degrading disturbances that have occurred to a Natural Community. A system of five letter grades (A, B, C, D., and E) expresses degrees of Natural Quality.” (3) The system of grades used by IDNR for describing the effects of disturbance is:

- Grade A – Relatively Stable or Undisturbed
- Grade B – Lightly Disturbed
- Grade C – Moderately to Heavily Disturbed
- Grade D – Severely Disturbed
- Grade E – Very Severely Disturbed

The Evolution of the INAI

The INAI has evolved over the past 30 years, both in terms of advances in science and technology and how they are used. The original objective of the INAI was to find, evaluate, describe, and classify natural areas of statewide significance. This was a far-reaching effort at that time, one of the first in the nation; however, many changes have occurred since the original inventory was completed. Availability of computer technology is one major change that has occurred and that continues to affect the INAI and its application. Data from the original inventory were recorded on paper and then transferred to an early mainframe computer. This system did not allow for easy access or manipulation of the data.

Beginning in 1986, the IDNR’s Division of Natural Heritage, in conjunction with The Nature Conservancy, established the Illinois Natural Heritage Database to be a central location of information on significant natural features within the state. The original database underwent several technological updates and its current form, known as Biotics 4, uses Geographic Information System (GIS) software and a powerful Oracle database. The database contains the information gathered during the Illinois Natural Areas Inventory conducted during 1976-1978 as well as data collected on other natural areas over the years.

The Natural Heritage Database contains information on:

- Almost 500 species that are either on Illinois' official list of endangered and threatened species or on the federal list of endangered and threatened species.
- High-quality communities of statewide significance.
- Other special features: colonial nesting birds, unique geological features, large forest blocks, unusual concentrations of flora/fauna, etc.

The most significant change regarding the INAI is how it is now used. Initially, the INAI was an inventory of sites containing unique natural features. This information was originally used primarily by the INPC to guide its land preservation programs and then by the IDNR to guide its land acquisition and land management activities. The use of the INAI has since expanded – it is now included in laws, administrative rules, public policy and plans, making it a "quasi-regulatory" tool, as well as an important inventory tool that now guides land acquisition and management activities of a broader range of state and local units of government and non-governmental organizations.

In the latter role, for example, forest preserve and conservation districts rely on the INAI as a source of important information that guides their land acquisition process. Several districts place a high priority on acquiring all INAI sites in their area of jurisdiction as they become available. The Nature Conservancy places a high priority on INAI sites that fall within their primary project areas. Many other organizations and agencies recognize the natural resource values of sites on the INAI. It has become a reliable, widely-used dataset that is referenced in a wide range of inventories and plans, for example:

- Illinois Natural Areas Plan
- Illinois Comprehensive Wildlife Action Plan
- Chicago Wilderness Biodiversity Recover Plan
- Shawnee National Forest Land and Resource Management Plan
- The Nature Conservancy Ecoregional Plan

The INAI has served as the foundation for a wide range of natural resource inventories designed to protect high-quality natural areas:

- IDNR's Critical Trends Assessment Project
- IDNR's Resource Rich Areas
- IDNR's Conservation 2000 Watershed Reports
- Chicago Wilderness' Atlas of Biodiversity
- Individual Site / County Inventories (e.g., McHenry County Natural Areas Inventory)

The INAI is cited in a number of laws and administrative rules and has been integrated into key public policies. As an example, the protection of INAI sites is central to environmental review processes of both the Illinois Department of Transportation (Bureau of Design and Environment Manual) and IDNR's Comprehensive Environmental Review Process (CERP). The laws and administrative rules citing the INAI include:

- Laws
 - Natural Areas Acquisition Fund Actⁱⁱ
 - Natural Heritage Fund Actⁱⁱⁱ
 - Illinois Open Land Trust Act^{iv}
 - Property Tax Code^v
 - Bond Referenda
 - Kane County Forest Preserve District - \$75 Million
 - Will County Forest Preserve District - \$95 Million
 - Lake County Watershed Development Ordinance
- Administrative Rules
 - Open Space Land Acquisition and Development Grant Program
 - Open Land Trust Program
 - Registry of Land and Water Reserves
 - Implementation Procedures for the Interagency Wetland Policy Act
 - Designates higher replacement value
 - US Army Corps of Engineers (USACE), Chicago Office Regional Permit Program
 - Defined within Conservation Area
 - Class III Special Groundwater Resource
 - Nature Preserves
 - IDNR's Consultation Requirements with State and Local Units of Government
 - Management of Illinois Nature Preserves

The references of INAI sites in these laws and regulations often provide guidance or are advisory; however, there are three examples of the INAI having become a quasi-regulatory tool, one of which is IDNR's Endangered Species Consultation Program, initiated in December 1990. This program requires state and local units of government to consult with the IDNR prior to taking any land-disturbing actions, including approval of land-altering development projects in order to protect endangered and threatened species. On January 9, 1994, INAI sites were added

ⁱⁱ (525 ILCS 35/14)

ⁱⁱⁱ (525 ILCS 150/)

^{iv} (525 ILCS 33/)

^v (525 ILCS 200/)

to the consultation requirement through revisions to the Illinois Natural Areas Preservation Act. While the result of the consultation process is voluntary and not mandatory, the process is required by law, thereby making the INAI a tool in a quasi-regulatory program.

The INAI is also an important quasi-regulatory component of the Illinois Interagency Wetland Policy Act. The goal of this act is to protect all wetland types from the adverse effects of any activity conducted by a state agency. This act uses the presence of INAI sites, in part, to determine replacement values for impacted wetlands; where an impacted wetland is part of an INAI site, the mitigation rate is much higher than for other wetland sites. (5)

The presence of INAI sites is also used in a regulatory context by the USACE. The USACE administers a nationwide wetland regulatory program that issues permits for adverse impacts to wetlands under Section 404 of the Clean Water Act. There are two types of permits: nationwide permits, which are reserved for wetland sites with minimal adverse impacts, and individual permits where the impacts are more severe or the wetland is of a larger size. The latter requires more documentation and a longer processing period. The Chicago District office of the USACE added a criterion specifically mandating the individual permitting process for impending impacts of wetlands classified as INAI sites.

Another significant change that has occurred in the past 30 years is the widespread use of the INAI in various programs by state and local units of government and not-for-profit organizations. For example, the INAI initially was used by IDNR in their land acquisition and planning programs but expanded to include the review of grant applications and environmental impact analysis. The INAI also served as the impetus for the creation of the Natural Areas Association and was the backbone of the natural areas movement in the State of Illinois for many years. None of this was envisioned in 1978 when the INAI was completed.

The INAI Today

The INAI as a product has continued to evolve over the past 30 years as changes have occurred over time. Effective June 2010, there were 1,350 INAI sites in all categories throughout Illinois, encompassing 423,143 acres. In the past 30 years, 693 sites were added, 328 sites were deleted, and 89 sites were combined. (6)

INAI methodologies have also been revised to reflect current information about botany, ecology, and more. IDNR's Natural Areas Program staffs have developed INAI Standards and Guidelines to document the INAI process, with leading scientific experts throughout the State and the Department having had the opportunity to provide input into this process.

In addition, definitions for significant feature categories, eligibility criteria, community types, community grading, and methods have been updated. Several of the categories of the INAI have been revised to reflect current knowledge of significant features. The current INAI categories are:

- I High-quality Natural Community
- II Specific Suitable Habitat Occupied by Endangered or Threatened species
- III Nature Preserves, Land and Water Reserves, Natural Heritage Landmarks
- IV Outstanding Geological Feature
- V Currently Unused
- VI Unusual Concentrations of Flora or Fauna

The Natural Areas Evaluation Committee (NAEC) was formed by IDNR to evaluate natural areas proposed to be added or deleted from the INAI. Sites nominated for the INAI must meet eligibility criteria and have the appropriate documentation submitted. The NAEC meets quarterly and is composed of staff from IDNR's Division of Natural Heritage, the INPC, and the IESPB.

The INAI Update – 2007-2010

The INAI is a dynamic set of data that changes over time, with a few sites lost or degraded and new ones occasionally added. During the past three decades, the INAI database has been kept up to date, as new information has been submitted to IDNR; however, neither a systematic, statewide re-evaluation nor a comprehensive inventory employing modern technologies to look for existing Category I sites or for new sites have ever been conducted. In 2006, IDNR announced it would provide the funding to conduct an inventory for new high-quality natural areas, taking advantage of new technologies such as satellite imagery and modern ecological concepts. This is the first component of the INAI Update.

The second major component of the INAI Update is a three-year effort to remap, re-grade, and conduct quantitative vegetative analysis of the existing Category I INAI sites, funded by the Clean Energy Community Foundation, Grand Victoria Foundation, and the Association of Conservation and Forest Preserve Districts. A team of ecologists will assess the 664 existing Category I natural areas, remap, re-grade and conduct quantitative vegetation surveys for each high-quality natural community type.

The search for new terrestrial Category I sites was initiated on June 1, 2007, and the evaluation of existing Category I sites began on December 1, 2008. Both components will use current technology, including remote sensing, GIS, and digital imaging, as well as the same standards and guidelines to ensure consistency in the application of modern scientific methodologies.

Once candidate sites are identified using remote imagery and aerial surveillance, the sites will be visited by ecologists for final determination, if landowner permission is granted.

The Illinois Natural History Survey (INHS) at UIUC, Applied Ecological Services -West Dundee, Ecological Services - Champaign, and Environmental Planning Solutions, Inc. - Riverton, have been contracted for the various components of INAI Update. Five regional ecologists (Fig. 2) have been hired to conduct the field assessment and to determine which new sites should be recommended to the IDNR for listing on the INAI.

The Landscape Integrity and Restorability Indices

A third major component of the INAI Update is the development of the Landscape Integrity and Restorability Indices, funded by the Gaylord and Dorothy Donnelley Foundation. The INHS is developing this valuable tool. This project “was designed to address the need for identification of lands that have the capacity to be restored to natural area quality using modern restoration techniques, and also occur in a landscape context that will allow them to be viable over the long-term once restored” (7). According to the INHS, restorable lands represent the “next tier” of lands worthy of public investment before restoration opportunities are lost. It will be particularly valuable in northeastern Illinois, where the majority of Category I INAI sites have already been acquired by public agencies.

The immediate objectives of the Landscape Integrity and Restorability Indices project are:

- Creation of maps of undeveloped lands with landscape characteristics necessary that could result in restorations at a scale and of a quantity that would be biologically significant.
- Development of a rapid method of assessing the relative complexity and cost of restoring different properties.

The longer-term objectives of the *Landscape Integrity and Restorability Indices* project are to:

- Develop of a new “Inventory of Ecological Resources Areas of Importance”.
- Increase in the registration of sites as “Illinois Land and Water Reserves,” which will be discussed later in this chapter.

Core Natural Areas

Throughout this document, a “core natural area” will be used to describe a natural area that meets statewide standards for inclusion as any category of the INAI, although the work to identify new INAI sites and to evaluate and re-grade existing INAI sites is limited to terrestrial Category I (high-quality natural communities). The Sustainable Vision also includes a discussion

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★ Director and Ecologist Office Locations

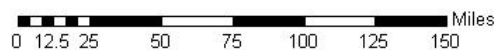


Figure 2: INAI Update Regions and Staff (INHS, 2010)

of Category II sites (endangered and threatened species). There are other important types of “natural areas” that can contribute to creating sustainable natural area complexes or networks that will be discussed. These include:

- Locally significant natural areas as defined at the regional or community level.
- Potential natural areas or natural areas that have yet to be evaluated for inclusion on the statewide inventory.

Buffers and corridors, which are critical to the long-term management and sustainability of the core natural areas, will be treated separately and will not be included in the definition of “natural area.”

Illinois’ Endangered and Threatened Species

The protection of Illinois’ endangered and threatened species is also a critical component of the Sustainable Vision. While the INAI Update is focused, in part, on Category I natural areas, which are high-quality natural communities, there is a strong correlation between Category I natural areas and the occurrence of endangered and threatened species, which are included in the INAI as Category II natural areas. Rosenzweig made the point that the “number of species determines the number of habitats. As we lose species, we will lose habitats too. This is why all of an ecosystem’s area is needed to maintain its integrity” (8). He and many other ecologists also acknowledged the greatest problem for most threatened and endangered species is habitat loss (8). The sustainable natural areas network, therefore, is vital to the sustainability of core natural areas but also to the survival and possibly recovery of many of Illinois’ endangered and threatened species.

Category II sites provide vital habitat for endangered and threatened species. A total of 463 of the 483 species on Illinois’ Endangered and Threatened Species list are documented as occurring in Category II sites – therefore, some habitat is provided for over 95% of Illinois endangered and threatened species on these 668 sites, although the aerial extent and condition of habitat may not be sufficient to support self-sustaining or viable populations at each site. (9) Not all listed species are represented at Category II INAI sites because the original criteria for Category II sites required there be one endangered species or three threatened species, at a minimum, to qualify. Sites with only one or two threatened species would not have qualified. The current criteria to qualify as a Category II site includes having a record of at least one endangered or threatened species occupying suitable habitat. Areas such as roadside ditches may be documented as feeding areas for listed species but would not qualify as Category II sites.

One indicator of the connection between high quality natural areas and endangered species can be found by examining the details of INAI Category I and II sites. There are 262 natural areas encompassing 146,337 acres on the INAI that are both a Category I and Category II site. This

indicates that these natural areas are both high-quality natural communities *and* provide habitat for endangered and threatened species. These high quality natural communities provide habitat for 272 (56.3%) separate endangered and threatened species: 4 amphibians, 14 birds, 7 fish, 20 invertebrates, 5 mammals, 209 plants, and 13 reptiles. (6) Thus, by protecting core natural areas, protection is provided for endangered as well as threatened species as well. (6)

Background

The Illinois Endangered Species Protection Board (IESPB) determines which plant and animal species are threatened or endangered in the state, and the IDNR, INPC and IESPB identify specific suitable habitat occupied by endangered or threatened species as INAI Category II sites. The IESPB was created by the Illinois Endangered Species Protection Act in 1972. The Board consists of nine members who are appointed by the governor and the Director of the IDNR as non-voting members. By law, the members include two zoologists, two ecologists, and one botanist. (9)

According to the Illinois Endangered Species Protection Act,^{vi}

Endangered Species means any species of plant or animal classified as endangered under the Federal Endangered Species Act of 1973, P.L. 93-205, and amendments thereto, plus such other species which the Board may list as in danger of extinction in the wild in Illinois due to one or more causes including but not limited to, the destruction, diminution or disturbance of habitat, overexploitation, predation, pollution, disease, or other natural or manmade factors affecting its prospects of survival.

Threatened Species means any species of plant or animal classified as threatened under the Federal Endangered Species Act of 1973, P.L. 93-205, and amendments thereto, plus such other species which the Board may list as likely to become endangered in the wild in Illinois within the foreseeable future. (9)

Based on these definitions, any plant or animal species that occurs in Illinois that is listed as endangered or threatened at the federal level is automatically listed as endangered or threatened by the state.

Effective October 2009, with the latest revision of the Illinois list of endangered and threatened species, there are 483 species of plants and animals identified as threatened or endangered in Illinois, 151 animal species and 332 plants. A link to the current List of Endangered and Threatened Species in Illinois can be accessed on the IESPB webpage at <http://www.dnr.state.il.us/espb/index.htm>. The breakdown by group of plants and animals can be found in Table 1.

^{vi} Illinois Endangered Species Protection Act (520 ILCS 10/1)

Table 1: Illinois' Endangered & Threatened Species

	Endangered	Threatened
Amphibians	3	6
Birds	25	5
Fishes	19	12
Invertebrates	42	12
Mammals	5	4
Reptiles	10	8
<i>Subtotal</i>	104	47
Plants	251	81
Total	355	128

Identification, Protection, Stewardship, and Defense And Adaptive Management

The third and final topic that needs to be considered in formulating a Sustainable Vision includes two related natural resource conservation paradigms. The first is the Identification, Protection, Stewardship, and Defense (IPSD) paradigm, which is important for the protection and enhancement of the state's biodiversity. The second paradigm is adaptive management, which can be described as a learn-by-doing process of land management. The IPSD paradigm should be conceptually familiar to many natural resource professionals and is applicable to many natural resources as well as some cultural ones (e.g., wetlands, scenic rivers, green infrastructure, historic buildings. Adaptive management, which is possibly a better understood paradigm, will be discussed at the end of this section.

The following is a brief discussion of Identification, Protection, Stewardship, and Defense as used in this plan.

Identification is typically the first step in any effort to protect any natural resources, including natural areas. Identification involves evaluating potential natural areas based upon science-based, agreed-upon criteria.

To *identify* potential natural areas requires separating one or more category of natural resource from another with criteria that are based on sound science. This categorization requires establishing a body of *definitions*, which are a set of statements, conditions or attributes that are applied to the object or category "identified."

In terms of the INAI, a body of definitions has been developed by IDNR, INPC, and the IESPB as the entities responsible for the approval of sites nominated for the INAI:

The *Illinois Natural Areas Inventory Update Survey Standards and Guidelines*, Volume 1 (3) introduces the concepts and terms that are central to the Illinois Natural Areas Inventory Update, such as *significant features*, *survey features*, and *survey sites*. Volume 1 also provides details for four classes of Survey Features: topo-edaphic features, ecological communities, species, and land-use and disturbance features.

The *Illinois Natural Areas Inventory Update Survey Manual* provides the principles, concepts, and terms associated with all stages of the identification process (3):

1. Existing Information stage
2. Map & Aerial photo stage
3. Aerial Survey stage
4. Field Survey stage

Finally, IDNR's 2008 *INAI Standards and Guidelines* is a dynamic document that provides the overall framework for the classification and description of natural features that may qualify for the INAI as well as the process for including potential natural areas in the INAI.

While IDNR and INPC are responsible for assuring that a site meets the established criteria to qualify to be added to the INAI, any agency or organization can nominate a site for the INAI.

Unlike the INAI, which tracks natural areas of *statewide* significance, local natural resource agencies often maintain their own natural areas inventories with sites of regional or local importance. For example, the McHenry County Conservation District has created a comprehensive McHenry County Natural Areas Inventory that contains natural resource information from all lands across the county, both public and private. These "locally significant natural areas" (3) can play important roles in the long-term survival of the state's biological diversity as well as complementing the INAI and individual INAI sites. Such sites should be incorporated into conservation planning where they have been identified and local inventories should be encouraged where such information is lacking.

A secondary phase of identification includes the ongoing inventorying of a site. Once a site is identified, additional resource inventories are conducted to assist in future conservation activities such as preserve design and stewardship activities. Additionally, inventory and monitoring may be used to assess the effectiveness of all other parts of the IPSD process. One could argue that monitoring might be a part of processes such as stewardship or defense, however the skill set needed to gather the data is similar to that needed for identification, and therefore is typically considered a part of identification. This approach also has the advantage of separating data collection and evaluation of a site from the remaining phases that tend to lean more toward advocacy for site protection, lending more credibility to the process as a whole.

Protection in its broadest context can be defined as “the act of protecting, or the state of being protected; preservation from loss, injury, or annoyance; defense; shelter; as, the weak need protection” (10). The protection of natural resources focuses on the “preservation from loss or injury,” with defense being a separate step in the process because it requires a different set of skills and tools.

As used in the Sustainable Vision, protection is a process involving informing the landowner or application of a range or combination of administrative/legal, collaborative, regulatory, or voluntary avenues of securing agreements or real property through formal and informal agreements, easements, dedications or fee simple acquisition for conservation purposes and the long term prevention of loss or degradation of the natural resources or ecosystem services provided by a property. While many tracts of land are maintained and improved by caring and conservation-dedicated landowners, the long-term survivability of those lands can change drastically after a sale or landowner crisis (e.g. a corporation needing to raise money or an illness in a family). Therefore, the sustainability of natural areas requires mechanisms and/or instruments that provide for their protection in perpetuity.

At the state level, protection of natural areas is the INPC’s fundamental role, serving as what is functionally the State of Illinois’s land trust. Protection can include any of the following:

- Contacting landowners to inform them of the significance of the resources on their property. The INPC regularly does this but it could be done by any conservation organization or contractor.
- Obtaining an informal agreement with a landowner to maintain the land as a natural area.
- Entering into a written, but non-binding or time limited agreement to maintain land as a natural area. The Natural Heritage Landmark program of the INPC is a good example of this kind of effort.
- Purchasing a site for conservation purposes. IDNR remains the primary landholding agency for natural areas currently owning more than 50% of the state’s protected natural areas. County forest preserve and conservation districts are the next most common owners of protected natural areas. These two groups of public owners currently own about 80% of the protected INAI sites in the Nature Preserves System.
- Securing a conservation easement held by a conservation organization with language intended to provide for long-term preservation of the target natural resources of an area. The Land and Water Reserve registration is a specialized conservation easement held jointly by the INPC and IDNR.
- Designating the site as an Illinois Nature Preserve provides immediate legal protections through a dedication, which is a recorded easement established under the Illinois Natural Areas Preservation Act and administered by the INPC.
- Including the sites in protective programs or classifications at the federal or local levels.

- Any other action that secures the site in such a way that facilitates long-term stewardship and defense.

Stewardship can be traced to “its roots in the centuries of work that stewards of households and ships performed - taking care of the daily details of managing resources and places, finances, food, and plans for celebration” (11). Today, stewardship can be defined as “the conducting, supervising, or managing of something; *especially*: the careful and responsible management of something entrusted to one's care – *stewardship* of our natural resources” (12).

As used in the Sustainable Vision, stewardship is a sequential process of quality assessment followed by land management to ensure the ecological integrity necessary to support the intended target(s) of protection efforts and compatible visitor use if appropriate. Stewardship involves the development and implementation of ecologically sound natural resources management policies as well as the implementation of on-the-ground management actions.

Typically, this land management work is done or controlled by the landowner using their own labor force, volunteers, and/or contracting. For owners not capable of completing the work, limited resources can be available through local and regional volunteer groups and conservation organizations, Soil and Water Conservation Districts, IDNR, or INPC if sites are in their programs. Typical land management activities include invasive species control, prescribed fire management, deer management, general community restoration, hydrologic restoration, and visitor facility use management, among other activities.

Stewardship is cyclical in the sense that its major components - planning, implementation, and assessment - operate in a feedback loop to not only ensure that appropriate and timely management actions are carried out but that those actions have the desired outcomes on the ground. This adaptive management process allows prompt adjustments in management policies should the executed plan be ineffective in achieving plan goals. The sustainability of natural areas requires the remediation and mitigation of past degradation, an assessment of current threats, and restoration, to the extent feasible, of the natural processes characteristic of the site.

Defense is broadly defined as “the act or power of defending, or guarding against attack, harm, or danger” (13). As it relates to natural resources, defense encompasses the social and legal strategies used to deter, thwart, and/or halt as well as to compensate and mitigate for acts, which undermine the protected status or ecological integrity of conserved lands. The defense of natural resources, including natural areas, is often controversial and expensive. Defense can be proactive or reactive.

The INPC has the staff, legal mechanisms, and unique authorities compared to other non-governmental conservation entities to defend natural areas. The INPC has staff that monitors dedication and easement agreements (Nature Preserves, Land and Water Reserves), and, access

to local states attorneys and the State Attorney General’s Office, to enforce dedications and easements, file suit to prevent damage, or prosecute criminal or civil violations of the Illinois Natural Areas Preservation Act.

Reactive defense occurs when action is taken after damage to a natural resource has occurred or is threatened to occur in the immediate future. Examples of defensive actions include:

- Taking legal action (civil or criminal) when damage occurs to a dedicated Illinois Nature Preserve, or Land and Water Reserve.
- As adjoining landowners, opposing or commenting on zoning changes that would allow a development to occur.
- Insuring that provisions of agreements, easements, and dedications are followed by owners and users.
- IDNR’s Consultation Program established under the Illinois Natural Areas Preservation Act and Illinois Endangered Species Act requires state and local governments to consult with IDNR to prevent damage to natural areas and endangered and threatened species habitat *after* a damaging act is proposed for approval or implementation.
- IDNR’s Incidental Take Authorization program provides a mechanism to pursue avoidance, minimization, and mitigation measures for projects that are likely to result in the incidental taking of a listed species and its habitat as a result of an otherwise legal activity. This process is an important means of protecting endangered and threatened species and their habitats, especially since not all endangered and threatened species habitat is currently identified as part of an INAI site.

Reactive defense is obviously the least effective means of defense in that the damage has often already occurred or is imminent. Success typically requires extensive negotiation, threat of or actual legal action, which can be expensive and time-consuming, and often generates controversy.

To be proactive means “acting in anticipation of future problems, needs, or changes” (14). Proactive defense involves defending natural resources from harm well before the damage or change is foreseeable. This is more complicated than reactive defense because new approaches and tools are often needed, which requires additional staff to implement. Examples of proactive defense include:

- Working with state and local units of government and planning agencies to include significant natural resources, including INAI sites, to their comprehensive plans for long-term protection or avoidance.
- Maintaining relationships with landowners after a site is legally protected to ensure the owners continue to understand the program they are enrolled in, along with enforcing breeches of the agreements. This kind of continual landowner contact becomes

particularly important with a change of owner due to sale, or death of the original owner who established the agreement. This kind of defense can seamlessly blend into a new set of protection processes for a site. INPC regularly does this with owners enrolled in its programs.

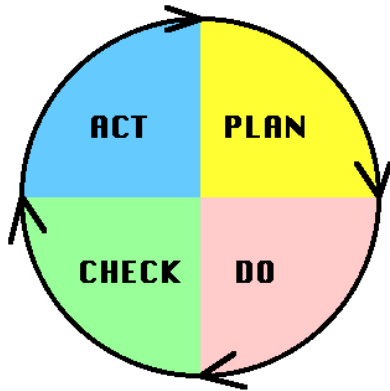


Figure 3: Deming's Plan-Do-Check-Act Cycle

- Posting signs at publicly owned natural areas, conservation easements, Land and Water Reserves or Nature Preserves pointing out the importance of sites and identifying the penalties for actions that directly or indirectly damage these sites.
- Coordinating with neighbors of natural areas to make them aware of the sensitivity of adjacent natural areas.
- Working with industry groups, such as wind energy or power transmission companies, to make them aware of natural areas located in proximity to their projects in advance of planning their activities.

Where a particular process or action is classified in this nomenclature is far less important than its recognition as having a key role in the process of creating sustainable natural lands and how best to achieve that end. As in on-the-ground stewardship, the IPSD paradigm should be adaptive, integrative, and cooperative.

Adaptive Management

Adaptive management today is recognized throughout the natural resource sector, mainly as a land-management paradigm. The process itself has been and has the potential to be used in a wide array of applications. The origins and multifunctional nature of adaptive management are highlighted now to support stakeholders in understanding and fully capitalizing on this highly effective process.

Background

The origins of adaptive management can be traced to the 1920s when Walter A. Shewhart, a Bell Laboratories scientist, developed the Statistical Process Control, as a means of improving the quality of industrial production. The concept was expanded by W. Edwards Deming in the 1950s when he proposed that “business processes should be analyzed and measured to identify sources of variations that cause products to deviate from customer requirements.” He recommended that business processes be placed in a continuous feedback loop so that managers can identify and change the parts of the process that need improvement (15). Deming created a

simple diagram to illustrate this continuous process, which was referred to as the PDCA cycle for Plan, Do, Check, Act (Fig. 3):

Deming's PDCA cycle was designed to improve industrial processes in a cyclical manner. Each of the steps is:

PLAN: Design or revise business process components to improve results

DO: Implement the plan and measure its performance

CHECK: Assess the measurements and report the results to decision makers

ACT: Decide on changes needed to improve the process. (15)

The PDCA cycle was adapted for use in the management of natural resources when

“The term ‘adaptive management’ was first coined by the ecologists C. S. Holling and Carl Walters thirty years ago). They developed a procedure for managing ecosystems where there is uncertainty about how the system works, which creates uncertainty about how best to manage the ecosystem. Adaptive management involves:

- Clear specification of the management objective. How will we recognize if management is successful or unsuccessful?
- Articulating all the different ways the ecosystem might work (hypotheses), and weighting or ranking them according to how plausible they are;
- Monitoring how the system reacts to management. This gives us feedback on which hypotheses stand up to scrutiny;
- Updating our understanding of how the system might work (adjusting our hypotheses) and adapting our management accordingly.” (16)

Adaptive Management Today

Adaptive management now is used by federal, state, and local resource management agencies across the country. Because there are many definitions of adaptive management, and it is used in different ways depending on the resource being managed, it is important to begin with a definition of adaptive management. At the federal level, the Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management defines adaptive management as:

“A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices” (17).

Most definitions of adaptive management include common characteristics:

- “An iterative, unified planning process that supports continual improvement.
- Emphasis on learning by doing and on experimentation to develop solutions.
- Broad stakeholder participation.
- Development of cross-sector analysis to effectively allocate resources.
- Integrated, comprehensive information management.
- Cooperation and transparency in resource planning” (18)

This federal definition of adaptive management has been adopted for use by a wide range of federal, state, and local agencies. According to the U.S. Department of Interior, adaptive management “focuses on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems.” (19)

The National Park Service (NPS) incorporates a stronger scientific basis for adaptive management. NPS identifies the purpose of adaptive management as to:

“Aggressively use management intervention as a tool to strategically investigate the functioning of an ecosystem. Management actions are designed to test key hypotheses about ecosystem function. This approach differs from 'informed trial-and-error' which uses the best available knowledge to generate a risk-averse, 'best guess' management strategy, which is then modified as new information alters the 'best guess'.” (20)

The NPS use of adaptive management focuses on the testing of hypotheses about ecosystem function. This approach is typically used when the uncertainties regarding specific management actions is high, and the risks to the resource would be great if the management actions failed. For example, when managing to improve the habitat for an endangered species, such as one of the many darters, it would be important to conduct the necessary research to establish habitat criteria on which to base the adaptive management hypotheses. This might include the specific size of material in the substrate, optimum oxygen levels and vegetation distribution, and more. This information would be used to formulate hypotheses for testing after conducting specific management actions.

For more common resources, or those for which a lot of information is already available, it would not be necessary to conduct the research needed to establish scientific hypotheses. When conducting prairie burns or improving habitat for more common species such as bluegill, for example, management goals need to be established and evaluated for success following implementation, but there is less need for the scientific rigor because the degree of uncertainty and risk is substantially less. This model of adaptive management is more an applied approach than a rigorous scientific one.

Adaptive management can also contribute to the sustainability of natural resources. The International Institute for Sustainable Development believes that “*adaptive management* builds resilient ecosystems.” Adaptive management “views each management action as an opportunity to further learn how to adapt to changing circumstances—*learning by judicious doing*” (21). Thus, using adaptive management can lead us to greater sustainability.

In Illinois, adaptive management is a common practice for federal agencies, local natural resource agencies such as forest preserve and conservation districts, and the Illinois Department of Natural Resources. At the state and local level, the applied model of adaptive management is more commonly employed because the risk to the natural resources and uncertainty of the management activities is relatively low. The large land area to be managed and the limited staff and financial resources lead these agencies to using an applied approach of adaptive management.

Adaptive Management and the IPSD Paradigms

It may be important to consider the relationship between adaptive management and the IPSD paradigm. While adaptive management has typically been applied to the stewardship phase of this process, the concept of the “plan, do, check, act cycle” could be applied to each step in the IPSD paradigm. Whether managing land or developing and implementing natural areas identification procedures, the processes should be learning *and adjusting* experience. A plan is developed and implemented; the results are evaluated for success in meeting pre-stated goals, and implementation plans are adjusted as needed.

As an example, the IDNR is responsible for establishing the criteria for sites to qualify as high-quality natural areas on the INAI. The Standards and Guidelines and Survey Manual provide comprehensive guidance on locating, evaluating, and classifying guidance on sites that qualify as high-quality natural areas. While these guidance documents were thoroughly updated in June 2008, ecologists from across the state recommended a major change to the community classification system – adding a category for “woodlands” to the existing savanna and forest categories. Because IDNR employs the adaptive management principles to all IPSD stages, the suggested addition of woodlands has now been completed. Thus, IDNR and INPC have gained new information through use of the existing guidelines and from stakeholders and have been willing to revise these guidelines accordingly.

The adaptive management cycle will also apply to the management of the core natural areas, buffers, and corridors, as well as to the identification of sustainable Natural Area Networks across the state, which will be discussed in Chapter 3. For example, through the identification process, buffers will be established based on at least one key criterion – the distance between core natural areas. This distance will vary from one region of the state to another.



Figure 4: The Adaptive Management Cycle

Establishing effective buffers will be learning and adjusting experience – or an “adaptive” process.

When using the term “adaptive management” in the Sustainable Vision, it is used to describe the cycle depicted in Figure 4**Error! Reference source not found.**, when a plan is made and implemented; outcomes are evaluated for success in meeting the intended goals; and plans are adjusted for future action to better meet the stated goals. This cyclical process applies to each step in the Identification, Protection, Stewardship, and Defense of natural resources.

Natural Resources Auditing – An Integral Component of the Sustainable Network

A comprehensive natural resources auditing process needs to be developed to document the status of the state’s valuable natural resource assets and to develop strategies to address problems that are identified. Natural resources auditing is defined as a systematic process of objectively obtaining and evaluating empirical evidence regarding the ecological status of natural resources to determine if there is a high degree of correspondence between the current ecological status and the previous goals established for these resources.

Natural resources auditing differs from what is now referred to as *monitoring* in that auditing is more comprehensive, is conducted on an on-going basis, and is used to evaluate progress being made or problems that pose threats so changes can be made to management or design practices. Such auditing is a critical component of the adaptive management process.

An auditing process needs to be developed for the process of creating a system of sustainable natural areas as well. The process needs to include comprehensive auditing of each core natural area and the buffers and corridors established to ensure that the preserve design strategies are working well. Where problems are identified, adjustments can be made before they become too severe to resolve.

It has been difficult to secure funding and other support for monitoring because of a lack of support from political leaders, in part, based on a lack of understanding of its importance. However, monitoring programs have often not demonstrated the important connection between the systematic process of objectively obtaining and evaluating empirical evidence regarding the ecological status of natural resources and the protection of valuable state assets – assets with a long-term economic value.

Throughout the Sustainable Vision, reference will be made for the need to conduct natural resource auditing of natural areas in the context of creating a sustainable system of natural areas. It is vital that such an auditing program be established to protect the state's natural resource assets and to ensure greater success in implementing the Sustainable Vision.

Identification, Protection, Stewardship, Defense Challenges

Challenges exist in successfully implementing the IPSD paradigm. It is important that these challenges are identified, and opportunities for meeting these challenges be explored in order to protect and enhance the state's biodiversity and to establish a sustainable network of natural areas.

The following challenges were identified through meetings, personal phone calls, and e-mail messages with stakeholders from across the state, and during the Natural Areas Summit held on March 9, 2010 (see Appendix IV for list of participants). Opportunities for meeting these and other challenges will be explored in Chapters 4 and 5.

Identification

The primary challenge (Challenge 4.4) that exists is ensuring all significant natural resources are captured in the identification process in order to protect Illinois' biodiversity. This will entail *maintaining and building upon the INAI after completion of the INAI Update and the re-assessment of the existing Category I sites.*

Protection

Seven challenges related to the protection of natural areas were identified by stakeholders. Opportunities to address these challenges were also assembled for each stakeholder group and will be discussed in Chapters 4 and 5. The protection challenges are:

Challenge 4.5: Identifying a flexible, responsive, and fully funded statewide land acquisition effort.

Challenge 4.6: Protecting natural resources given that much of Illinois' natural resources are in private ownership.

Challenge 4.7: Working with local units of government (municipalities and county governments) that, while having an important role to play in establishing the sustainable natural areas system, often have minimal understanding of the natural areas or their role in protecting them.

Challenge 4.8: Integrating the protection of natural resources into economic development plans and proposals, and into the goals of all state agencies; this integration is vital both to the protection of natural resources and successful economic development.

Challenge 4.9: Strengthening the Nature Preserve system to better engage landowners enrolled in INPC programs, to increase enrollment of lands in protection programs, to monitor enrolled sites as a proactive defense mechanism, and to identify ways to protect lands that do not meet the INPC's strict criteria.

Challenge 4.10: Sustaining viable populations of endangered and threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population. As a result, over time these populations may be lost.

Challenge 4.11: Permanently protecting or defending INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.

Stewardship

Five challenges related to meeting the stewardship needs of natural areas were also identified:

Challenge 4.12: Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.

Challenge 4.13: Developing efficient and productive volunteer stewardship programs within IDNR/INPC to assist in the stewardship of the sustainable network of natural areas.

Challenge 4.14: Addressing management needs, including funding, for the immediate and costly investments needed to protect the state's natural resource assets from current ecological threats, e.g., climate change and invasive species, and the many socio-cultural threats that exist.

Challenge 4.15: Improving Illinois' aquatic resources, many of which are in poor condition or are declining in quality.

Challenge 4.16: Building support for conducting comprehensive audits of the status of natural resources to ensure that the Illinois's valuable natural assets are being protected.

Defense

One straightforward challenge faces the defense phase of the process: *Identifying the management needs and the resources and use to defend existing Nature Preserves and Land and Water Reserves.* Opportunities for addressing these challenges will be discussed in Chapters 4 and 5.

This discussion of the history and evolution of the INAI, the importance of including endangered and threatened species, the IPSD, and adaptive management paradigms provides background information for the effort of creating sustainable natural areas. Attention now needs to be focused on defining sustainability, threats to natural areas, both ecological and social-cultural, and the role of corridors and buffers in creating sustainable natural areas.

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The Illinois Sustainable Natural Areas Vision

Chapter 3

Creating Sustainable Natural Areas in Illinois

What is Sustainability?

Before discussing how to create sustainable natural areas, it is important to explore the concept of sustainability itself, which in its broadest concept, is the capacity to endure. There are now over 100 detailed definitions provided by different scholars and organizations. The U.S. Environmental Protection Agency (USEPA) indicates that “the basic principles and concepts (of sustainability) remain constant: balancing a growing economy, protection for the environment, and social responsibility, so they together lead to an improved quality of life for ourselves and future generations” (1). Issues related to resilience, as well as the relationship among the three sectors: environmental, economic, and social are also important “sustainability” components woven into the debate.

The concept of sustainability gained global attention in the late 1980s and into the 1990s. The 1987 Brundtland Report, also known as *Our Common Future*, prepared by the Brundtland Commission convened in 1983 by the United Nations, addressed sustainability, and sustainable development. This report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (2).

As is evidenced by the two definitions cited above, many proponents continue to believe the definitions of sustainability refer primarily to satisfying human needs rather than finding a balance among the environment, economy, and social responsibility (3). In response to these concerns, Callicott and Mumford have proposed a definition of ecological sustainability that emphasizes conservation: “meeting human needs without compromising the health of ecosystems” (3). Other definitions offer a purely ecological perspective, such as the “capacity of ecosystems to maintain their essential functions and processes, and retain their biodiversity in full measure over the long term” (4).

This definition of ecological sustainability raises a key question regarding the goal of creating sustainable natural areas. Are these areas to be protected as they are, with their corresponding functions, processes and biodiversity, or are these areas being protected and sustained to allow them to adapt and change as conditions change, which may result in a change in function, process, or the biodiversity they support? Given the looming threat of climate change, the latter goal may be more realistic, although daunting.

As discussed in Chapter 1, there is a short term and long-term goal for Illinois' natural areas. In the short term, efforts should be made to protect and sustain natural areas, as they currently exist, as has been the goal since the completion of the first INAI in 1978. Efforts may be necessary, however, to build larger, connected, more resilient natural area complexes that would allow these sites to adapt to changing conditions. Resilience is but one of the ecological considerations in creating sustainable natural areas.

Resilience

L. Gunderson defines ecological resilience as “the amount of disturbance that an ecosystem could withstand without changing self-organized processes and structures (defined as alternative stable states). Other authors consider resilience as a return time to a stable state following a perturbation.” (5).

Four attributes of resilience are important to consider:

- Latitude, the maximum amount an ecosystem can change before losing its ability to recover. This can be thought of as a threshold or “tipping point” where a major change becomes imminent.
- Resistance, the degree of difficulty in changing an ecosystem.
- Precariousness, how close the ecosystem is to a threshold where major changes will likely occur.
- Panarchy, how latitude, resistance, and precariousness are influenced by the dynamics of ecosystems at scales above and below the ones being managed. (6)

Thus, in order to be sustainable, Illinois' natural areas must be ecologically resilient. In order for this to be achieved, it will require an assessment of each natural area to evaluate the four attributes of resilience and other ecological components and to develop an adaptation strategy. But there are challenges in conducting this assessment. For example, what data do we need to demonstrate when we have reached the threshold? These attributes of resilience are interesting conceptually, but in reality, they will be difficult to quantify.

Biodiversity

There has been a general understanding among ecologists that the more biologically diverse a natural system is, the more resilient it will be. This paradigm is now under question given the problem many natural areas face from invasive species. Questions being asked include:

1. If greater biodiversity leads to greater resilience, why are monotypic systems, such as stands of *Phragmites*, so resilient?
2. Do invasive species take hold because the natural system was already weakened with reduced biodiversity?

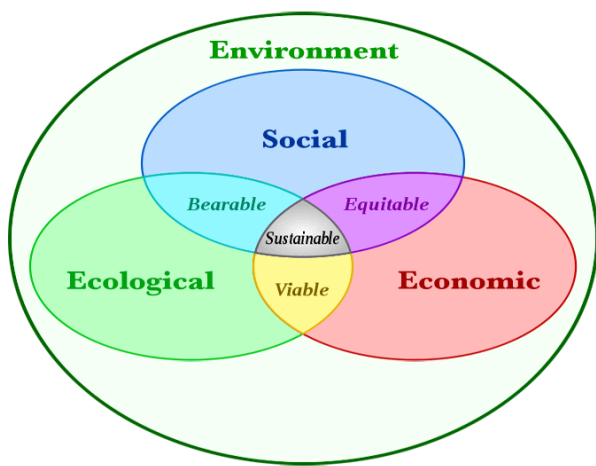
3. Are the invasive species overtaking native species or occupying an unknown, vacant niche?

These questions need to be answered in order to understand how to achieve sustainability. If the prevailing belief that greater biodiversity is a reflection of a more resilient system is incorrect, sustainability will be difficult to achieve without a better understanding of the relationship between biodiversity and resilience.

Ecological-Economic-Social Sustainability

Ecological sustainability of natural areas is the long-term goal, but this cannot be achieved without consideration of the two other pillars of sustainability – the economic and social components (Fig. 1). Emphasis must be placed on evaluating the ecological needs of each

natural area, but these must be integrated into the economic and social fabric of society.



Sustainability occurs only when there are viable economic-ecological systems, equitable socio-economic systems, and a sound link between the environment and society. While a full discussion cannot be devoted to the intersection of these three pillars, it is important to provide an overview of these components before exploring the threats to sustainability, and strategies and solutions for overcoming them.

Figure 1 - Depiction of the Three Pillars of Sustainability (38)

the interests of private landowners, neighbors, local governments, developers, etc. when working to achieve sustainability. Engaging and educating the public about natural areas and their role in preserving biodiversity will be important to success.

Integrating ecological needs with economic values is also extremely important. Protecting natural areas is often viewed as being incompatible with economic growth, although the latter cannot continue long term without a sound, healthy environment. If there is a perception that natural areas will impede economic development, there may be local opposition to their conservation.

There are many ways in which to inform people about the relationship between a healthy economy and a healthy environment. One of these is to make them aware of the ecological services performed by natural areas, such as flood control, water quality and quantity protection,

air quality improvements, and the financial and human costs associated with these services being compromised by environmental degradation. A quantitative value can be placed on ecological services to help landowners, local officials, and legislators understand the economic importance of protecting natural areas. Efforts could be made to integrate provision of these ecological services or values into economic development plans and projects.

We need to take advantage of opportunities to engage local units of government to integrate them into the planning for sustainable natural areas, particularly where sufficient natural areas exist to create a complex or network of natural areas that may contribute towards increased tourism. This can be done by identifying existing communities to serve as “gateways” to the larger complexes or networks of natural areas. Gateway communities typically consist of “towns with a year-round population of less than 10,000 residents” and “are distinguished through their rural character and proximity to public lands” (Kurtz 2003). (7) Engaging communities to integrate these natural area complexes or networks into their economic development and tourism plans may help gain support for the creation and maintenance of sustainable natural areas.

In summary, the process of achieving the sustainability of Illinois’ natural areas is a complex, long-term effort that will require the involvement of a diverse array of agencies and organizations, and consideration of social and economic factors in addition to ecological. The roles of these stakeholders will be explored in chapters 4 and 5.

Establishment of natural areas complexes or networks will require an evaluation of each core natural area to determine what actions are needed to lead to sustainability. In addition, extensive natural resources monitoring or auditing are necessary to understand which practices are successful and where changes are required. In other words, an adaptive management framework, as discussed in Chapter 2, is vital to success in achieving sustainable natural areas. As sites are managed or restored, and buffers and corridors are designed to link core natural areas with each other, it is important to evaluate the progress being made towards achieving sustainability through repeated monitoring or auditing. Changes in management can then be made to address problems as they are identified. This “plan-do-evaluate” process will help in dealing with the many ecological and cultural-social threats that exist to achieving sustainability.

Threats to ecological sustainability

At the March 9, 2010 Illinois Natural Areas Summit, six key threats, or challenges, to the ecological sustainability of Illinois’ natural areas were identified. Responses, or opportunities, for each of the threats were also identified, which will be discussed later in this chapter. The six ecological threats include:

Ecological Challenge 1: Researching and addressing the adverse effects of climate change in Illinois.

Evidence of climate change is being documented around the world. For example, plants and animals have been shown to shift their ranges north or south towards the poles approximately six kilometers in the past 25 years. Spring events such as wildflower blooming, frog breeding, and bird migration have advanced 2.3 days per decade. Finally, tropical pathogens are moving up in latitude, affecting species that are not immune to them. Experts predict that even with modest estimates of temperature increases 15-37% of the world's terrestrial species will become extinct by 2050. (8)

Experts are also predicting continued increases in average temperatures, which will further compound the problems facing ecosystems around the world. For example, the report *Confronting Climate Change in the Great Lakes Region* projects by the end of the twenty-first century, Illinois will see increases in temperature of 7-13° F in the winter and 9-18° F in the summer. This could extend the growing season 3-6 weeks. This continued warming is expected to result in a change in rainfall as well, although annual average precipitation will not likely change, seasonality of the precipitation is expected to change. Winters could see 10-25% increases in precipitation and summers 5-20% decreases. (9) Compounding the dryness effects will be the rise in temperature, further drying soils.

These changes in temperatures and rainfall patterns will have a dramatic impact upon all natural areas. These problems are compounded by the highly fragmented habitat in Illinois that makes it difficult or impossible for species to migrate in response to changes in temperature or hydrology. Over 90% of Illinois' landscape has been modified by agriculture or urban land uses, which will make it a challenge to create sustainable natural areas, although opportunities do exist.

Many of those attending the Natural Areas Summit believe global climate change is the biggest ecological threat facing Illinois' biodiversity and the most daunting challenge to address.

Ecological Challenge 2: Addressing hydrological modifications.

Hydrological modification refers to changes in the flow regime of water bodies, such as lakes, ponds, wetlands, and stream and rivers. The flow regime has been highly altered across Illinois from the conversion of natural wetlands to agricultural lands, dam construction, channelization of streams and rivers, and the creation of vast areas of impervious surfaces through urban development. These modifications have resulted in the loss of over 90% of Illinois' wetlands, problems with soil erosion and other forms of nonpoint source pollution in many of Illinois' rivers and streams. These changes provide additional challenges to protecting natural areas.

Ecological Challenge 3: Addressing landscape/habitat fragmentation.

Plant and animal species require undisturbed, high-quality core habitats of sufficient size in order to develop and maintain stable populations. They require areas that permit exchanges between these core habitats and allow colonization of new habitats, for instance as a strategy of adaptation to changing environmental conditions as with climate change.

Unfortunately, Illinois' landscape has become highly fragmented, or divided into smaller tracts interspersed by inhospitable land uses, such as the clearing of vegetation for agricultural use or urban development. This fragmentation of the landscape results in fewer, smaller, isolated tracts of land that is incapable of sustaining high-quality natural communities. Buffers and corridors become critical components in addressing the fragmentation of these natural lands, as well as the restoration and reconstruction of these buffers and corridors.

Ecological Challenge 4: Addressing the changes that have occurred in the fire regime to which many natural communities are adapted.

Humans have influenced fire regimes even prior to settlement by Europeans. The fire suppression policy that began in the 1920s resulted in dramatic landscape-scale changes. Open landscapes maintained by fire, such as prairies and woodlands, have tended to move towards an increase in forest cover, resulting in increased shade-tolerant and fire-sensitive species. (10) The timing, frequency, intensity, and scale of fires also have been altered by livestock grazing, timber harvest, and the spread of invasive species. Disruptions of natural fire regimes have led to alterations in landscape patterns and processes. (11) Because of our highly fragmented landscape, it is often difficult to simulate historical fire regimes, which poses additional challenges.

Ecological Challenge 5: Researching and controlling invasive and exotic species.

Exotic and indigenous invasive species are a major source of disturbance in Illinois' natural areas. Illinois faces unique challenges from these species because of its adjacency to the Great Lakes, the Illinois and Mississippi rivers, and its extensive road and railroad networks. All of these are portals of entry for the spread of invasive species. There are also concerns that the plants used in future efforts to increase bio-fuel production will be invasive, such as the miscanthus grasses.

Invasive species are having an adverse effect on endangered and threatened species as well. At one site in Massac County, Illinois, an endangered plant species *Melica mutica* (two-flowered melic grass) is being eliminated by an invasive plant *Microstegium vimineum* (Japanese stilt

grass). Successful management is hampered by the fact that an herbicide that kills the stilt grass will also destroy the protected species. (12)

The environmental and economic costs of invasive species are estimated at over \$137 billion in the United States every year (13). Illinois is anticipated to spend over \$90 million to eradicate the Asian long-horned beetle and \$9.6 million to prevent the Asian carp from reaching Lake Michigan. The latter problem has also resulted in lawsuits being filed by multiple states, so there can be legal problems associated with invasive species as well.

It may be necessary to address the problems associated with invasive species, one species at a time. For example, Florida formed a task force to develop statewide management plans for individual invasive species (14). Illinois formed such a task force to develop a statewide management plan for the bush honeysuckle. The plan will include such information as the native range, a description of the plant, why it is an ecological threat, general background, current distribution, life history, priority management areas, and action options. The plan will be reviewed on a regular basis (approximately every five years) to determine what is working and what can be done better.

Ecological Challenge 6: Promoting positive human interactions with the landscape.

Obviously, the above ecological problems exist or are exacerbated by human interactions with the landscape. However, this challenge is more directly related to what people can do within their social and economic systems to reverse negative and create positive human interactions with the landscape.

This challenge encompasses regulatory programs, funding, education programs, and special events that can be used to promote positive interactions between society as a whole and the landscape. These mechanisms can play a role in working to create sustainable natural areas. The biggest challenge is raising people's awareness of the problems facing natural areas and the need for immediate action in addressing these problems.

Cultural-Social Threats to Sustainability

While ecological issues can dominate the discussion of contributing to the sustainability of natural areas, the cultural-social barriers to natural area sustainability cannot be ignored. Humans are an integral component of successfully creating sustainable complexes of natural areas. It is important to create a sense of cultural ownership of natural areas by a broader range of stakeholders. At the March 9, 2010 Illinois Natural Areas Summit, six key cultural-social threats, or challenges, to sustainability were identified.

It is important to note that the cultural-social threats may be more dynamic over time than the ecological threats. In other words, these social-cultural threats can change dramatically in even just a few years compared to the ecological threats, some of which have existed for decades (if not longer), such as habitat fragmentation and changes to the hydrologic and fire regimes. Natural areas will likely be facing changing social-cultural threats in the decades to come.

Efforts were made to identify solutions, or opportunities, for each of the threats, which will be listed later in this chapter. The six cultural-social sustainability threats include:

Cultural-social Challenge 1: Retirement of a generation of natural resource professionals and the resulting “brain drain”.

Seventy-six million people, referred to as “baby boomers,” were born between 1946 and 1964. This group comprises one-third of the workforce, fills many of the senior jobs, and its members are known to be “among the most aggressive, creative, and demanding workers on the market” (15). The oldest of these will turn 65 in 2011, the traditional retirement age. There are two concerns with this phenomenon. First, there is the potential for a tremendous loss of expertise if a large number of baby boomers retire over a short time period. Second, the generation that follows, “Generation X,” is composed of only 47 million people who were born from 1965 to 1975. (16) This raises the spectre of a potential labor shortage as many more people retire than are available to replace them. Both of these potential consequences pose threats to our ability to make natural areas more sustainable. The recent economic downturn, however, appears to have slowed the rate of baby boomer retirements, at least in the short term.

Cultural-social Challenge 2: Addressing the impacts of the global financial crisis.

Beginning in mid-2007 but escalating in 2008, the world experienced the worst financial crisis since the Great Depression. The United States lost 2.6 million jobs in 2008, banks collapsed at rates not seen since the 1930s, and major investment banks were either liquidated or sold for a fraction of their value. (17) In October 2008, the stock market experienced tremendous losses, with the Dow Jones Industrial Average losing 22.1% of its value in only eight days. (18) Housing values began declining in mid-2007, dropping dramatically in some parts of the country, creating a mortgage default crisis whose effects were felt globally. While the declines have stabilized, the impacts have been severe to federal, state, and local government budgets, and in the portfolios of foundations that have supported natural resource programs. These economic crises have compromised the ability of all sectors – public, private, and not-for-profit – to fund basic natural resource protection efforts.

Cultural-social Challenge 3: Working with a flawed natural resources conservation business model.

The natural resources conservation business model in place for decades has relied on federal and state governments to fund land acquisition and other natural resources protection programs. Funding was derived primarily from tax revenues. The not-for-profit sector played a role in supporting government funding of these efforts, but was not a major source of funding. With the global financial crisis, however, all government agencies have found their tax income from all sources greatly reduced and their responsibilities for the largest programs – education and healthcare – expanding. The State of Illinois, for example, reportedly has a \$14 billion deficit. This has resulted in large budget cuts to the Illinois Department of Natural Resources and an increased reliance on the not-for-profit sector, which has seen its financial resources compromised as well. As a result, government agencies, particularly the State of Illinois, have greatly reduced roles in protecting natural resources, creating a vacuum that needs to be filled in a different, collaborative way. It is clear that a new paradigm for financing natural resource protection is needed.

Cultural-social Challenge 4: Bolstering work within the political processes and creating a united voice within the conservation community.

This challenge draws attention to the need for the conservation community to work more closely together within the political process. Much is accomplished by the wide range of individual conservation organizations, but they often compete with each other for resources, which can fracture efforts to protect natural resources or may lead to a lack of consensus within the political process. It is vital that *all* conservation groups work together in identifying their roles and reducing duplication or competition. It is also important to partner with a broad range of players – even non-traditional partners – within the political arena.

Cultural-social Challenge 5: Minimizing or addressing the increased ideological polarization.

This challenge is focused on the increased polarization that has occurred across a wide range of natural resources issues. To some extent, it is being portrayed as a conservative versus liberal or Republican versus Democrat issue, but the schisms are often more complex than this. As an example, the views on climate change range from those who accept that the climate is changing primarily as a result of human actions, to those who agree that the climate is changing but believe this is “natural”, or those who believe the climate change argument is a hoax. These beliefs do not necessarily fall along party lines. These widely differing views make it very difficult to reach consensus on how to move forward with a plan of action. The issues related to

natural resources protection are important to economic success, social equity, and the quality of life for all people and should not become political or ideological pawns.

Cultural-social Challenge 6: Enhancing constituency engagement to re-connect people to the land.

Many people believe that there has been a tremendous disconnect between people and the natural world in recent decades. Richard Louv's 2005 book *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder* drew attention to the sad fact that children were no longer playing outdoors and no longer connected to nature. The reasons for children (and adults) losing their connections to the out-of-doors are varied. The use of computers and video-games, television, and other indoor activities compete with outdoor activities, but parents' fears of harm coming to their children if allowed to play outdoors unsupervised have also played a role. A lack of access to natural areas also contributes to this disconnect. Given the ecological threats, the financial constraints, and the need for everyone to be a part of the effort to create a sustainable system of natural areas, it is vital that we find ways to connect people to the natural world.

Sustainability Strategies

In order to address the ecological and social-cultural threats discussed above and to take advantage of existing opportunities, it is important to look at specific strategies or activities that are available for working to create a sustainable system of natural areas. It is not suggested that these are the only strategies that might be employed, but these strategies, and possibly others, may need to be employed in combination with each other to be successful.

The sustainable strategies will include a combination of various types of lands and activities that will help shape the landscape and move towards the sustainability of natural areas. The types of land include core natural areas, other natural areas, buffers and corridors, which can lead to networks of natural areas. Activities that will be used include stewardship, restoration, natural resources auditing, landowner contact, assisted migration, and sustainable preserve design.

The ecological elements for building sustainable natural areas consist of three physical components regarding land use – 1) core natural areas, 2) other natural areas, and 3) buffer zones and corridors within greater landscapes. By protecting core natural areas, providing buffers for them, and creating linkages between them, it is possible to create natural area networks or complexes, which would increase the opportunities for sustainability into the future.

Core Natural Areas

The biogeographical components used to build sustainable network or complexes of natural areas and to create networks or complexes are centered around core natural areas. Core natural areas are, according to prominent ecologists Cain, Bowman, and Hacker, “those where the conservation of biodiversity and ecological integrity takes precedence over other values or uses, and where nature can operate in its own way in its own time” (19). For the purposes of the discussion, a core natural area is defined as a site identified and approved by IDNR, INPC, and IESPB as any category of natural area for the Illinois Natural Areas Inventory. The goal should be the protection of the core natural areas in perpetuity through fee simple acquisition, permanent easement, or dedication as an Illinois Nature Preserve, or registration as a Land and Water Reserve. Specific designated boundaries have been identified for these sites and therefore can be mapped to begin the process of identifying buffers, corridors, or other linkages.

Other Natural Areas

Other natural areas are important to the effort to create sustainable complexes or networks of natural areas. There are natural lands that meet the criteria for the INAI but have not yet been added to the inventory. A locally significant natural area is one that has been identified by a local natural resource management agency, such as a forest preserve or conservation district, as being important to protect at the local or regional level. These areas need to be identified and integrated into the fabric of the networks or complexes being created.

Buffer Zones and Corridors

Buffers and corridors are needed to connect with the core natural areas, to protect them from incompatible adjoining land uses, and to allow movement of plants and animals between natural areas. The assemblage of overlapping, individual core natural area buffers can form a complex system of buffer zones. The buffer zones envisioned for the purposes of this document are best described by Cain et al., as matrices consisting of “large areas with less stringent controls on land use [than core areas],...which are at least partially compatible with [targeted] species’ resource requirements” and regional ecosystem functionality (19).

The most biologically productive method of creating corridors is to expand and restore buffers around core natural areas until they interconnect, as depicted in Figure 2. This increases the area of effective habitat for many species, but can dramatically increase the needed acreage and create a very large restoration burden. Consequently, corridors may end up as narrow bands of habitat connecting core areas. While these provide access between core areas, if too narrow, they can become a “biological trap” for some species, like ground-nesting birds, by funneling and

concentrating predators. Corridors provide physical pathways that allow for the passage of species from one core area to another. Corridors within buffer zones may also provide continuity of ecosystem processes and functions, thus contributing to the overall sustainability of the core areas they connect.

Buffers come in many forms and have wide-ranging utility. The Illinois Environmental Council, the Nature Conservancy, and Trust for Public Lands captured the importance of buffers in this statement regarding the current trend regarding providing buffers to natural areas:

“In response to the scarcity and fragility of natural areas in Illinois, land is often now acquired for the purpose of enlarging and buffering natural areas already owned by the state or another conservation entity. These buffer lands, often-marginal farmland or former pasture, are ...restored. “With time, the buffer lands develop into good habitat and improve the likelihood that the natural area will survive unimpaired well into the future.” (20)

There are two types of buffers, active, and passive, defined by their function. According to the Illinois Nature Preserves Commission (INPC), passive, or physical, buffers provide three of the five characteristics of conservation buffer areas. Passive buffers are those that:

- 1) Separate important conservation lands from less biologically significant, more developed, or more intensively managed lands.
- 2) Serve as barriers to or attenuate off site impacts like noise, herbicide drift, alterations of surface flow, chemical contamination, invasion by exotic species, etc.
- 3) Provide access and support amenities or facilities that might not be appropriate in the high-quality core of a conservation reserve or preserve (21)

Active buffers, according to the INPC, perform all the functions of passive buffers, as well as the remaining two of the five remaining conservation buffer characteristics:

- 4) Provide general habitat for species of conservation concern where the conservation core area provides the limiting habitat, and can expand the effective habitat for area-sensitive species.
- 5) With appropriate management, may eventually qualify for registration or dedication as a nature preserve (21).

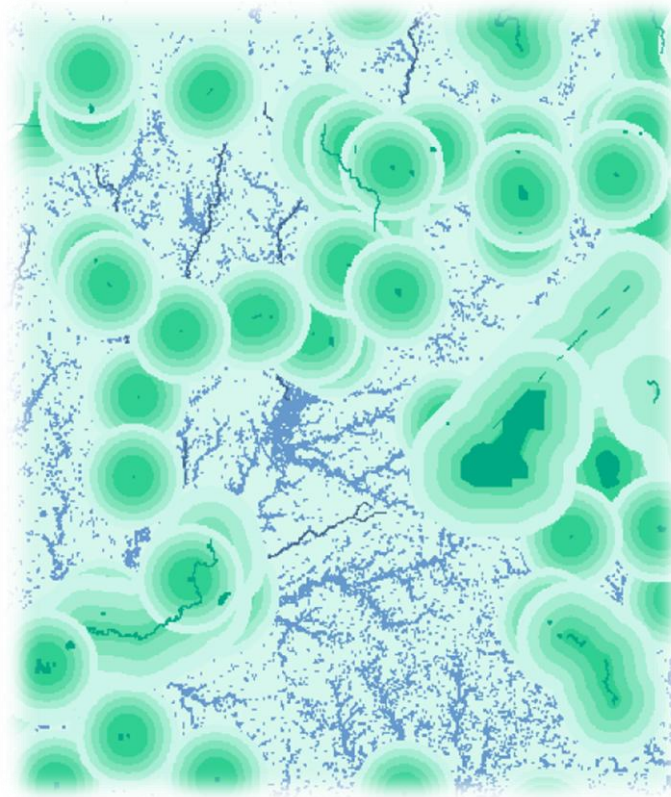


Figure 2 - Core Natural Areas with Hypothetical Buffer Zones

The primary benefit of buffers, particularly active buffers, is to increase the area of compatible land use, which reduces the “edge effects” along the length of fragmented remnants of high-quality natural areas, thereby promoting resilience of the sensitive ecological core. The array of species that occur near the edge of a core natural area is often compromised by noncompatible neighboring land use. By providing additional land surrounding core natural areas, there is also the possibility of the high-quality vegetation expanding into the active buffers.

Corridors have the capacity to connect natural areas, providing habitat for the movement of wildlife. Natural resource corridors also enhance the ecological function and aesthetic quality of natural systems, linking major natural features. Discussion regarding corridors will be expanded upon in the context of using buffers and corridors in building larger complexes or networks of natural areas, as a means of facilitating long-term protection and sustainability.

Sustainable Networks

It is important to acknowledge that buffers and corridors also may have adverse impacts. For example, a buffer or corridor may be a path for invasive species to move into the core natural

area. This is a complicated issue. While a buffer or corridor may allow the movement of invasive species, the lack of such avenues for movement by the native vegetation in light of climate change can result in the extirpation of certain species.

Corridors can also be unsuccessful for other reasons. They may increase the edge effects, allow the movement of parasites and diseases, or, as previously mentioned, concentrate predators.

The National Agroforestry Center has identified design considerations for corridors that should be considered, along with other ecological conditions when designing appropriate buffers and corridors:

- “Design corridors at several spatial and temporal scales.
- Provide quality habitat in a corridor whenever possible.
- Locate corridors along dispersal and migration routes.
- Corridors, particularly regional corridors, should not be limited to a single topographic setting.
- Similarity in vegetation between corridors and patches is beneficial.
- Restore historical connections and generally avoid linking areas not historically connected.” (22)

Natural area complexes or networks can be created by establishing buffers around natural areas and using corridors to connect natural areas. Before discussing the various strategies for creating natural area networks, it is important to define “sustainable networks”. The IDNR Wildlife Action Plan provides this definition:

A sustainable network is a system of natural areas managed to retain or restore a diverse, structurally complex community of native plants and animals characteristic of a natural division and section, buffered by lands of lesser natural quality. Ancillary habitats that meet the life history needs of species would be provided, nested within large blocks of natural vegetation...This would provide watershed scale benefits like slowing surface runoff and wind erosion, moderating air and water pollution. These areas are connected by corridors along Illinois major rivers that...allow the migration of both animal and plants species in response to large-scale threats like climate change. These networks also provide social benefits such as opportunities for outdoor recreation or nature study, or that provide access for hunting, fishing, and hiking.

The creation of networks is ecologically sound and is supported by key stakeholders. The Illinois Nature Preserves Commission recognizes the urgent need for the creation of networks of natural areas that “possess the ‘ecological resilience’ that allows [targeted ecological] resources

to persist through time....” (21). The commission’s vision for Nature Preserves captures the Sustainable Vision’s goal for such networks. Chicago Wilderness also captures the essence of natural area networks when they describe their Green Infrastructure Vision as an “...interconnected network of land and water that supports biodiversity and provides habitat for diverse communities of native flora and fauna at the regional scale. It includes large complexes of ...natural communities...[as well as] areas adjacent to and connecting these remnant natural communities that provide both buffers and opportunities for ecosystem restoration” (23).

To illustrate the concept of creating natural area networks, two statewide maps were created showing a two-mile and a four-mile buffer around each core natural area (Figs. 3-4). As distance between natural areas increases, buffer zone radii need to be increased to create the required connectivity. The two-mile buffer shown in Figure 7 clearly does not create a connection between natural areas across much of the state where natural areas are geographically diffuse, yet it does create vast complexes in areas where core natural areas are more numerous.

The four-mile buffer shown in Figure 4 still fails to provide a connection to all core natural areas, particularly in the central part of the state, yet requires the commitment of far more land than is realistic in much of the northern and southern parts of the state, and along major river corridors.

Clearly, a combination of appropriate buffers and strategically located corridors must be designed to meet regional needs.

The land in a buffer zone can be held in public or private ownership. Once the buffer zones around core natural areas have been designed, efforts can be made to manage the lands within the buffers’ radii in ways that promote natural linkages between core natural areas, and expand through restoration the effective size of the included natural areas. The resultant connectivity is crucial to creating sustainable natural areas. Identification of buffer zones will also help to determine priorities for promoting protection and restoration.

Stewardship

Stewardship is another important strategy or activity that is important if sustainability is to be achieved. Stewardship is the land management policies and practices required to maintain the ecological integrity necessary to support the intended target(s) of protection efforts and compatible visitor use if appropriate. It is cyclical in the sense that its major components - planning, implementation, and assessment - operate in a feedback loop to not only be sure that appropriate and timely management actions are carried out but that those actions have the desired

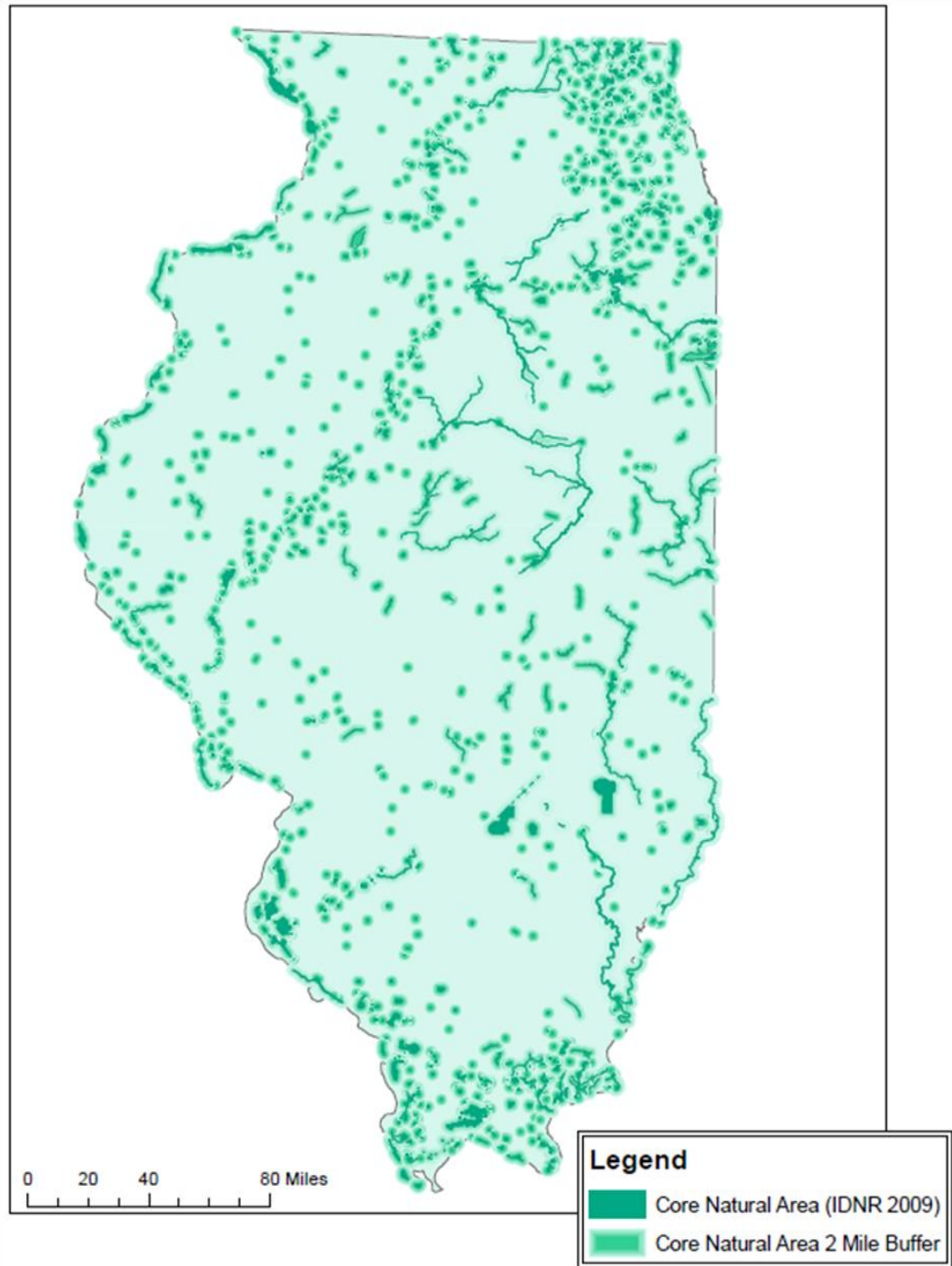


Figure 3 - Core Natural Areas with Hypothetical 2-Mile Buffer Zones

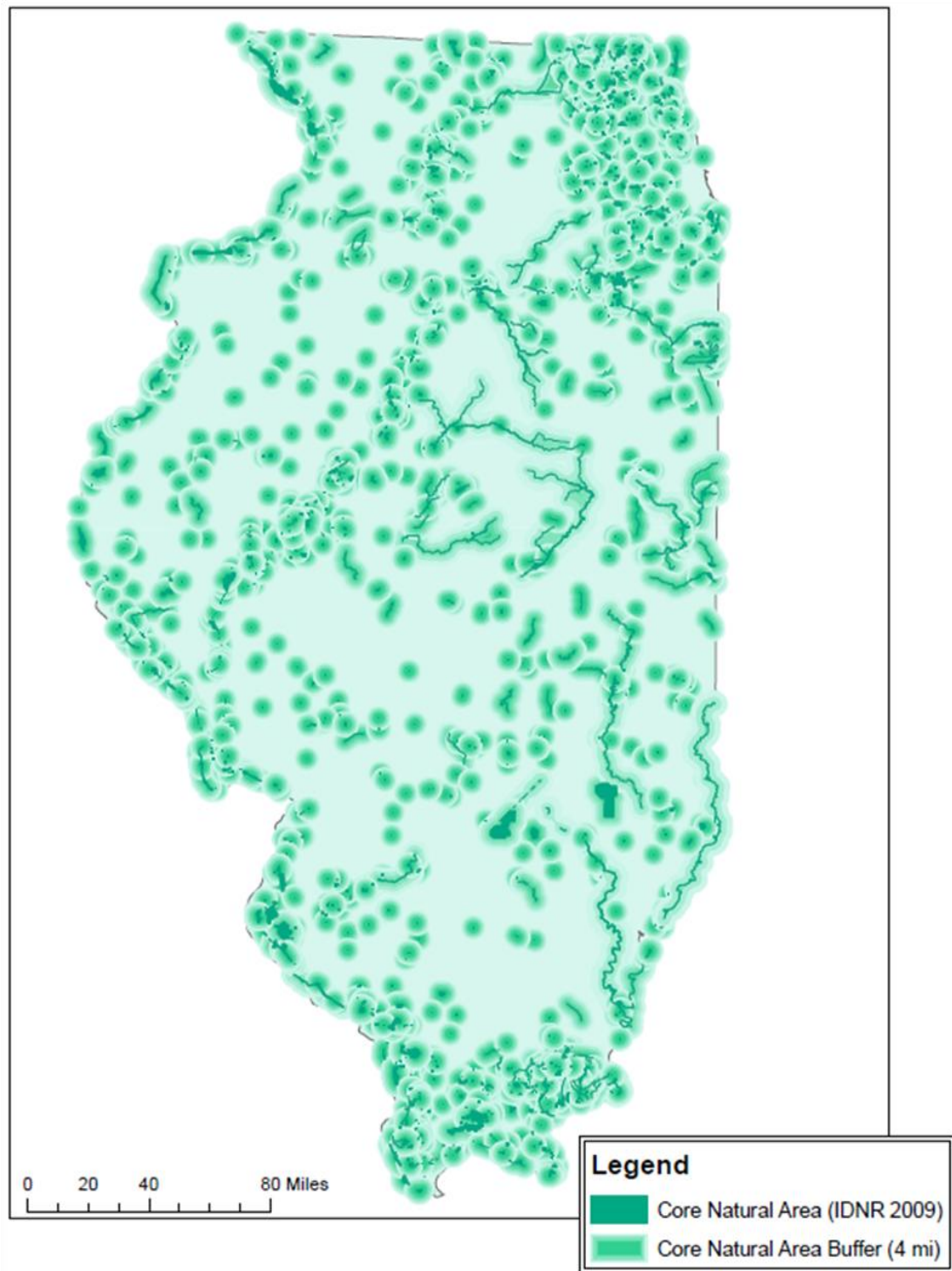


Figure 4 - Core Natural Areas with Hypothetical 4-Mile Buffer Zones

outcomes on the ground. Without appropriate stewardship, it is not possible to retain the character of high-quality natural areas. Extensive information and documentation is available on stewardship policies and practices.

Restoration

Restoration activities include but are not limited to native species augmentation/enrichment, removal of invasive species, and restoration of natural processes (e.g., fire, hydrology). For the purposes of INAI sites, restoration involves managing a formerly Grade C natural community to improve the quality. Restoration is a key strategy for improving the quality of natural areas.

Natural Resources Auditing

Natural resources auditing is a systematic process of objectively obtaining and evaluating empirical evidence regarding the ecological status of natural resources to determine if there is a high degree of correspondence between the current ecological status and the previous goals established for these resources. It is different from monitoring, in that it is measuring progress toward specific natural resource goals. General resource monitoring has been difficult to fund, and we suggest that an outcomes-based auditing process will be more enthusiastically embraced by funding authorities. Conducting such audits is essential to determine whether the stewardship or restoration practices are being successful in meeting the goal of creating sustainable natural area networks or complexes. An important element of natural resources auditing is to identify indicators for success that reflect ecological conditions and make sense to those outside of the natural resources community.

Landowner Contact

An often-overlooked strategy for protecting and sustaining natural areas is identifying the owners of these sites and establishing a working relationship with them. This might be done by the INPC in an effort to encourage landowners to dedicate their natural area as an Illinois Nature Preserve. However, this may best be accomplished by a local land trust or other local NGO. Local contacts may already have a relationship with the landowner that can help in encouraging the person to value their natural area and then to protect it.

It is vital that a centralized landowner contact program be established in cooperation with IDNR and the INPC. The landowners of all INAI sites and their contact information should be maintained as part of the INAI database. Landowners could be contacted in person annually, and a Natural Areas Newsletter could be produced for distribution at consistent intervals.

Assisted Migration

Assisted migration, also often called assisted colonization or managed relocation, is a relatively new and a very controversial strategy for addressing changes that may occur as a result of climate change. Assisted migration involves the manual relocation of species that are threatened with extinction due to climate change. (24) Many scientists believe such relocations could result in ecological disaster. They believe the relocation of these species could result in them becoming invasive species, bringing in diseases, or failing to survive after being removed from their natural habitats. Such relocations can also be viewed as contrary to the purposes of protecting and sustaining natural areas.

Others believe that human intervention is essential for the survival of some species. Some species with limited mobility could find it impossible to migrate in light of climate change – barriers such as large areas of developed land or agricultural lands could prevent them from moving. The plants that certain insects depend on may also shift locations as climate changes or they may disappear entirely, threatening the existence of species such as the Bay checkerspot butterfly.

Since assisted migration is a controversial and untested strategy for addressing specific threats to plant and animal species from climate change, much research is needed before it will be an accepted method, even on a limited basis. It is also possible that the threats from climate change are so severe and manifest themselves so rapidly that strategies such as assisted migration may have to be employed on an emergency basis.

Sustainable Preserve Design

Much has been written about the process of preserve design, so there is no need to go into detail here about what this entails. However, it is important to understand that in order to create the connected system of natural areas discussed in the Sustainable Vision, a preserve design process that accommodates both site-by-site and system-level preserve design will be needed. This is important because, according to the INPC “to achieve anything approaching sustainability, most preserves will end up being a mosaic of land parcels, often under different ownerships, sometimes enrolled in different protection programs, with a second mosaic of management units superimposed upon the first, each unit with different stewardship and management needs.” These mosaics need to be connected where possible to create a network to provide resilient complexes that may adapt as the environment changes, surviving into the next century.

When the update to the INAI has been completed – and the locations of new core natural areas sites are identified and the condition of existing ones is evaluated – the process of conducting the

assessment necessary to design connected networks of natural areas can begin. Preserve design protocols should be updated for use in conducting this assessment.

Building a Sustainable Landscape Legacy

The strategies, tools, and programs needed to build a landscape that functions as a living system capable of providing for current and future natural resource needs, such as the buffers and corridors, are discussed in the following sections. Achieving the goal of natural area sustainability will also require consideration of ecological and social-cultural challenges previously discussed. Appropriate responses to those challenges will follow the discussions about available tools and programs.

Traditionally, the protection of core natural areas has focused on fee-simple acquisition or securing conservation easements, followed by dedication as an Illinois Nature Preserve. However, using these traditional tools to protect the entire web of lands that are required to provide pathways across the highly modified landscape of Illinois is not feasible (21) nor necessarily desirable. Such strict control over the landscape is both unworkable economically and socially, and not flexible enough to accommodate the impending environmental uncertainty (19).

It is essential to create a new way to shape landscape patterns for the future, to leave a different type of *landscape legacy* that includes a statewide network of lands designed to protect the state's natural areas and the native biodiversity they support. The goal is to achieve regionally compatible land uses that not only achieve ecological objectives, but also meet the social and economic needs of the communities in which they occur. Multiple approaches can be used in siting these landscape-scale networks of conservation lands. They can be nested within and representative of Illinois natural divisions, or embedded in specific watersheds, or provide the core lands that anchor Illinois Wildlife Action Plan Conservation Opportunity Areas.

During the sustainable preserve design process, variations in composition and structure of Illinois' landscape need to be taken into consideration. To account for landscape-scale variability when designing networks, the degree to which a complex of natural lands is representative of the state's natural divisions should be an important consideration. The 15 natural divisions throughout the state represent distinct combinations of biological and geographical characteristics caused by landscape-altering glaciations (Fig. 5) and other geologic processes. According to the Illinois Comprehensive Wildlife Conservation Plan and Strategy (CWCP) of 2006, these divisions provide "a useful scale to consider wildlife and habitat conservation," (25). Specific to building sustainable networks, the natural divisions can be employed to determine appropriate site linkages on a regional scale. Figure 6 shows the core

natural areas with a hypothetical four-mile buffer in relationship to the natural division boundaries.

Building natural area networks within the geographical framework of Illinois' natural divisions might have to begin at a scale that is more manageable by the regional coalitions of stakeholders. Using smaller, ecologically defined areas, such as watersheds, might be a good beginning point for building a statewide, sustainable system of networks. Geographer J. W. Powell defined a watershed as "that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community" (27).

If natural areas are linked using buffers and corridors into complexes and these complexes are identified at the watershed scale, existing watershed-based programs and partnerships, such as Partners for Conservation's Ecosystem Partnerships, could be used to construct them and provide stewardship for them. Natural area complexes could then be further linked to build a network representative of a natural division. Ecosystem Partnerships are each affiliated with a watershed area, as illustrated in Figure 7. Such partnerships will be addressed in the Social-cultural Elements section later in this chapter.

Illinois Wildlife Action Plan and Conservation Opportunity Areas

Another approach for identifying the complexes of core natural areas, buffers, and corridors that could become segments of a sustainable natural areas network is to integrate them into the Illinois Wildlife Action Plan's Conservation Opportunity Areas (COA). The Wildlife Action Plan defined COAs as:

“locations (a) with significant existing or potential wildlife and habitat resources, (b) where partners are willing to plan, implement and evaluate conservation actions, (c) where financial and human resources are available, and (d) where conservation is motivated by an agreed-upon conservation purpose and set of objectives” (28).

COAs are complementary to the development of sustainable natural areas across the state. The existing programs and partnerships dedicated to COAs could be used to initiate the development of natural area complexes locally and networks regionally.

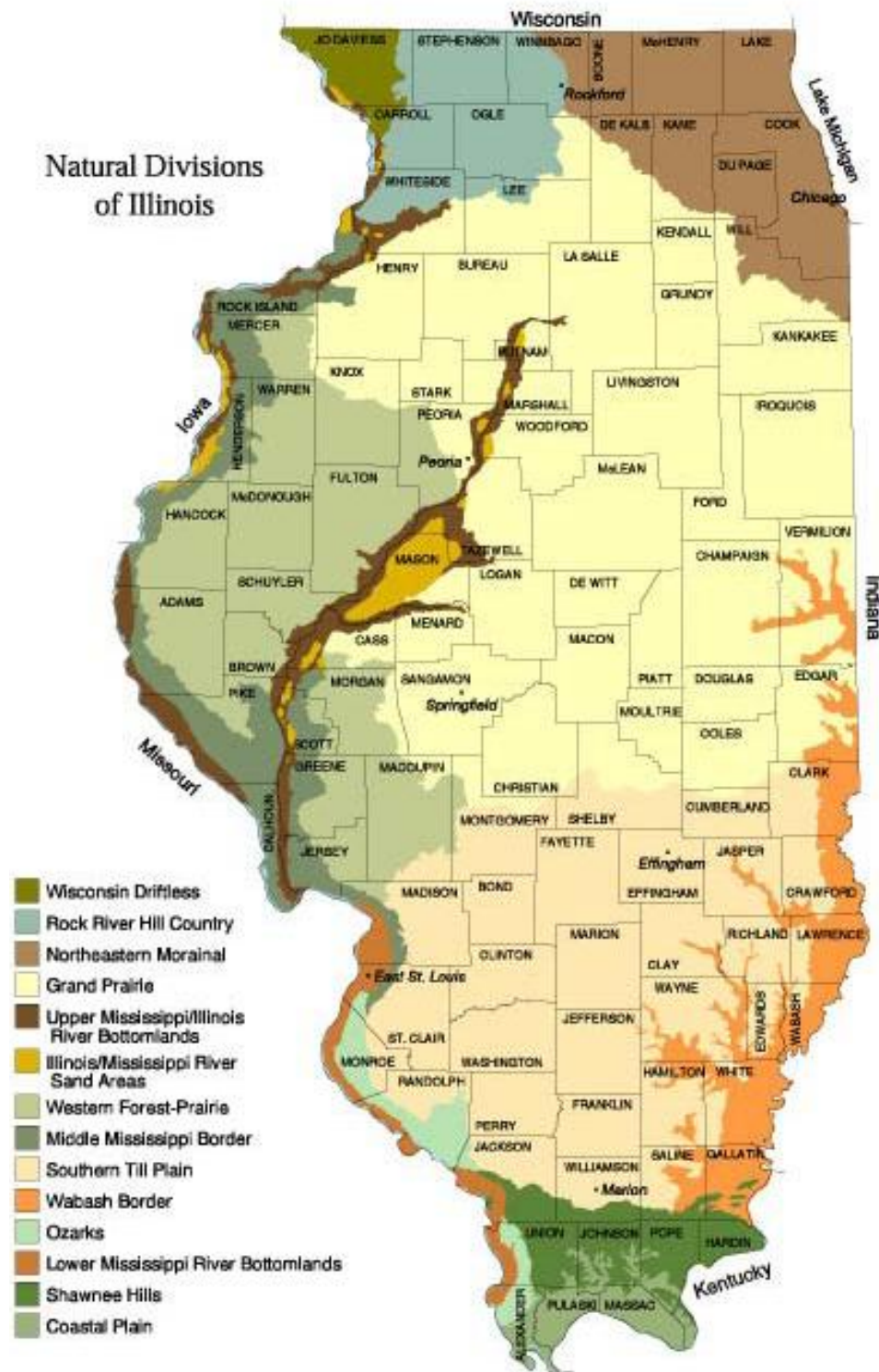


Figure 5 - Natural Divisions of Illinois (26)

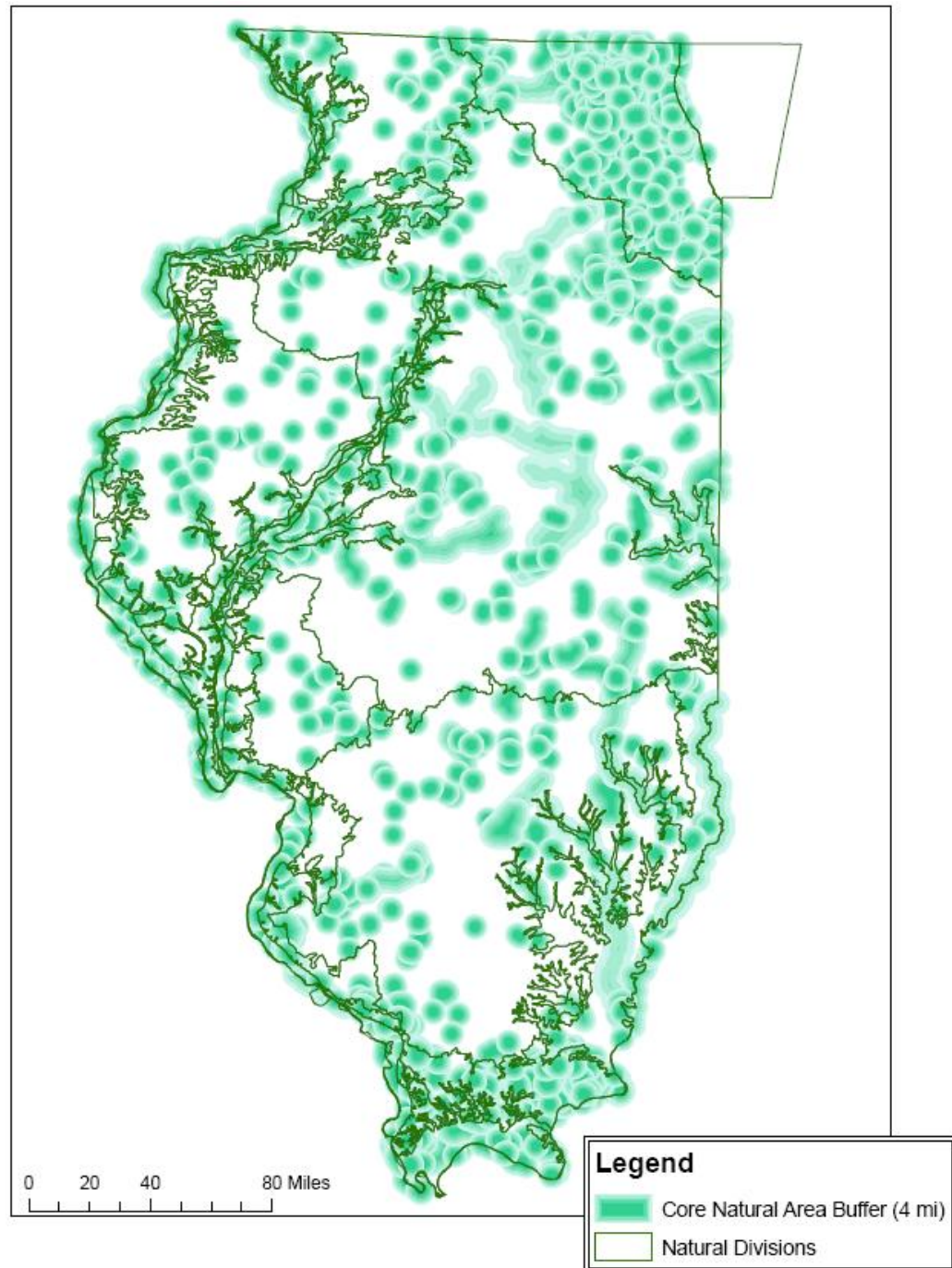


Figure 6 - Natural Divisions of Illinois with Hypothetical Natural Area Networks

Use of Existing or Creation of New Programs

Because of the large amount of land involved, even attempting to establish legal protection for the entire matrix of buffers and corridors needed to create a statewide sustainable natural area system is not recommended. Since many of the buffer lands are merely expanding the effective size of a natural area to accommodate area sensitive species, and corridors are simply providing cover or undeveloped lands through which wildlife and plants can move, such lands may not always be of high natural quality (though restoration of some of these lands may be critical in certain cases). Land acquisition or strong legally binding protection, particularly those that are perpetual like State Nature Preserve dedication, might not be appropriate for such disturbed natural lands. Prominent ecologists, such as Cain et. al, have noted that privately-owned lands “can be managed in ways that permit the production of needed human resources, such as timber, fiber, wild fruits, nuts, and medicines, but still maintain some habitat value. Activities that may be compatible with the conservation function of buffer zones include selective logging, grazing, agriculture, tourism, and limited residential development...” (19). Such “working lands,” whose owners are willing to operate in ways compatible with conservation of nearby core natural areas can be recognized as contributing to a new kind of landscape legacy. Such contributions by private landowners to the sustainability of natural areas could be nonbinding, but should be celebrated and recognized as a significant commitment to altering land use patterns for the benefit of maintaining the beauty and functionality of natural areas, and Illinois’ native landscapes.

Existing programs could be modified, or in some circumstances, new conservation programs could be created to facilitate landowner participation in building natural area complexes and networks. Key programs that can assist in developing the specific physical components of the network are highlighted in this section to acknowledge their significance in building a sustainable system of natural areas in Illinois. Details regarding the roles of other programs and groups will be discussed in Chapter Four.

Corridors in particular are crucial for the migration of species between core natural areas, and they may need some level of formal protection. It may be necessary to develop scientific guidelines related to the effectiveness of corridors for the migration of different species. A corridor used by birds to move from breeding to feeding habitats may possess characteristics very different from a corridor that accommodates shifts in plants’ ranges. Specialized tools may need to be developed for the identification, recognition, or protection of key corridors. Many of the direct pathways between core natural areas that might be created by overlapping buffer areas coincide with the Wildlife Action Plan’s Conservation Opportunity Areas (COAs) and other

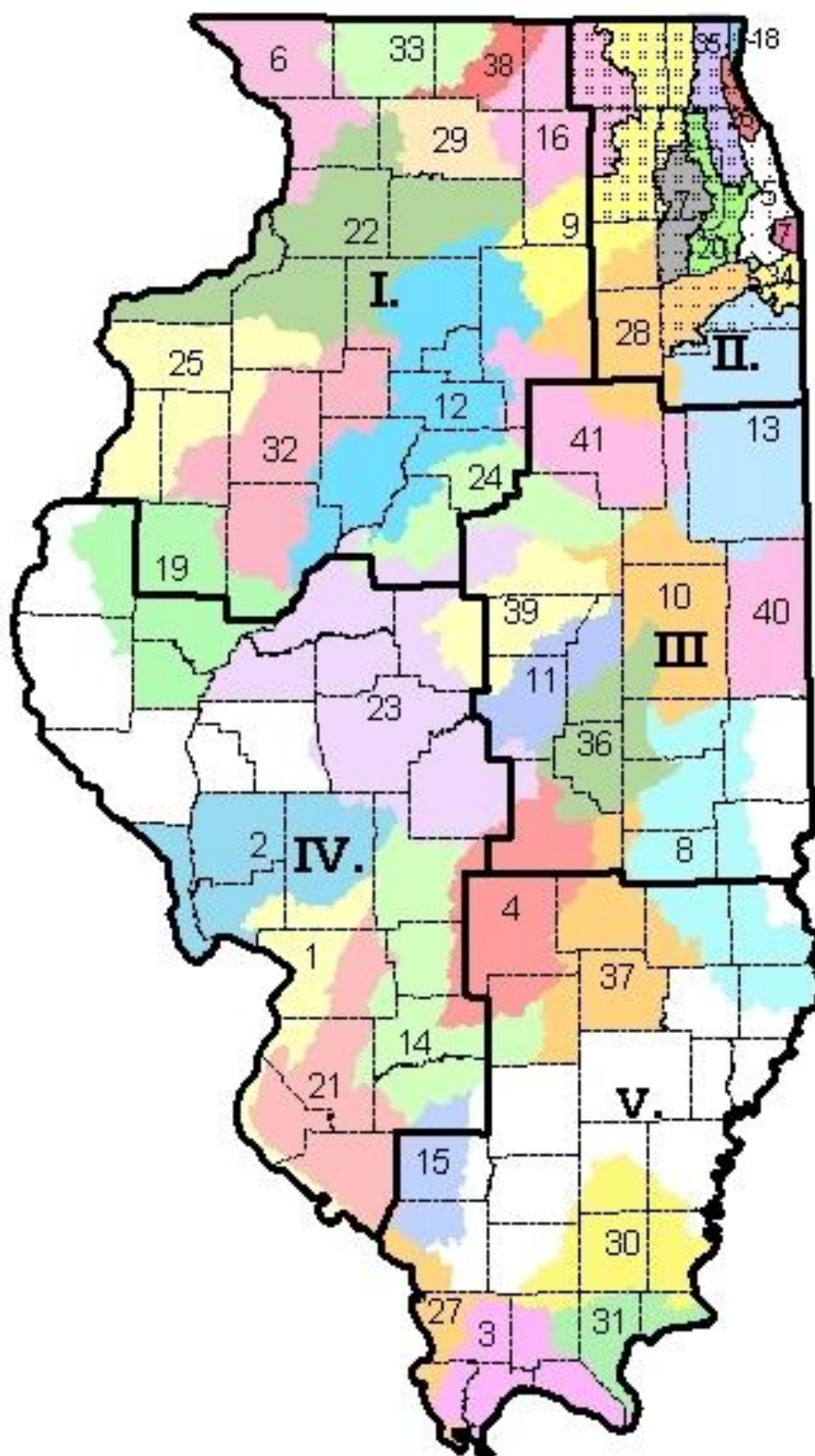


Figure 7- Partners for Conservation Ecosystem Partnership Boundaries (26)

conservation priority areas, as illustrated in Figures 8 and 9. As previously discussed, it is not practical to provide buffers of this size around most natural areas, but such conceptual models would allow conservation planners to “zero in” on where corridors are needed to connect core natural areas into complexes and natural area complexes into networks.

Agricultural Conservation Programs

Programs that may be utilized in supporting private landowners with financial and ecological management resources for lands comprising buffer zones or corridors include the Farm Service Agency’s Conservation Reserve Enhancement Program (CREP), the Conservation Reserve Program’s (CRP,) State Acres For Wildlife Enhancement (SAFE) initiative, as well as the United States Department of Agriculture’s (USDA) Grassland Reserve Program.

CRP and CREP were created through the Food Security Act of 1985, although CREP was not initiated in Illinois until the late 1990s. CREP is a program that combines federal, state, and local agency resources “to retire frequently flooded and environmentally sensitive cropland to achieve restoration and long-term protection” (29). The goal of CREP is to reduce sedimentation and nutrients within the Illinois River watershed by applying conservation practices, and creating or enhancing habitat to increase fish and wildlife populations. There are two sides to CREP, the federal, and the state. The federal side provides funding for a 15-year Conservation Reserve Program (CRP) contract. The state side is a 15- or 35-year contract extension or a permanent conservation easement. All easements are voluntary.

CREP protects unimproved land that is 5 acres or greater by providing property tax relief. Property is assessed at 5% of the fair market value. To date, 2,260 landowners have enrolled 83,165.64 acres in the program. The estimated average tax savings is \$106/acre/year. To date, landowners have realized almost \$9 Million in tax savings. (30)

Federal, state, and local governments play a role in CREP. The USDA Farm Service Agency (FSA) administers the federal side of CREP as they currently do for CRP. IDNR has the primary responsibility for administering the fiscal portion of the state side of the program. The local Soil and Water Conservation Districts (SWCDs) administer the state side of the program at the county level and hold the conservation easements. The Natural Resources Conservation Service (NRCS) and IDNR provide technical assistance for the development and implementation of conservation plans for the restoration and enhancement of the land. The Illinois Department of Agriculture (IDA) provides support for the SWCDs and assists with CREP Policy. (29)

Statewide Conservation Priority Areas

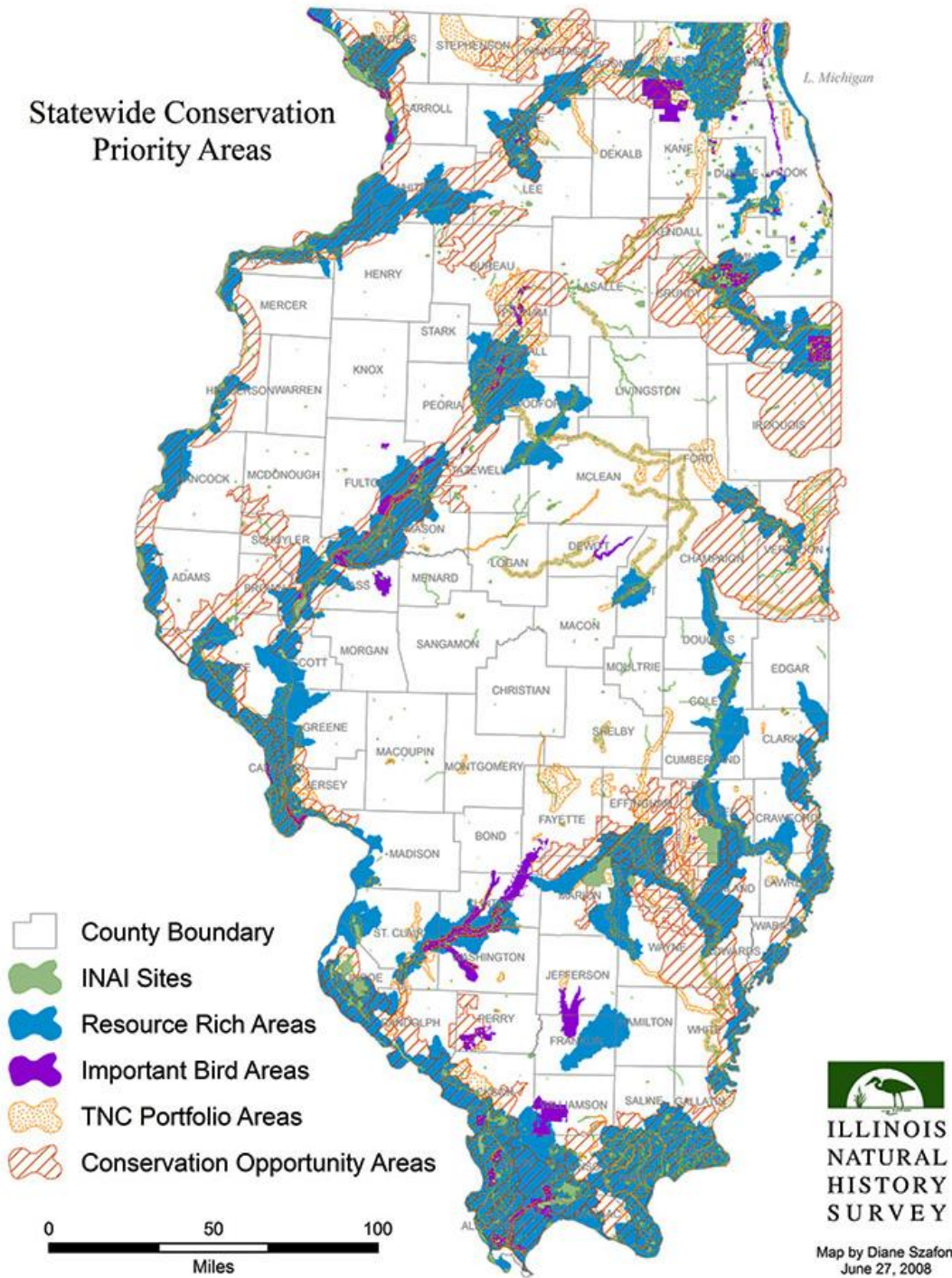


Figure 8: Conservation Priority Areas

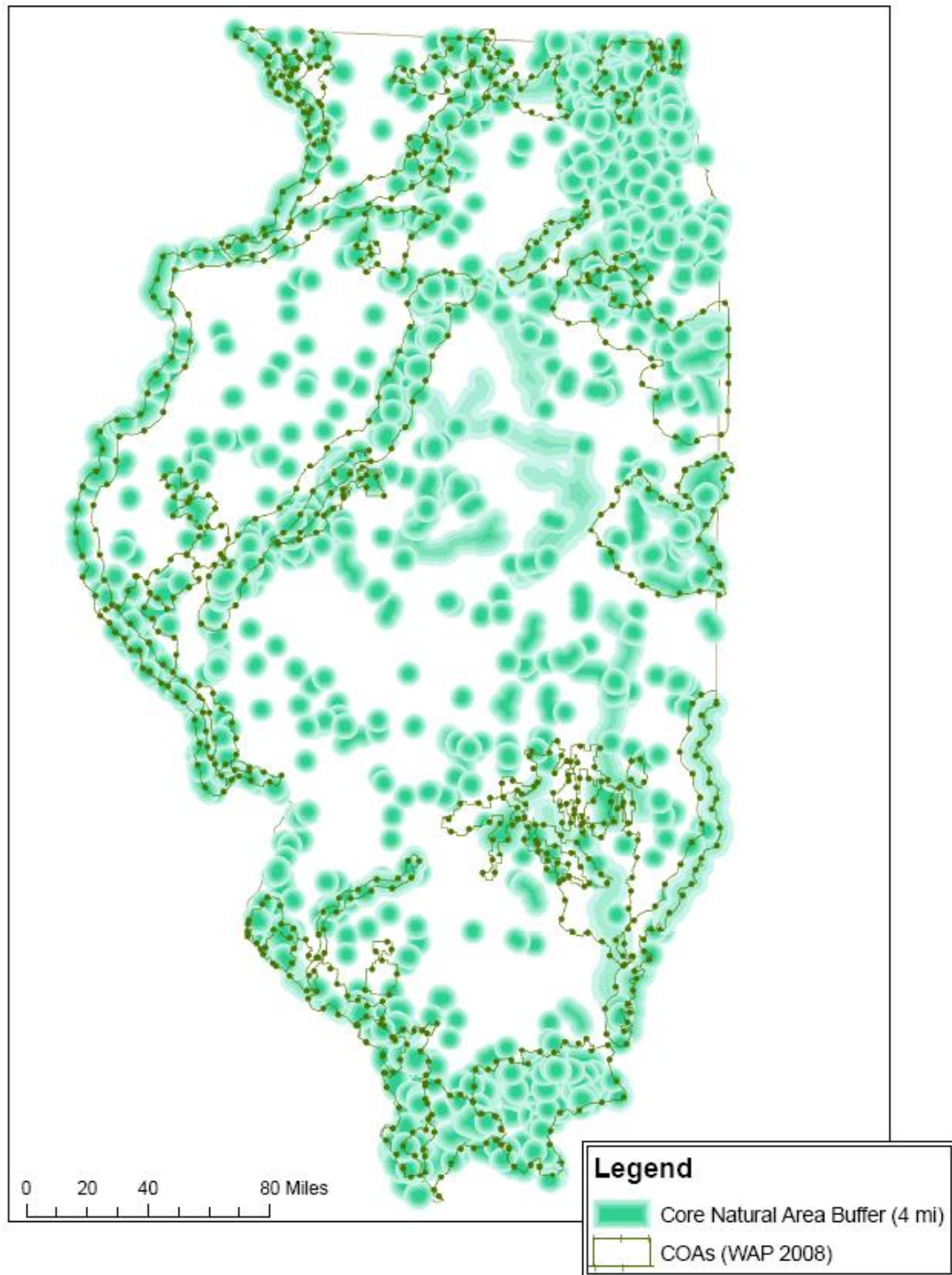


Figure 9: Core Natural Area Buffer Zones with Hypothetical Conservation Opportunity Areas

Since the program began in Illinois in 1998, the USDA has enrolled over 127,000 acres, and approved over 200,000 agricultural acres of land in Illinois for enrollment in CREP. CREP accepts frequently flooded or degraded crop- and pasture-land that was or will be converted to wildlife habitat, wetlands, or other water quality enhancement purposes. Once enrolled, lands could immediately be incorporated into sustainable natural area complexes and network designs as passive buffers and should be recognized as serving this important function. After conversion to functioning wildlife habitat, the lands can serve as active buffers. The system has the promise of being supported long term, as “over 90% of state CREP acres are in permanent easements, ensuring long-term protection of floodplain and other environmentally sensitive land” (IDNR, 2009). Areas along the mainstem of the Illinois River are among the sites currently benefiting from this program. (31). The recognition of the contribution of such lands to natural area sustainability and the preservation of Illinois’ biodiversity could eventually spawn new incentives for their landowners, or eventually even provide priority consideration for their enrollment.

SAFE lands show promise to play a big role in the assemblage of buffer zones and corridors, and in creation of future Category II INAI sites by supporting restoration of endangered species habitat. According to the USDA, “Conservation practices currently offered under CRP [have been] fine-tuned through SAFE to improve, connect or create higher-quality habitat to promote healthier ecosystems in areas identified as essential to effective management of high priority species” (32). SAFE’s programs, according to the Wildlife Management Institute, “address specific habitat-conservation needs of threatened and endangered, declining or economically valuable wildlife species.” (33) “Through the USDA ...SAFE... program for converting cropland to wildlife habitat, Illinois may enroll up to 20,600 acres” of cropland for restoration to grassland to fulfill a major goal identified in the Illinois Wildlife Action Plan – reviving the native prairie landscape (34). The project, Illinois Prairie Habitat SAFE, aims “to increase the abundance of grassland wildlife including endangered, economically significant, and declining species” (33).

A myriad of top-down and bottom-up strategies will be needed to build a sustainable natural areas system in Illinois. Partnerships to implement the actions required are critical social elements of building fully functioning, statewide, sustainable networks. A few of the many conservation partnerships already in existence throughout the state are highlighted next.

Social/Cultural Elements of Sustainable Natural Areas

Local, regional, and statewide partnerships will be necessary to develop sustainable natural areas networks. Support of stakeholders of at all levels, from landowners and community volunteers, to statewide nongovernmental organizations (NGOs) and government agencies is essential for

success. Partnerships and programs that serve to build and support the cooperation of stakeholders in the conservation of natural areas are identified here.

Regional and Statewide Conservation Partners

Partners in conservation whose plans and programs complement the Sustainable Vision's efforts to create sustainable natural area networks include the IDNR, Chicago Wilderness, and Grand Victoria Foundation. The plans and programs that are central to this effort include IDNR's Wildlife Action Plan and Partners for Conservation program, Chicago Wilderness' Green Infrastructure Vision plan, and Vital Lands Illinois, a statewide network of partners supported by Grand Victoria Foundation working to create an interconnected system of protected lands and water

While the Illinois Comprehensive Wildlife Conservation Plan and Strategy (CWCP) was developed by IDNR, the responsibility for implementation is shared by stakeholders from across the state. The CWCP "is a comprehensive plan to manage public and private lands in the best way possible to benefit all Illinois wildlife" (25). The creation and implementation of CWCP was required by the federal government to receive funding from the Wildlife Conservation and Restoration Program (WCRP) and the State Wildlife Grant Program (SWGPs). The planning effort included input from over 150 agencies and organizations, all with a stake in implementing the goals of CWCP. The implementation phase began in 2006 under the direction of the Illinois Fish and Wildlife Action Team. The team is a committee comprised of IDNR staff and other core partners, including conservation-focused NGOs, as well as hunting and fishing organizations (31). The CWCP was renamed the Illinois Wildlife Action Plan (IWAP) for the implementation phase.

The efforts of the Fish and Wildlife Action Team will undoubtedly overlap with efforts needed to create and sustain core natural areas. Items addressed in the IWAP common to the implementation needs for the Sustainable Vision include those related to CWCP's landscape-scale habitat protection and management goals, such as the Conservation Opportunity Areas (COAs). COAs were developed with scientific data and conservation partner input. As seen in Figure 9, many COAs overlap hypothetical buffer zones and therefore the potential corridors that might be identified to connect natural areas.

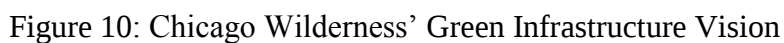
Conservation 2000 (C2000) Ecosystem Partnerships were acknowledged for their contribution to the IWAP. They are "coalitions of local stakeholders – private landowners, businesses, scientists, environmental organizations, recreational enthusiasts, and policy makers... united by a common interest in the natural resources of their areas' watershed" (35). In 2008, the C2000 program was renamed when the program was reauthorized by the legislature. Under the IDNR

program now known as Partners for Conservation, ecosystem partners continue to function in ways that can support the development of Illinois' natural area networks across the state. The 41 partnerships, defined by watershed and covering 84% of the state (36), have already begun to lay the groundwork for establishing ecologically defined, regional landscape-scale management teams. They have the potential to cooperatively provide leadership in the development of regional sustainable networks.

The Chicago Wilderness (CW) is “a regional alliance that connects people and nature.” Their members include over 250 organizations from the greater Chicagoland area (including parts of Wisconsin and Indiana). Many of their members and partners collaborated to develop the Green Infrastructure Vision (GIV) plan. According to CW's plan, “The Vision is not merely a land acquisition strategy, but rather a call to carefully think about how we can live in and among natural areas in a sustainable way and to mutual benefit.”

The implementation of the GIV includes a regionally scaled effort to develop land-use plans that take conservation of the environment and people's communities into account. The main product of the initiative thus far is a regional-scale map of the Chicago area's green infrastructure (GI) and identified resource protection areas derived from the findings of CW's Biodiversity Recovery Plan, although implementation plans are under development (Fig. 10). The GIV shares common elements with the Sustainable Natural Areas Vision, however, since the GIV is also designed to maintain greenspaces for groundwater recharge, outdoor recreation, etc., it may “capture” more lands than are necessary to maximize the long-term sustainability of the region's natural areas. As conservation planners begin to narrow the alternative footprints of the Sustainable Vision and begin to map them, a careful comparison needs to be made with the GIV.

Vital Lands Illinois, is “intended to help ensure the permanent protection and long-term stewardship of Illinois' most vital lands and build support for projects and conservation among public, private, and nonprofit organizations, other potential donors, and the broader public” (35). The overall goal is to create “a state-wide, connected system of natural lands, ensuring their permanent protection and long-term stewardship, and building public support for conservation” (35).



Locally Based Conservation Partners

Locally based conservation partners include land trusts, watershed protection organizations, C2000 Ecosystem Partnerships, and other regional or community-level organization devoted to protecting natural resources, including core natural areas. These partners are pivotal to the long-term protection of core natural areas because they know local leaders, understand the local political conditions, and often have the trust of the general public. It will be necessary to solicit the support of a myriad of individual communities and volunteers to create natural area complexes and networks.

The regionally focused programs mentioned above can serve to empower smaller-scale efforts like supporting “gateway communities,” (communities in close proximity to core natural areas), and volunteer networks. Based on the analysis of voting records in the *Resourcing the Sustainable Natural Areas Vision*, the most effective generators of support at the local scale, are forest preserve and conservation districts. The contributions of local units of government, including special districts such as forest preserve and conservation districts, to conservation efforts are analyzed in detail in Chapter 4. It is at the local level where most individual natural areas are protected. We need to encourage these locally focused partnerships to increasingly consider linking individual natural areas into sustainable complexes that will become the building blocks for regional sustainable natural areas networks and ultimately the statewide system of sustainable natural areas.

Many more programs and partnerships will likely be involved during the course of the design of sustainable strategies for natural areas across the state. Those highlighted in this document are identified as potentially able to provide the initial impetus for the preliminary planning and building of networks.

Educational Programs

An important social-cultural component needed to successfully achieve the Sustainable Vision’s goals is to expand natural resources education opportunities for political and civic leaders, schoolchildren, and the public. Many exciting and successful education programs are sponsored by governmental agencies or NGOs. One of these is the 21st Century Corps of Discovery (CoD), sponsored by the INHS. This program is highlighted here because it is an educational program that connects people to a specific complex of natural areas with hands-on activities. CoD is place-based in that participants adopt a natural area complex on which to focus. INHS provides a 4-6 day training session on how to aesthetically document a landscape and its biodiversity. It has been found that this is an extremely effective way of engaging citizens in conservation

efforts over the long-term, leading participants to want to know and do more. This is a popular and successful program and warrants expansion.

Proposed Solutions to Ecological Threats to Sustainability

The participants at the Natural Areas Summit in March 2010 discussed in depth six key ecological and six social-cultural threats facing natural areas and other natural resources in Illinois. Solutions were posed for each threat, although the details were not fleshed out at this summit. These solutions range from being very broad to very specific, some requiring global actions, while others are specific to one or only a few stakeholders. Some of these ideas may appear as stakeholder “opportunities” in Chapters 4 and 5, while others warrant more attention as the Sustainability Vision is implemented.

Ecological Challenge 1: Researching and addressing the adverse effects of climate change in Illinois.

Solutions:

1. Conduct research:
 - a. Expand the Critical Trends Assessment Program (CTAP) for use in determining species vulnerabilities to altered of conditions.
 - b. Identify climate vulnerable species.
2. Adapt management/design practices:
 - a. Incorporate climate adaptation strategies into preserve designs.
 - b. Improve health and resiliency of natural areas.
 - i. Create larger complexes of protected areas.
 - ii. Create corridors to connect protected complexes.
 - c. Implement land and biodiversity protection and strategic habitat restoration.
 - d. Use goats instead of fire or fossil fuel-derived herbicides to control invasive plants.
 - e. Apply restoration knowledge and understanding to adapt to climate changes.
3. Revise energy policies/regulation:
 - a. Create incentives for carbon sequestration in trees, soils, and other native biomass.
 - b. Increase incentives for energy efficiency and generation and use of renewable energy sources.
 - c. Regulate agricultural production methods to reduce use of fossil fuels and generation of methane (reduce mono-crop and CAFOs).

- d. Pass cap and trade legislation in Illinois.

Ecological Challenge 2: Addressing hydrological modifications, including protecting groundwater and surface waters, channelization, wetland loss, alteration of drainage patterns, loss of riparian areas.

Solutions:

1. Finish designating Outstanding Natural Resource Waters
2. Defend and enforce existing water quality regulations.
3. Pass water quality and quantity legislation to regulate the protection of ground and surface hydrology and run-off, and wetlands, including isolated wetlands.
4. Prioritize hydrological restoration areas, and work to create more wetlands and floodplains.
5. Identify, protect, and improve Green Infrastructure.
6. Get conservation-minded representation on local drainage district boards.
7. Raise public awareness of the problems related to hydrological modifications.

Ecological Challenge 3: Addressing landscape fragmentation.

Solutions:

1. Identify a statewide green infrastructure plan with targets based on scientific principles of preserve design.
2. Increase biological effective size of natural areas, using buffers, and restore, protect, and connect core areas.
3. Increase protected open space from 4% to 20% using both public and private lands, creating larger complexes and networks.
4. Use local and county planning and zoning regulations, and regional planning processes to minimize fragmentation.
5. Establish an active, systematic grass-roots landowner contact program.
6. Develop "Think globally, act locally" type conservation programs:
 - a. Study the Rivers to Ridges Campaign in Jo Daviess Co.
7. Integrate the activities of educational and research institutions with those of management agencies to achieve greater public awareness and support.
8. Expand the number of Forest Preserve Districts and County Conservation Districts, creating them in counties where they currently do not exist.
9. Push for local open space funding.
10. Explore the potential role of assisted species migration in climate adaptation and endangered species recovery.

Ecological Challenge 4: Addressing the changes that have occurred to the fire regime associated with natural resources.

Solutions:

1. Increase the application of prescribed fire, both spatially and temporally, leaving portions of sites unburned.
2. Increase prescribed burn training for both volunteers and professional staff.
3. Create regional prescribed burn crews.
4. Protect the IL Prescribed Burning Act of 2007 (Public Act 95-0108) from amendments that might restrain the use of prescribed fire.

Ecological Challenge 5: Researching and controlling invasive and exotic species.

Solutions:

1. Create healthy intact ecosystems to increase their resistance to invasion.
2. Develop consistent management strategies for invasive species using new technologies and strategies.
3. Eliminate physical stressors upon ecosystems
4. Require insurance or performance bonds by state statute before intentional introduction of non-native species.
5. Establish federal import/export fees for inspection and management of biological entities.
6. Improve screening and rapid response plans.
7. Identify triage species and implement New Invaders Rapid Response.
8. Establish interstate cooperation and regulation.

Ecological Challenge 6: Addressing negative and creating positive human interactions with the landscape.

Solutions:

1. Adopt regulations/policies:
 - a. Develop and adopt model ordinances for green development.
 - b. Adopt statewide county zoning.
 - c. Adopt statewide wetlands legislation, including isolated wetlands.
2. Implement education programs:
 - a. Engage an already supportive audience by targeting adults that vote.
 - b. Promote natural areas as economic assets that provide ecological services.
 - c. Create special events.

3. Funding Issues:
 - a. Use a portion of the taxes paid by wind farms for open space protection and restoration.
 - b. Fund the auditing of natural resources.
4. Land Management:
 - a. Adopt adaptive management.
 - b. Engage private landowners in land conservation programs.
5. Develop a statewide corridor plan and scorecard meetings
6. Create and maintain adequate GIS resources.
7. Develop a youth conservation corp.

Proposed Solutions to Social-cultural Threats to Sustainability

Cultural-social Challenge 1: Retirement of a generation of natural resources professionals and the resulting “brain drain”.

Solutions:

1. Employers options:
 - a. Create council of advisors for anyone to access.
 - b. Job sharing to phase out retirees.
 - c. Job shadowing.
 - d. Hire internships/residents for mentoring.
 - e. Identify and recreate different career paths.
2. Reestablish educational programs to train field botanists in universities/colleges.
3. Create conservation camps for children; IDNR had such camps many years ago, and they were extremely successful. If IDNR does not sponsor these camps, other organizations could.
4. Create state chapters of Natural Areas Association.
5. Solicit foundation support for talent cultivation and retention.
6. Maintain stable funding for state natural resource agencies.

Cultural-social Challenge 2: Addressing the impacts of the global financial crisis.

Solutions:

1. Identify new funding sources:
 - a. Expand the Real-Estate Transfer Tax to include commercial property.
 - b. Generate revenue from natural area – sell waste, carbon credits, etc.
2. Eliminate perverse incentives for land conversion.
3. Develop a strategic conservation plan that focuses on target audiences.

4. Engage corporate world - Form corporate councils to support conservation of natural resources.
5. Mobilize the jobless to do restoration.
6. Develop a certificate and Associates' Degree in Applied Science in restoration management to provide employment opportunities.
7. Buy land now – it is cheap.
8. Communicate the economic and social value of ecological services.
9. Sell our success stories.

Cultural-social Challenge 3: Working with a flawed natural resources conservation business model.

Solutions:

1. Re-examine basic land use regulation at state/local level to encourage better development regulation, including conservation design.
2. Establish more forest preserve districts and conservation districts.
3. Focus on landscape level issues with many partners involved in conservation.
4. Look at the federal Farm Bill as a source of conservation funding.
5. Include income-producing properties in conservation portfolios.
6. Develop a statewide planned giving program.
7. Link environmental settlement fees to impacts and use for conservation.
8. Build the capacity of NGOs to augment or, if necessary, replace the work previously done by governmental entities.

Cultural-social Challenge 4: Bolstering work within the political process and creating a united voice within the conservation community.

Solutions:

1. Find common ground with and develop a common message among traditional natural resource interests.
2. Develop nontraditional partners.
 - a. Housing authorities, for-profits, anybody not in the room who has something to contribute.
3. Make conservation a bi-partisan issue.
4. Make an effort to work from within opposing organizations.
5. NGOs can work to mobilize registered voters, focusing on those who actually vote.
6. Get politicians outside - Leave No Politician Inside.

Cultural-social Challenge 5: Minimizing or addressing the increased ideological polarization.

Solutions:

1. Recruit nontraditional partners for hands on work together.
2. Use or develop business-minded approaches to conservation.
3. Communicate public policy transparently.
 - a. Train communicators.
 - b. Communicate with social media, employ non-value-laden language, use pictures, and the beauty of nature.
4. Engage children.

Cultural-social Challenge 6: Enhancing constituency engagement and people's connection to the land.

Solutions:

1. Support, or create new successful conservation/nature programs or campaigns ("Protect Kendall Now") to engage the public.
 - a. Use photo exhibits.
 - b. Use place-based models like "MY PLACE" / "My INAI Site" to develop other local programs.
 - c. Connect with education programs through site interpretation, museum exhibits, zoological gardens, and science centers.
 - d. Frame issue of natural areas protection around quality of life.
 - e. Make the link to "Ecosystem Services" supporting life: water, air, pollution.
2. Connect to the locally grown food movement ("Every meal is a teachable moment").
3. Package the message and present it in the local vernacular, use their sense of place to connect with them.
4. Coordinate advocacy between government and NGOs.
5. Create "friends of" groups for specific natural area complexes, or entities such as the Illinois Nature Preserves Commission and forest preserve or conservation districts.

Conclusion

When the INAI Update is completed and compiled, a current, comprehensive list of core natural areas in Illinois will exist. The next step is for a team of landscape and community ecologists, social scientists, Geographic Information Systems analysts, and many others to determine which lands are critical, both public and private, to serve as buffers and corridors in creating natural area networks. In most cases, several viable alternatives for creating networks will exist. Which are pursued will depend on the interests of landowners and the local community.

Existing programs already exist that can play a role in the effort to create a sustainable natural areas system but some may need to be modified or expanded to incorporate the objective of natural area sustainability. New programs will likely need to be developed to encourage or provide incentives for landowners to participate in protecting and sustaining natural areas and their buffers. The roles of stakeholders and their programs, as well as the challenges and opportunities they face, will be discussed in detail in Chapters 4 and 5.

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The Illinois Sustainable Natural Areas Vision

Chapter 4

Stakeholders and Their Roles in Creating Sustainable Natural Areas

In order to begin creating a sustainable system of natural areas, it is important to examine the roles and authorities of the many stakeholders associated with such an effort. The first step is to develop a list of the key stakeholders to examine. The next step is to explore the challenges facing these stakeholders in participating in this effort. Finally, as Sir Peter Crane has said, “out of challenges come opportunities” (1) – opportunities will then be identified for overcoming these challenges.

Stakeholders are those agencies, organizations, or individuals who meet one or more of the following criteria. For some stakeholder categories, it is possible that only a few individual organizations or agencies currently meet one or more of these criteria. Because this demonstrates the *capacity* of that group of stakeholders to be involved in sustaining natural areas, the entire category of stakeholders is included in the discussion. As an example, if several park districts own and manage INAI sites, the entire group of park districts is included as a Category II stakeholder. Stakeholder criteria include those organizations or agencies who:

- Own or hold a legal interest (easement, or dedicated interest) in one or more existing INAI sites.
- Own additional lands that could aid in creating sustainable natural areas.
- Play a role in any step in the natural resources identification, protection, stewardship, defense or adaptive management paradigms.
- Have the potential to affect natural resources or land-use change through legislation, funding, regulations, zoning, ownership, or other external influence, and therefore could play a role in making core natural areas sustainable.

Once the list of stakeholders has been identified, the potential role of each group of stakeholders in the creation of sustainable natural areas will be explored. This will involve an examination of what lands they own beyond core natural areas, their legal authorities to protect, manage, and defend natural areas, as well as their ability to influence or regulate land use changes. The challenges and opportunities that are related to each of these groups of stakeholders will also be identified.

Key Stakeholders

The existing INAI database was examined to determine the ownership of existing INAI sites. While the ownership status is not known for all INAI sites, data do exist for at least half of the existing Category I sites. An assessment of these owners indicates great diversity in ownership of core natural areas. All of the stakeholder groups below own or have interest in at least one core natural area:

- State Agencies (IDNR, INPC, IESPB)
- Forest Preserve Districts/Conservation Districts
- Federal Agencies (USFWS, USACE, USFS, USDA-NRCS, USDA-FSA)
- Park Districts
- NGOs
- Private Landowners
- Municipalities
- County Governments
- Township Governments
- Grade Schools and High Schools
- Colleges/Universities

While each individual agency or organization within these groups does not own an INAI site, they all meet one or more of the other three requirements and, thus, would qualify as stakeholders in this effort. Based on these criteria, four categories of stakeholders were identified. The four stakeholder categories include:

Category I Stakeholders

Category I stakeholders own lands in fee simple or who hold a legal interest in core natural areas, as well as other lands that could play an important role in this effort. They have direct legal authority to identify, protect, manage, or defend natural resources. This group of stakeholders meets all four criteria identified.

- State Agencies – Illinois Department of Natural Resources (IDNR), Illinois Nature Preserves Commission (INPC), and the Illinois Endangered Species Protection Board (IESPB)
- Forest Preserve Districts/Conservation Districts
- Federal Agencies (USFWS, USACE, USFS, NRCS)

Category II Stakeholders

Stakeholders in this category own INAI sites as well as other natural resources that could play an important role in this effort. With 96% of Illinois' acreage being held in private ownership, private landowners play a significant role in protecting and managing natural areas. This group of stakeholders meets three of the four criteria – owning one or more INAI sites, possessing potential lands to serve as buffers or lands that could serve as corridors or linkages, and affecting adjacent land use through their land ownership.

- State Agencies – Illinois Historic Preservation Agency (IHPA)
- Park Districts
- NGOs (The Nature Conservancy, Illinois Audubon Society, land trusts)
- Private Landowners (individuals and corporations)

Category III Stakeholders

This group of stakeholders has the potential to affect natural resources or land-use change through legislation, funding, regulations, zoning, ownership, or other external influences. Therefore, they could play a pivotal role in making these sites sustainable. This group does not typically have direct legal authority to identify, protect, manage, or defend natural resources, but does have tremendous influence on land-use change through regulatory or zoning powers, funding authorities, or other programs they administer. A few of these stakeholders also meet a second of the four criteria by owning one or more INAI sites.

- Governor/Legislature
- County Governments
- Municipalities
- Township Governments
- Soil and Water Conservation Districts (SWCD)

Category IV Stakeholders

This group of stakeholders meets two of the established criteria – they may own one or more INAI sites and have influence over the land they own, which provides opportunities to assist in creating sustainable sites.

- School Districts – Grade Schools and High Schools
- Colleges/Universities

We will now discuss Category I stakeholders to understand their possible roles in creating sustainable natural areas, including creating sustainable networks. Category 2, 3, and 4 stakeholders will be discussed in Chapter 5.

Category I Stakeholders

Illinois Department of Natural Resources (IDNR)

IDNR is the largest single public landowner in the State of Illinois, and the largest single landowner of core natural areas. IDNR, INPC, and IESPB also are responsible for the maintenance of the Illinois Natural Areas Inventory through its Natural Areas Evaluation Committee (NAEC), and proactive and reactive defense through the INPC. IDNR has the statutory authority to protect, manage, and defend natural resources, and implements programs that affect lands it owns as well as those of private landowners. All of these factors make IDNR the lead stakeholder in protecting natural areas and making them sustainable.

The Illinois Department of Conservation was created in 1925 and was merged with the Illinois Department of Energy and Natural Resources, Illinois Department of Mines and Minerals, and the Illinois Department of Transportation's Bureau of Water Resources to form the Illinois Department of Natural Resources (IDNR) in 1995. IDNR's current mission is to "manage, conserve, and protect Illinois' natural, recreational, and cultural resources, further the public's understanding and appreciation of those resources, and promote the education, science, and public safety of Illinois' natural resources for present and future generations." (2) The IDNR's 2008 Strategic Plan identifies seven strategic priorities, four of which directly support the creation of sustainable natural areas:

1. Maintain and meet the outdoor educational and recreational demands of Illinois' citizens in a manner that preserves and protects fish, wildlife, natural areas, and other natural resources of our state.
2. Pursue direct acquisition of property to meet IDNR's ecosystem-based management and resource-compatible recreation objectives.
3. Repair, reclaim, and restore land and water resources including those that were degraded by mining activity prior to the passage of the Surface Mining Control and Reclamation Act in 1977.
4. Work with conservation partners to conserve wildlife and plant species before they become rarer and more costly to protect. (3)

IDNR Land Ownership

IDNR owns 375,049 acres of land and leases an additional 93,672 acres, giving them direct management responsibility over 468,721 acres of land (Table 1). Of this acreage, IDNR owns 114 State Natural Areas, totaling 43,774 acres. This classification includes INAI sites, Nature Preserves, Land and Water Reserves, and other significant natural areas. (4)

Table 1: IDNR Land Ownership by Category (4)

<i>IDNR Site Classification</i>	<i>Land & Water Acreage</i>	<i>Leased Acreage</i>
State Parks	127,768	9,911
Conservation Areas	73,262	0.0
Fish Facilities	233	33
Natural Areas	43,774	0.0
Fish and Wildlife Areas	93,704	73,384
State Wildlife Areas	1,159	700
Greenways and Trails	1,547	0.0
State Memorials	0.1	0.0
Boating Access Areas	6	304
State Recreation Areas	3,955	9,300
State Forests	21,252	0.0
Game Propagation Centers	1,087	0.0
Tree Nurseries	360	0.0
State Habitat Areas	5,924	0.0
Other Department Properties	734	40
Museum Division Properties	285	0.0
Land and Water Acreage – TOTAL	375,049	
Leased Properties – TOTAL		93,672
TOTAL ALL PROPERTIES	468,721	

IDNR continues to purchase high-quality habitat areas that it will own and manage. On average, since 2003, the agency's main mechanism for funding these purchases, the Natural Areas Acquisition Fund (NAAF), has provided \$4 million a year (5) specifically for the "acquisition, preservation, and stewardship of natural areas." (6) Beginning in 2003, however, these funds have diminished substantially due to the current economic conditions, and even with the funds available, far less has been made available for land acquisition. The latter is due to the state's economic conditions. Dollars generated for the NAAF have been moved to the General Revenue Fund, as well as having been used to pay for IDNR staff costs. For example in fiscal year 2001,

the NAAF reached its highest level of funding with a budget of \$15.43 million. This compares to the funds appropriated in 2002-2007, which ranged from \$4.77 million to \$6.84 million, respectively.

IDNR Authorities

The IDNR has more than 700 mandates, which encompass numerous diverse cultural and natural resource-related programs and activities, including natural resource and cultural resource protection, and resource-related recreation, science, and education. (7) The key mandates are articulated in several state statutes:

- Department of Natural Resources Actⁱ
- Forestry Cooperative Agreement Actⁱⁱ
- Interagency Wetland Policy Act of 1989ⁱⁱⁱ
- State Parks Act^{iv}
- Recreational Trails of Illinois Act^v
- Urban and Community Forestry Act^{vi}
- Comprehensive Enhancement Act^{vii}
- Wildlife Code of 1971^{viii}
- Open Space Lands Acquisition and Development Act^{ix}
- Cave Protection Act^x

IDNR also administers regulatory programs related to mining activities under the Abandoned Mined Land and Water Reclamation Act, the Coal Mining Act^{xi}, and the Surface Coal Mining Land Conservation and Reclamation Act.^{xii} IDNR also administers regulatory programs related to floodplains and waterways under the Waterway Act,^{xiii} the Flood Control Act of 1945,^{xiv} and the Rivers, Lakes and Streams Act^{xv}. (7)

ⁱ (20 ILCS 801)

ⁱⁱ (20 ILCS 820)

ⁱⁱⁱ (20 ILCS 830)

^{iv} (20 ILCS 835)

^v (20 ILCS 862)

^{vi} (30 ILCS 555)

^{vii} (505 ILCS 35)

^{viii} (520 ILCS 5)

^{ix} (525 ILCS 35)

^x (525 ILCS 5)

^{xi} (225 ILCS 705)

^{xii} (225 ILCS 720)

^{xiii} (615 ILCS 10)

^{xiv} (615 ILCS 15)

^{xv} (615 ILCS 5)

All of these statutes and administrative rules give the IDNR the authority to identify, protect, steward, and defend natural areas as discussed in Chapter 2. The acreage owned also provides opportunities to take the steps necessary to create sustainable natural areas. IDNR also exerts some influence on land-use change through their regulatory authorities related to water resources and mining activities.

Defense of Natural Areas

IDNR has two key mechanisms for defending core natural areas. One is through the Conservation Police Officers (CPOs). CPOs have the authority to enforce the Illinois Natural Areas Preservation Act (INAPA) and rules established under the Act. The second defense mechanism is provided for both in the INAPA and the Illinois Endangered Species Protection Act. Both acts requires state and local units of government to consult with the IDNR “before authorizing, funding, or carrying out projects to determine if the project is likely to result in the destruction or adverse modification of any natural area that is registered under” the INAPA or endangered and threatened species or the designated essential habitat of such species. (8) Administrative rules identify the details for this consultation process. While the consultation process is largely reactive, it does provide opportunities to educate government agencies on methods to protect endangered species and natural areas.

Natural Areas Program

The Natural Areas Program of IDNR is central to the Sustainable Vision. This program, in collaboration with INPC and IESPB, is responsible for the Illinois Natural Areas Inventory. Authority to conduct this inventory is derived from Ch. 105, par. 706 through 707 of the Illinois Natural Areas Preservation Act where the law grants power to the department/commission: “To compile and maintain inventories, registers and records of ... natural areas and features.”^{xvi}

The IDNR’s Natural Areas Evaluation Committee (NAEC), whose voting members include representatives from the IDNR, INPC, and IESPB, oversees the identification of and makes the final decision to designate a natural area as an official INAI site. (9) After the NAEC has listed a site on this inventory, the IDNR and the INPC share the responsibility for the protection, stewardship, and defense of these natural areas.

Related IDNR Programs

In addition to owning numerous INAI sites and additional acreage, IDNR administers programs that influence how private landowners manage their land, providing additional opportunities that

^{xvi} (525 ILCS 30)

could play a role in making core natural areas sustainable. The following are a few examples of these programs, which can play a role in building sustainable natural areas.

Illinois Forestry Assistance Programs

IDNR implements a number of forestry programs aimed at providing technical assistance to the state's 169,000 forest landowners. These programs focus on nonindustrial private forest (NIPF) lands. The goals of forestry programs in Illinois are “to maintain and improve the state's rural and urban forests, and enable forests to remain as an important component in the ecological processes that sustain the state's valuable natural resources and economy.” (10) This is accomplished using voluntary and nonregulatory approaches in consultation with private landowners. Specific programs include:

- Rural Forest Landowner Assistance, which “provides technical assistance to NIPF landowners to manage their forests for multiple resources [and] cost-share assistance for landowners to implement forest stewardship practices.” (10)
- Urban and Community Forestry, which “provides technical and financial assistance to communities to help build a local community's capacity to manage their natural resources.” (10)
- Forest Legacy Program is a partnership between IDNR and the U.S. Forest Service. Through this program there are 9 Forest Legacy Easements including 493 acres worth \$3.3 million. (11)

Illinois Conservation Reserve Enhancement Program (CREP)

Illinois CREP is an example of a federal, state, and local partnership “to retire frequently flooded and environmentally sensitive cropland to achieve restoration and long-term protection” on privately owned land. (12) A goal of CREP is to use conservation practices to reduce sedimentation and nutrients, while creating and enhancing habitat to increase fish and wildlife populations. Land enrolled in this program is first enrolled in the federal Conservation Reserve Program administered by the USDA Farm Service Agency. The Natural Resources Conservation Service provides technical assistance for the development of conservation plans. Once enrolled in the federal side, landowners may also enroll their land in state conservation easements, which are held by local Soil and Water Conservation Districts. The IDNR handles the fiscal side of the state program. Approximately 126,500 acres of bottomlands and other environmentally sensitive lands have already been restored in the Illinois River watershed. (13) Approximately 82,000 acres have been enrolled in the state side, with over 90% in permanent easements. The CREP program expanded its eligible area in 2010 to include the Kaskaskia

River watershed; and over the next 3 years, the remaining 105,500 acres that are authorized for enrollment, will be restored to native vegetation. The Illinois and Kaskaskia River watersheds include all or a part of 68 counties (14).

Partners for Conservation (formerly Conservation 2000)

Conservation 2000 (C2000) is a voluntary, incentive-based program “designed to take a holistic, long-term approach to protecting and managing Illinois' natural resources.” (15) C2000 was approved by the General Assembly in 1995 as a six-year, \$100 million effort. This program was renewed in 1999 for 10 years, and in 2008, House Bill 1780 was signed into law as Public Act 95-0139, extending the program to 2021 as Partners for Conservation. The amended State Finance Act funds Partners for Conservation at \$14 million each year from 2008 through 2021, and designates that the “funds shall be used ... to protect Illinois' natural resources through cooperative partnerships between state government and public and private landowners.” (15) A grant program funds natural resources protection efforts by the program's 41 Ecosystem Partnerships. The program has been successful, with more than 65,000 acres having been restored. Nearly 5,600 acres have been protected through conservation easements or fee simple acquisition. More than \$32.9 million in project grants have been awarded, and recipients have provided another \$37.1 million in match. A total of 929 grants have been awarded. (16)

Unfortunately, this fund has also suffered significant reductions in the amount budgeted since its peak in fiscal year 2003 at just over \$15 million. In the years following 2003, funds budgeted for C2000 programs ranged from \$0 to \$12.25 million, although it is not known how much of this amount was actually devoted to C2000 programs. (17) (18) (19) (20) (21) (22) (23)

Conservation Stewardship Program

The Conservation Stewardship Program (CSP), passed by the Illinois legislature in 2007, aims to “maintain unimproved land in order to protect limited environmental resources” (24) by providing economic relief in the form of property tax reduction for private landowners who adopt a Conservation Management Plan with the appropriate conservation management standards and practices as set forth by IDNR (25). This program applies to “woodlands, prairie, wetlands, or other vacant and undeveloped lands not used for any residential or commercial purpose that materially disturb the land” (26). CSP protects unimproved land that is five acres or greater by providing property tax relief. Property is assessed at 5% of the fair market value. To date, 2,260 landowners have enrolled 83,166 acres in the program. The estimated average tax savings is \$106/acre/year. To date, landowners have realized almost \$9 million in tax savings. (12)

Open Space Lands Acquisition and Development (OSLAD) Grant Program

OSLAD provides state funding assistance to local government agencies for acquisition and/or development of land for public parks and open space, which has included natural areas. The federally funded Land and Water Conservation Fund program has similar objectives and is also administered by IDNR. Projects vary from small neighborhood parks to large community parks or natural areas. Grants can be awarded for up to \$750,000 for land acquisition projects, but development/renovation projects are limited to a maximum of \$400,000. (27)

Unfortunately, this fund has also seen dramatic declines since its peak in fiscal year 2002 at \$70.7 million with Governor George Ryan's budget. These figures declined to around \$1.1 million in the budgets for fiscal years 2003 through 2009. (17) (18) (19) (20) (21) (22) (23)

IDNR Summary

IDNR meets all four criteria identified as important in sharing responsibility in the creation of sustainable natural areas. As the primary public landowner and owner of the largest number of core natural areas, IDNR clearly plays a lead role in identifying, protecting, managing, and defending natural areas, and in building a system of sustainable natural areas. IDNR and the INPC are the only public entities responsible for maintaining the INAI database, which includes the development of criteria for each INAI natural area category, approving additions and deletions to the inventory, maintenance of the database, conducting natural resources audits, and managing these lands. In addition, IDNR has statutorily mandated responsibilities to protect natural resources and to implement programs that influence private property. This requires the agency to take a leadership role if the goals of the Sustainable Vision are to be met.

Illinois Nature Preserves Commission

The Illinois Nature Preserves Commission (INPC) was established in 1963 with passage of the Illinois Natural Areas Preservation Act (INAPA).^{xvii} The act establishes as a “public policy of the State of Illinois to secure...the benefits of an enduring resource of natural areas, including the elements of natural diversity present in the State.” The act specifies this to be accomplished “by establishing a system of nature preserves...disseminating information regarding them, providing for appropriate use...maintaining a register of natural areas and buffer areas, providing...protection and control of registered natural areas and...buffer areas and otherwise...assisting in the preservation of natural areas and features (28). This was the first such comprehensive effort to protect natural areas in the United States.

^{xvii} (525 ILCS 30)

The INAPA empowers the INPC to:

- Maintain inventories of nature preserves, other natural areas, and species of plants and animals and their habitats.
- Approve the dedication of nature preserves as part of the system.
- Prepare master plans for nature preserves and oversee the protection, management, and use of nature preserves.
- Conduct investigations and disseminate information and recommendations pertaining to nature preserves, other natural areas, and habitats of endangered, threatened, or rare species of plants and animals and other elements of natural diversity.
- Promote the protection of natural areas in the state, which are not dedicated as nature preserves.
- Formulate and adopt policies for development and maintenance of the nature preserves system.
- Adopt administrative rules, approved by IDNR.

According to the Illinois Nature Preserves Commission (INPC), their mission “is to assist 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.” The INPC also assists in providing for “the preservation of these significant lands and... leadership in their stewardship, management, and protection” (29).

Three voluntary protection programs offered by the INPC under the authority of INAPA are available to public and private landowners: Dedication as an Illinois Nature Preserve, as well as registration as an Illinois Land and Water Reserve or Natural Heritage Landmark. (30) The INPC describes the programs as follows: (29)

- **Nature Preserve (NP) Dedication** serves as a tool to legally and permanently protect high-quality natural areas. According to the INAPA, dedicated nature preserves offer areas additional protection from eminent domain by requiring the approval of public owners, the Commission, and the Governor before a change in land use is made. The landowner retains ownership of the land, but voluntarily restricts future uses in perpetuity to preserve its natural state (29). According to the INPC, dedication agreements “may result in financial benefits to the landowner, primarily in the form of a charitable contribution deduction on federal income taxes and a local property tax reduction” (30). Nature preserves range in size from as little as 1 acre to over 2,000 acres, provide habitat for more than 20% of Illinois’ endangered species (30), and provide opportunities for low-impact recreational use (31).

- **Registration of Land and Water Reserves (L&WR)** became available as a protection tool with amendments to the INAPA in 1994. L&WR registrations are similar to a conservation easement, and protection is voluntary. Areas designated as L&WRs contain important natural heritage or archaeological resources, and can allow for hunting, fishing, and other activities that do not harm or change the significant features within the protected area. Owners of registered reserves are eligible for reduced property taxes if the agreement is in perpetuity and may be eligible for management assistance (31).
- **Natural Heritage Landmark (NHL)** is a recognition program available to private landowners as an introduction to natural areas protection. According to the *Strategic Plan for the Ecological Resources of Illinois* (SPERI), “The landowner is recognized for their intention to protect the property. The agreement is not legally binding; however, the landowner may receive limited management assistance once enrolled in this program. No tax benefits are offered under this program” (31).

In addition to protecting core natural areas through the above three programs, the INPC and IDNR provide stewardship of these sites to help restore and maintain the natural resources found within dedicated Illinois Nature Preserves, registered Land and Water Reserves, and Natural Heritage Landmarks. Major amendments to the administrative rules for the management of nature preserves were promulgated on January 31, 1994.^{xviii}

Once a natural area is enrolled in one of the INPC protection programs, the INPC has a responsibility to defend these sites from direct and indirect adverse affects. Most threats are from off-site activities, such as road projects, subdivisions or other developments, mining, or pipeline projects. INPC staff work with state and federal agencies, local units of government, and developers to ensure these sites are provided the greatest protection possible. If a protected area is threatened or damaged, the INAPA provides three legal remedies:

1. The Illinois Attorney General or the local State's Attorney can sue to have the threat stopped or to force action that would prevent a threat from occurring.
2. The act provides for criminal penalties. Any person who violates the act is guilty of a Class A misdemeanor. When the violation is a continuing offense, each day is considered a separate violation.
3. The act provides for civil fines up to \$10,000 for each violation of the act. (28)

^{xviii} 17 ILL. ADM. CODE CH. V, SEC. 4000

IDNRs Conservation Police Officers, county sheriffs, and other police personnel have the authority to enforce these provisions (32). As referenced earlier, INAPA also requires that state and local units of governments consult with IDNR prior to taking an action that would alter the condition of an INAI site, thus providing opportunities to negotiate protection agreements.

INPC Summary

The INAPA provides the INPC with the legal authorities to identify, protect, steward, and defend natural areas. Consequently, the INPC plays a vital role in meeting the goals of the Sustainable Vision. The INPC does not own land in fee, but holds interests in property in the form of nature preserve dedication agreements, and L&WR easements. In addition, the INAPA authorizes the INPC to dedicate buffers to protect and provide access to nature preserves or L&WRs. Such buffers can play an important role in creating sustainable natural areas.

Illinois Endangered Species Protection Board

The Illinois Endangered Species Protection Board (IESPB) was created by the Illinois Endangered Species Protection Act (IESPA)^{xix} in 1972. The primary role of the IESPB is to determine which plant and animal species are endangered or threatened within the state. The list of endangered and threatened species is reviewed at least once every five years. In reviewing this list, the IESPB establishes Endangered Species Technical Advisory Committees (usually referred to as ESTACs) composed of experts on plants, invertebrates, fishes, reptiles, amphibians, birds, and mammals to assist the board and its staff in compiling and analyzing data for each species. All changes to the list must be based on scientific data (33).

Another role of the IESPB is to advise the IDNR on methods of assistance, protection, conservation, and management of endangered and threatened species and their habitats, and on related matters. The IESPA requires that the IDNR seek advice of the IESPB when it plans and implements its program for the conservation of endangered and threatened species, issuing incidental take authorizations, developing rules related to endangered species permits and incidental take authorization.

The IESPB is administratively attached to IDNR, as is the INPC, which is one reason it is included as a Category I stakeholder. IESPB's role in achieving the goals of the Sustainable Vision is less direct than INPC's, because the IESPB does not own land or enter into agreements with private landowners to protect natural areas or listed species. The IESPB is, however, a valuable resource for information related to the protection of Category II INAI sites – those that provide habitat for endangered and threatened species.

^{xix} (520 ILCS 10)

Challenges and Opportunities IDNR-INPC-IESPB

A wide range of threats, or challenges, and solutions, or opportunities, related to protecting and sustaining natural areas were identified by stakeholders while preparing the Sustainable Vision. Some of these relate directly to creating the sustainable network, while others relate indirectly by providing stakeholders with the resources, training, legal standing, or other support to successfully protect and sustain core natural areas. The challenges and opportunities reported here are ones that could be addressed by or directly affect IDNR, INPC, or IESPB. Overcoming these challenges will require the involvement of state authorities at multiple levels, including the governor and legislature, and potentially other nongovernmental partners to be implemented successfully.

These challenges and opportunities are organized into two major categories. The first three challenges and sets of opportunities are general in nature and apply to a broad array of issues. The second set is divided, employing the Identification, Protection, Stewardship, and Defense paradigm discussed in Chapter 2.

4.1 Challenge: Hiring and retaining qualified professional staff within IDNR/INPC/IESPB.

Illinois Department of Natural Resources Opportunities

- 4.1.1 Develop a “succession” plan to outline strategies for replacing key staff as they retire or leave the agency, as well as training new staff. Federal agencies have prepared such plans over the past 10 years to address staffing problems associated with the baby boom generation reaching retirement age and the need for job sharing, mentoring, or other strategies to avoid the loss of extensive expertise.
- 4.1.2 Collaborate with universities to create quality field ecology programs to provide opportunities for interested students and to provide a quality pool of potential employees.
- 4.1.3 Establish additional natural heritage-related internships to interest more young people in careers in the natural resources field.
- 4.1.4 Provide on-going training for existing staff to ensure the most current methodologies and practices are incorporated into the agency’s activities.

Governor, Central Management Services (CMS) and Illinois Department of Natural Resources Opportunities

- 4.1.5 Direct CMS to update IDNR staff position descriptions and qualification requirements at all levels of the agency to ensure that only qualified candidates are hired. This should be done with the participation of the Natural Resources Advisory Board (NRAB), which has authorities in this area that have not been recently exercised, and under the direction and oversight of the governor. A committee could be set up with appointees from CMS, the NRAB, and other boards and commissions, which fall under the auspices of IDNR who would be specifically charged with this review.

4.2 Challenge: Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ ESPB activities, including management of natural areas and land acquisition.

Illinois Department of Natural Resources Opportunities

- 4.2.1 Work with Partners for Parks and Wildlife and the Conservation Congress to generate possible new sources of funding.
- 4.2.2 Build constituent support in major urban areas by having a greater presence and involvement there, making a special effort to engage Hispanic, African-American, and other minority groups.

Governor/Legislative Opportunities

- 4.2.3 Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/IESPB, including a statewide land acquisition fund.
- 4.2.4 At a minimum, appropriate the amounts of monies generated in special funds and allow these funds to be spent on the purposes identified.
- 4.2.5 As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR. This would professionalize the organization and ensure the state's valuable assets will be protected in perpetuity.
- 4.2.6 When considering an expansion of gambling venues such as casinos, require every facility to include a foundation that supports environmental, social, and cultural issues and projects. The Grand Victoria Foundation is an example.

4.3 Challenge: Increasing and strengthening IDNRs visibility and constituent support across the state, but particularly in major urban areas.

Illinois Department of Natural Resources Opportunities

- 4.3.1 Establish an urban outreach team to determine how to best enhance IDNR's role in urban areas. As an example, this could be a part of the IWAP Green Cities Campaign.
- 4.3.2 Identify the natural resource and recreation needs/interests of urban residents, particularly within minority communities and then have the IDNR Director/Deputy Directors schedule meetings with the legislative minority caucuses to discuss IDNR's role in meeting these needs.
- 4.3.3 Work to understand/gauge public support for conservation efforts – the work District Heritage Biologists (DHBs)/Natural Area Preservation Specialists (NAPS) do may mean little into the future if there is no public support for conservation.
- 4.3.4 Work with the Farm Bureau and realtors to make them understand that controlling invasive species is an investment in their land. Maintaining healthy natural systems increases their property values – as property overrun by kudzu or other invasive species is unattractive to many potential buyers.
- 4.3.5 Continue to mobilize the Conservation Congress to consider major issues confronting IDNR within Illinois.

The following challenges and opportunities are divided into four categories related to protecting natural areas and making them sustainable: identification, protection, stewardship, and defense.

Challenge and opportunities related to the identification of natural areas.

- 4.4 Challenge: Ensuring all significant natural resources are identified and made available to key stakeholders in order to protect Illinois' biodiversity. This will entail maintaining and building upon the INAI after completion of the INAI Update and the re-assessment of the existing Category I sites.**

Illinois Department of Natural Resources/ Illinois Nature Preserves Commission Opportunities

- 4.4.1 Conduct an in-depth analysis of the INAI when both the Update and Category I reassessment are completed as was done in the case of the Natural Areas Plan. This would include:
 - a. Using preserve design, develop the plan to buffer and link natural areas.
 - b. Identify what has been preserved and establish goals for the future.
 - c. Overlay a wide array of GIS coverages from programs such as CREP, COAs, C2000 partnerships, etc. to determine where programs overlap.
 - d. Assess ownership of INAI sites – private vs. public, breakdown of public ownership, all done by county.
 - e. Identify the number of acres of INAI sites by county.
- 4.4.2 Prepare an INAI Technology Plan to identify immediate and short-range equipment and software needs to address the changes in technology and support by vendors in order to maintain a healthy database.
- 4.4.3 Work with local partners to fully develop the concept of “local natural areas” as now included in the INAI Update’s Standards and Guidelines to address issues such as the need for sites to accommodate migratory birds/insects, corridors to allow adaptation to climate change, etc. Local natural areas that do not necessarily qualify for the INAI may serve these needs, which are critical to the management of natural resources.

Challenges and opportunities related to the protection of natural areas.

4.5 Challenge: Identifying a flexible, responsive, and fully funded statewide land acquisition effort.

Illinois Department of Natural Resources Opportunities

- 4.5.1 Create a granting program for registered 501(c) (3) land trusts in Illinois to use for matching foundation grants for land acquisition, capacity building, stewardship, and defense of easements. This would make land acquisition a “local” issue.

Governor/Legislative Opportunities

- 4.5.2 Create and fully fund a statewide land acquisition program within IDNR that focuses on core natural areas and the effort to make these sites sustainable.

4.6 Challenge: Protecting natural resources given that much of Illinois’ natural resources are in private ownership.

Illinois Department of Natural Resources/ Illinois Nature Preserves Commission Opportunities

- 4.6.1 Develop incentive programs for landowners to maintain high quality natural areas, e.g., provide a payment similar to CREP for enrolling land into a Nature Preserves System program.
- 4.6.2 Evaluate programs such as the Urban Forestry Program and Conservation Stewardship Program to include coordination with the Nature Preserves Commission staff to provide landowners the opportunity to protect their land as nature preserves or L&WRs and to eliminate opportunities to use these programs to “bank” land to be sold in a few years for development purposes.
- 4.6.3 Institutionalize a stewardship ethic within communities and build local support for natural areas by creating “Make a Difference Day” events for clean-up/management of natural resources.
- 4.6.4 After the assessment of the ownership status of INAI sites is completed, contact all private landowners of the unprotected sites to discuss protection strategies for these sites.
- 4.6.5 Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and the wide range of regulatory programs.
- 4.6.6 Hold a bi-annual Natural Areas Summit to discuss the status of natural areas and the creation of sustainable networks, including the threats that continue to exist and management and funding needs.

4.7 Challenge: Working with local units of government (municipalities & county governments) that, while having an important role to play in establishing the sustainable natural areas system, often have minimal understanding of the natural areas or their role in protecting them.

Illinois Department of Natural Resources Opportunities

- 4.7.1 Establish a pro-active outreach program for local units of government, a “Green Cities” initiative as defined in the Illinois Wildlife Action Plan. This program could work with local governments to:

- a. Educate them as to the ecological/economic values of natural resources.
- b. Encourage local units of government to strengthen planning infrastructure (comprehensive plans, ordinances) to protect INAI sites from off-site land uses/changes and to establish the foundations for sustainable natural areas networks.

4.8 Challenge: Integrating the protection of natural resources into economic development plans and proposals, and into the goals of all stage agencies; this integration is vital both to the protection of natural resources and successful economic development.

Illinois Department of Natural Resources Opportunities

- 4.8.1 Explore creating a Natural Areas Inventory Trail for publically owned sites – would serve as both an educational effort and a tourism activity. This could include the history of sites to “create a story” that helps people understand and value natural areas.
- 4.8.2 Work to gain the support of tourism agencies throughout Illinois to increase interest in natural areas. A public guide for INAI sites would be helpful – with a slogan such as "Escape to Illinois Natural Areas" to attract visitors and increase support.
- 4.8.3 Work with other state agencies to encourage the inclusion of natural resource protection in their planning efforts, grant programs, and other activities.

Governor/Legislative Opportunities

- 4.8.4 Establish a gubernatorial appointed committee composed of the directors of IDNR, IDOT, IEPA, the Attorney General’s Office, IDOA, and the Illinois Toll Highway Authority to develop a coordinating committee to identify where agencies have overlapping and competing programs that limit the protection of natural resources. The members of the committee can identify ways of working together to protect and sustain natural areas.

Local Units of Government

- 4.8.5 Integrate natural resource protection in local comprehensive, economic development, and other planning efforts.
- 4.9 Challenge: Strengthening the Nature Preserve system to better engage landowners enrolled in INPC programs, to increase enrollment of lands in protection programs,**

to monitor enrolled sites as a proactive defense mechanism, and to identify ways to protect lands that do not meet the INPC's strict criteria.

Illinois Nature Preserves System/Illinois Department of Natural Resources Opportunities

- 4.9.1 Add categories to the Nature Preserve System that would target corporations and other private landowners with large holdings of high-quality natural areas, e.g., a “legacy” concept that would be appealing to corporations or family landowners.
- 4.9.2 Send an annual newsletter to all Category I INAI and Nature Preserve private landowners to allow them to be more engaged in being stewards of their natural areas.
- 4.9.3 Fully develop the Local Natural Areas designation to recognize natural areas that are worthy of protecting but that do not meet the standards for inclusion in the INAI.
- 4.9.4 Identify a formal dedication category for “corridors” similar to what exists for buffers to encourage landowners to participate in creating both buffers and corridors.
- 4.10 Challenge: Sustaining viable populations of endangered and threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population. As a result, over time these populations may be lost.**

Illinois Nature Preserves System/Illinois Department of Natural Resources/ Endangered Species Protection Board Opportunities

- 4.10.1 Use prescribed burning and focused preserve design to ensure the inclusion of Category II sites in sustainable networks of natural areas.
- 4.10.2 Acquire the necessary lands to ensure the continued use of Category II sites by listed species.
- 4.10.3 Adopt and implement appropriate management strategies for Category II sites.
- 4.10.4 Based on criteria established by the ESPB and IDNR, conduct a review of, and outline the recovery potential for Illinois’ endangered and threatened species.
- 4.10.5 Review all current Category II sites and identify science-based boundaries for them; also develop criteria for future Category II boundary delineations.

4.10.6 Identify the potential impacts of climate change on the viability of maintaining endangered and threatened species that may shift ranges out of the state.

4.11 Challenge: Permanently protecting or defending INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.

Illinois Nature Preserves System/Illinois Department of Natural Resources Opportunities

4.11.1 Conduct a full assessment of the ownership status (public, private-protected, private unprotected) of all INAI sites and develop a strategy for approaching private landowners to discuss protection strategies.

4.11.2 Dedicate all INAI sites owned by IDNR as Illinois Nature Preserves as a first priority, or as Land and Water Reserves as a second priority.

Challenges and opportunities related to the stewardship of natural areas.

4.12 Challenge: Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.

Illinois Department of Natural Resources Opportunities/Illinois Nature Preserves Commission

4.12.1 Establish and implement a policy to maintain and preserve the natural quality as the highest priority for all property owned and managed by IDNR.

4.12.2 Work with natural resource partners, including forest preserve and conservation districts, and land trusts, to assist in or assume management of sites in proximity to their own landholdings.

4.12.3 Establish multiple natural areas restoration/management teams within each IDNR Division of Natural Heritage Region, i.e., develop “Heritage Teams.”

4.12.4 Establish and maintain the highly acclaimed Natural Heritage Residency program, which was a component of a university-approved Master’s degree curriculum in ecology, botany, or zoology.

- 4.12.5 Create a student apprenticeship/internship program to provide additional technicians for management. Friends of the Forest Preserves and the Field Museum have good programs. The program could offer college credits to participants.
- 4.12.6 Create a new status for INAI sites that have declined in quality – a “remediation needed” category that indicates the need for a management plan. This will help in establishing management priorities.
- 4.12.7 Build capacity within the natural areas stewardship industry (consulting companies that plan and perform land management activities) so IDNR has qualified firms to hire across the state by providing capital dollars to out-source large-scale restoration projects. There is also a need for a credentialing process to ensure hiring of qualified firms.
- 4.12.8 Establish and implement a process to evaluate and grade all lands owned and managed by IDNR, using INAI grading methodologies, creating a map showing all of the forests, barrens, glades, woodlands, and wetland communities with their natural quality grade included. Priority should then be given to restoration work conducted in the higher graded communities.

Governor/Legislature, IDNR, Local Units of Government, Federal Agencies, NGOs

- 4.12.9 Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.

4.13 Challenge: Developing efficient and productive volunteer stewardship programs within IDNR/INPC to assist in the stewardship of sustainable natural area networks.

Illinois Department of Natural Resources Opportunities/Illinois Nature Preserves Commission

- 4.13.1 Establish one or more positions for Volunteer Stewardship Coordinators to identify, train, and direct stewardship activities in coordination with the District Heritage Biologists and Natural Areas Preservation Specialists.
- 4.13.2 Establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.

4.14 Challenge: Addressing management needs, including funding, for the immediate and costly investments needed to protect the state’s natural resource assets from current

ecological threats, e.g., climate change and invasive species, and the many socio-cultural threats that exist.

*Illinois Department of Natural Resources Opportunities/Illinois Nature Preserves Commission/
Illinois Endangered Species Protection Board*

- 4.14.1 Ensure that all IDNR land management policies are based on sound science. Coordinate with INHS staff on research/project results would be useful.
- 4.14.2 Prepare management plans for targeted core natural areas and their buffers once a comprehensive evaluation of the updated INAI data is completed and the total acreage of INAI sites and the number of acres by habitat type by county is known.
- 4.14.3 Develop the climate change component of the Wildlife Action Plan to evaluate the scale of the problem, explore potential solutions, and to secure federal funding as it becomes available to develop adaptation strategies when climate impacts are identified.
- 4.14.4 Address how we deal with sites that no longer qualify for the INAI due to invasive species or other management problems. One option is to highlight these sites by requiring remediation plans be developed to try to restore them to their original inventory quality.
- 4.14.5 Prepare a summary of the reasons existing INAI sites have been reduced in quality. There are concerns that problems identified at existing INAI sites will reflect poorly on natural resource agency staff even if the problems are beyond their control given existing staffing and funding levels.
- 4.14.6 Re-evaluate whether IDNR is appropriately structured to address particular categories of species, such as nongame species, E&T species, invasive species, etc. Ideas included:
 - a. Maintain nonhunted wildlife (nongame and T&E species) as a responsibility of the Division of Natural Heritage
 - b. Cross train new hires in management paradigms to minimize the conflicts between disciplines such as wildlife and natural heritage and continue with periodic training.
 - c. Bring back specialists in the Division of Natural Heritage – e.g., the avian, botany, and cave program.
 - d. Examine the greatest threats to natural communities and identify solutions including any restructuring within IDNR needed to address those problems, e.g., invasive species, climate change.

4.15 Challenge: Improving Illinois’ aquatic resources, many of which are in poor condition or are declining in quality.

Illinois Department of Natural Resources Opportunities

- 4.15.1 Conduct a statewide inventory of aquatic resources and update the INAI accordingly.
- 4.15.2 Based on the results of the statewide inventory, initiate a “wade-able” streams program to protect the highest quality headwaters and restore those headwaters in the greatest need.

4.16 Challenge: Building support for conducting widespread auditing of the status of natural resources to ensure the state’s valuable assets are being protected.

Illinois Department of Natural Resources Opportunities

- 4.16.1 Develop a natural resources auditing program that is politically acceptable and fundable. “Auditing” is critical when analyzing the status of the state’s natural resource assets in order to make appropriate changes as needed (and thereby implement adaptive management).
- 4.16.2 Fully fund and expand the highly successful and nationally acclaimed Critical Trends Assessment Program at the INHS, which has quantitatively and qualitatively documented the status of natural resources across the state over the last 13 years. It is currently one of only a few long-term datasets of its kind in the nation.

Challenges and opportunities related to the defense of natural areas.

4.17 Challenge: Identifying the management needs and the resources and use to defend existing Nature Preserves and Land and Water Reserves.

Illinois Department of Natural Resources Opportunities/Illinois Nature Preserves Commission

- 4.17.1 Post multilingual notifications of penalties for violation at protected sites (civil fines up to \$10,000) and charge the allowed criminal penalties (Class A misdemeanor) for violators of the INAPA.
- 4.17.2 Educate Conservation Police officers, county sheriffs, and other police personnel about their authority to enforce the INAPA and train them to recognize infringements on or violations of the INAPA.

- 4.17.3 Recognize the need for passive or proactive defense, by providing the staff resources needed to participate in pre-development meetings with developers and local government officials to negotiate natural areas protection agreements.
- 4.17.4 When appropriate, solicit and encourage the Illinois Attorney General or the local State's Attorney to threaten action to eliminate or mitigate threats to natural areas.
- 4.17.5 Provide training for the IDNR Endangered Species Consultation program staff to fully understand the adverse impacts that can occur from actions such as pipeline installation, oil exploration, mining operations, subdivision development, wind turbines, and more, and find ways of exploring and providing consistent alternative, less damaging approaches to clients.
- 4.17.6 Upon designation of a natural area as an INAI site, identify and monitor potential threats from local activities (such as the damming of a river upstream from the site or nearby crop dusting), which may adversely affect the site.
- 4.17.7 Address how to handle INAI sites that are found through an auditing process to no longer qualify for inclusion on the INAI. One option is to create a new category that requires a remediation plan to identify corrective management needs.

Category 1 Stakeholders

Forest Preserve and Conservation Districts

Illinois' Forest Preserve and Conservation Districts (FPD/CD) are key stakeholders in meeting the goals of the Sustainable Vision. FPD/CDs are the second largest owners of existing core natural areas. Collectively, FPDs own nearly 180,000 acres of land (Table 2), and the total acres owned by Illinois CDs total over 30,000 acres (Table 4). Both also have clearly articulated authorities to protect and preserve natural resources and make them available to the public for a wide range of purposes. FPD/CDs clearly meet three of the four criteria identified as stakeholders for meeting the goals of the Sustainable Vision.

Forest Preserve Districts

Two similar bills allowing the formation of Forest Preserve Districts (FPD) by public referenda were passed by the state legislature in 1913. The Downstate Forest Preserve District Act^{xx} applies to counties with a population of less than 3 million, and the Cook County Forest Preserve

^{xx} (70 ILCS 805/)

District Act^{xxi} applies to counties with a population larger than this. The purpose of FPDs is very similar in both acts. Both acts indicate that forest preserve districts can be created to acquire and hold lands that are currently in forested land cover or are capable of being restored to a natural condition in order to protect “the flora, fauna, and scenic beauties within such district.” These lands can be held for the “purposes of the education, pleasure, and recreation of the public” (34). Both acts also allow lands along waterways, lakes, ponds or planned impoundments to store and control floodwaters and to improve drainage conditions (34).

Table 2: Illinois Forest Preserve Districts-Date Established and Total Acres Owned

Forest Preserve District	Year Established	# of Acres Owned
Byron Forest Preserve District		
Champaign County Forest Preserve District	1935	3,858
Forest Preserve District of Cook County	1914	67,000
DeKalb County Forest Preserve District (35)	1940	1,050
Forest Preserve District of DuPage County	1915	25,000
Kane County Forest Preserve District	1925	18,262
Kankakee River Valley Forest Preserve District (36)	1989	350
Kendall Forest Preserve District	1964	2,150
Lake County Forest Preserve District	1958	27,700
Piatt County Forest Preserve District	Not available	Not available
Rock Island Forest Preserve District (37)	Not available	2,529
Forest Preserve District of Will County	1927	21,000
Winnebago County Forest Preserve District	1922	9,500
Total		178,073

Both Acts contain provisions that support the goals of the Sustainable Vision:

1. Both allow FPDs to dedicate areas as nature preserves as provided in the Illinois Natural Areas Preservation Act.
2. Both acts provide that, “lands for connecting links of such width, length, and location as the board deems necessary or desirable may be acquired and held for such purposes and improved by forestation, public roads, roads, and pathways” (34).

^{xxi} (70 ILCS 810)

Conservation Districts

The Illinois Conservation District Act of 1963^{xxii} authorizes the formation of Conservation Districts (CDs) by a public referendum. CDs are authorized by this act to:

- Acquire interest in land through fee simple acquisition, easement, or gift.
- Preserve and maintain this “wild land, other open land, scenic roadways and pathways”.
- Use these lands for public “education, pleasure and recreation” (38).

This Act identifies the purpose for which lands can be purchased by CDs, all of which are complementary to the goals of the Sustainable Vision:

- To protect natural streams or water supplies;
- Promote soil conservation or protection of wetlands; and
- To manage lands “in such manner and with such restrictions as will leave it unimpaired for the benefit of future generations; and otherwise promote the conservation of nature, flora and fauna, natural environment and natural resources of the district” (38).

There are differences between this act and the Illinois Downstate Forest Preserve District Act. The Illinois Conservation District Act allows for the formation of CDs composed of multiple counties; the governing board of Conservation Districts is separate from the County Board; and coordination with the IDNR is required “on all matters relating to conservation and recreation policies and plans” (38). The focus of CDs is also more narrowly defined than for FPDs: “Every district shall consider the preservation of natural conditions and protection of flora and fauna as part of its principal purpose and to that end shall set aside a substantial portion of its land to remain in an essentially undisturbed condition” (38). CDs and FPDs are also empowered to dedicate areas as nature preserves as provided in the Illinois Natural Areas Preservation Act.^{xxiii}

There are currently five Conservation Districts within the State Of Illinois (Table 3).

Table 3: Illinois Conservation Districts-Date Established and Acres Owned

Conservation Districts	Year Established	# of Acres Owned
Boone County Conservation District (39)	1964	2,500
Macon County Conservation District* (40)	1966	3,200
McHenry County Conservation District*** (41)	1971	23,742

^{xxii} (70 ILCS 410)

^{xxiii} (70 ILCS 410/11)

Putnam County Conservation District (42)**	1966	705
Vermilion County Conservation District (43)	1966	5,800
Total		30,727

* Public and Private Holdings (Macon County CD, pers comm, 24 May 2010).

** PCCD only owns two sites, but provides stewardship over others listed on website (Putnam County CD, pers comm, 24 May 2010).

*** (McHenry County CD, pers comm, 24 May 2010)

FPS/CD Summary

Forest Preserve and Conservation Districts directly meet three of the four criteria established to define stakeholders important to meeting the goals of the Sustainable Vision. They own multiple INAI sites and have the legal authority to protect, manage, and defend the lands they own. The only criterion that this group of stakeholders does not meet directly is the influence on land use change through zoning or through regulations on lands they do not own. FPDs/CDs do serve as important role models and educators, however, and can indirectly influence the future of lands they do not own.

Challenges and Opportunities Forest Preserve and Conservation Districts

A wide range of challenges and opportunities for overcoming the challenges of protecting and sustaining natural areas were identified from stakeholders in developing the Sustainable Vision. The challenges and opportunities reported here are ones that could be addressed by or directly affect FPD/CDs, although they will require the involvement of other partners at multiple levels, including the governor, legislature, NGOs, or other entities to successfully respond to them.

4.18 Challenge: Increasing the number of local open space/natural resource agencies (Forest Preserve and Conservation Districts) because of the valuable role they play in natural resource protection. Only a few counties in Illinois have these agencies, and no new ones have been formed for almost 40 years.

FPD/CD Opportunities

4.18.1 Provide technical assistance to stakeholders in counties where FPD/CDs do not exist when local support exists to establish a new FPD or CD.

Governor/Legislature Opportunities

- 4.18.2 Amend the Downstate Forest Preserve District Act to allow multiple counties to form a forest preserve district. This could facilitate the formation of such districts in areas of the state with reduced financial resources.
- 4.18.3 Amend the Downstate Forest Preserve District Act to remove the provision that allows townships to vote to withdraw from a legally established forest preserve district approved by the voters within a county.
- 4.18.4 Remove the amendment to the Conservation District Act that allows referendums to be conducted to convert CD's to FPD's.

4.19 Challenge: Taking action to permanently protect core natural areas and to establish a sustainable network of natural areas.

- 4.19.1 Dedicate all INAI sites owned by FPD/CDs as Illinois Nature Preserves as a first priority or as a Land & Water Reserve as a second priority.
- 4.19.2 Identify locally significant natural areas that can serve as important components of a regional natural areas network links to INAI sites.
- 4.19.3 Establish comprehensive natural resources auditing programs.

Category 1 Stakeholders

Federal Agencies

The federal agencies included in this review are those that own and manage lands within Illinois, as well as those that are responsible for programs that affect large areas of land across the state and could be instrumental in protecting core natural areas and establishing sustainable networks. The agencies that own and manage lands in Illinois are the U.S. Fish and Wildlife Service (USFWS) a branch of the Department of the Interior, U.S. Army Corps of Engineers (USACE), and the U.S. Forest Service (USFS), which is a branch under the U.S. Department of Agriculture (USDA). Two other agencies that manage programs complimentary to the Sustainable Vision's goals are also branches under the U.S. Department of Agriculture (USDA): the Natural Resources Conservation Service (NRCS), and the Farm Services Agency (FSA).

Federal Land Ownership

Combined, the USFWS, USACE, and the USFS own or manage about 600,000 acres (1.6%) of Illinois' land area (44). The distribution of these lands, as well as other publicly owned lands in

Illinois are shown in Figure 1. One of the challenges – and opportunities – is to incorporate these federally owned lands into the larger system of natural areas and work to ensure their survival into the next century. The following is an overview of the USFWS, USFS, and USACE, NRCS and FSA, which have been identified as possible partners in achieving and maintaining sustainable natural areas.

United States Fish & Wildlife Service

United States Fish & Wildlife Service (USFWS) is one of eight agencies that are currently a part of the U.S. Department of Interior. The USFWS was created in 1939 when the Bureau of Fisheries and the Biological Survey were combined. There are numerous laws that define the role of the USFWS; among them are the: (45)

- Lacey Act, 1900, the first Federal law protecting game species.
- Migratory Bird Treaty Act, 1918, protects migratory bird species.
- The Fish and Wildlife Coordination Act, March 10, 1934 (and amended numerous times through 1965). The purpose of this act was to “to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The Act provides the basic authority for the involvement of the United States Fish and Wildlife Service (Service) in evaluating impacts to fish and wildlife from proposed water resource development projects” (46). This act extends authorities to the Secretaries of Agriculture and Commerce to take actions which benefit the stock of game wildlife, such as study pollution effects; dictates the Bureau of Fisheries to take actions which benefit fish and bird migration where impoundments occur, and allows the Bureau to undertake the survey of wildlife on public lands and the writing of wildlife protection plans, as well as to accept land donations. Subsequent amendments require cooperation with state fish and wildlife agencies “for the purpose of preventing loss of and damage to wildlife resources,” and authorize USFWS lands to be transferred to states for management (47).
- Federal Aid in Wildlife Restoration Act, 1937, provided funding for habitat improvements.
- Federal Aid in Sport Fish Restoration Act, 1950, provided funding to improve fisheries resources.
- Endangered Species Act, 1973, provides for the listing, recovery, and delisting of federal endangered and threatened species.

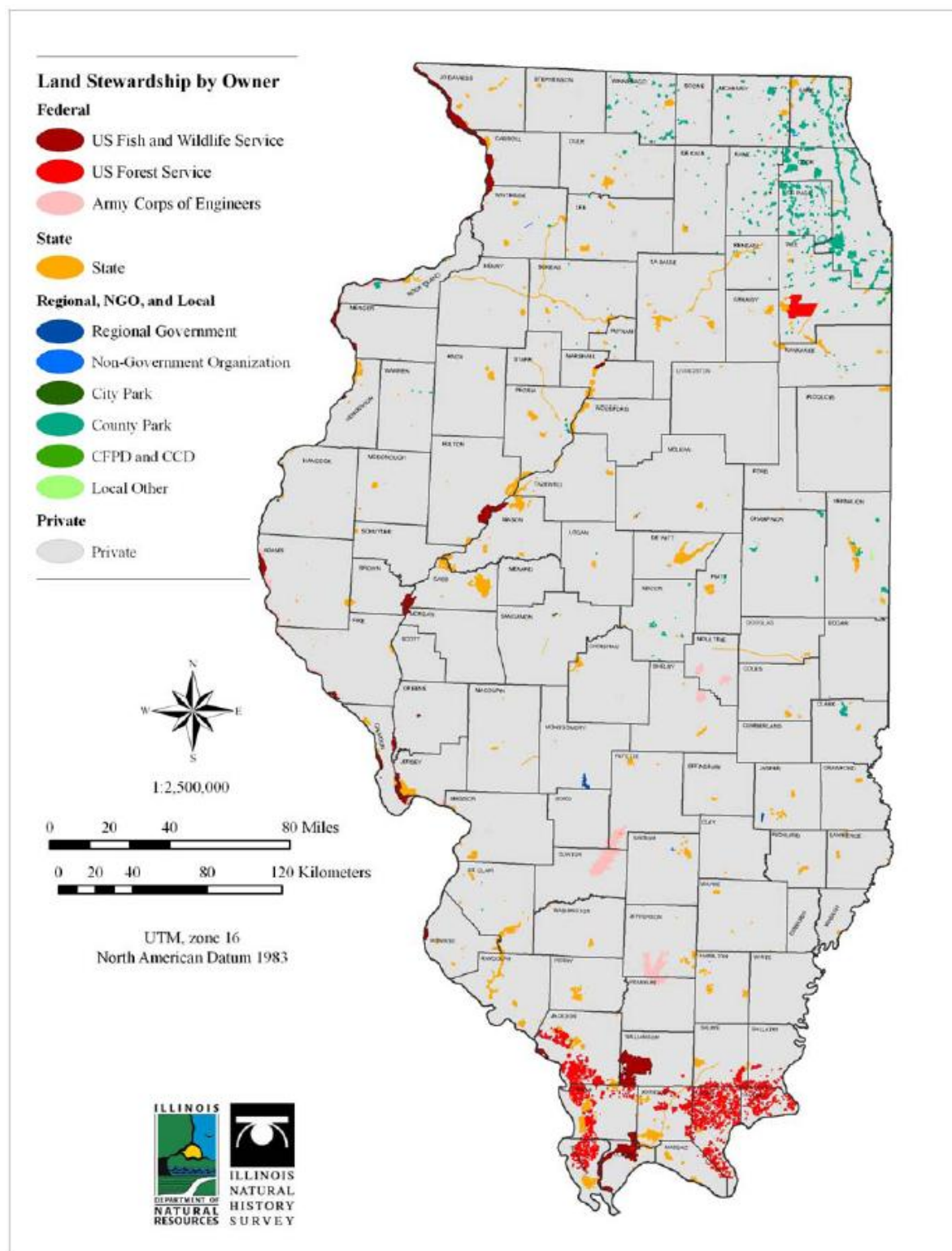


Figure 1- Land Ownership Status in Illinois (44)

The mission of the USFWS is to “to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people” (48). One of the guiding principles of the USFWS emphasizes “partnerships with those who want to help us meet our mission”. The mission and guiding principles make the USFWS a logical partner in the effort to conserve natural areas and to create and maintain a sustainable system of natural areas.

The USFWS owns ten National Wildlife Refuges in Illinois which cover nearly 128,000 acres” (48) (Table 4). The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (48). These refuges pose opportunities in the creation of sustainable networks of natural areas.

The USFWS is engaged in a wide range of activities that illustrate its mission to protect natural resources in partnership with state and local agencies and local organizations:

- The Realty Division works with conservation groups, state and local officials in the land acquisition process, which includes land surveys, negotiations, title curative work, and records maintenance.
- The Partners for Fish and Wildlife program “works with private landowners to restore wetlands, prairie, streams, and watersheds through voluntary cost share agreements” (49).
- The USFWS Private Lands Office also recognizes the importance of working with private landowners, and serves as a facilitator for a coalition that partners with private landowners, nonprofit organizations, corporations, and governmental agencies to cooperate in efforts such as restoring and enhancing fish and wildlife habitat on private lands. Between 1987 and 2006, these programs have successfully restored 9,527 acres of wetlands and 769 acres of upland habitat (50) (p. 19).

The USFWS acquires natural resources, manages land, partners with state agencies and private landowners, and has legal responsibilities to protect federally endangered and threatened species. Some of their landholdings in the National Wildlife Refuge System are compatibly managed for the protection and stewardship of natural areas that fall within their bounds. The refuges also provide ecosystem services and functions that contribute to the sustainability of natural areas. The USFWS clearly has the legal authority to protect and steward natural resources and can therefore be an important partner in protecting natural areas and establishing networks of natural areas.

Table 4: National Wildlife Refuges Located Within Illinois (51)

Name of Wildlife Refuge	Acres/Description
Middle Mississippi River National Wildlife Refuge	4,000 acres located in southwestern Illinois
Upper Mississippi River National Wildlife Refuge	261-mile long refuge from the confluence of the Chippewa River near Wabasha, Minnesota, ending near Rock Island, Illinois. The refuge lies within four states: Minnesota, Wisconsin, Iowa, and Illinois. In Illinois, consists of 63,545 acres along an 80-mile stretch of the river from Dubuque, Iowa to Rock Island, Illinois, includes 34,000 acres of bottomland forest. (52)
Illinois River Complex-Chautauqua National Wildlife Refuge	4,488 acres, including two backwater lakes of the Illinois River: the 2,000-acre South Pool and the 1,100-acre North Pool (53)
Illinois River Complex-Emiquon National Wildlife Refuge	1,305 acres located adjacent to the Illinois River, with 11,122 acres planned when completed (54)
Illinois River Complex-Meredosia National Wildlife Refuge	3,852 acres located along the Illinois River, with 5,255 acres planned when completed (55)
Mark Twain National Wildlife Refuge Complex	44,000 acres spanning 343 river miles of Mississippi River bottoms. Administers five refuges: Great River, Middle Mississippi River, Port Louisa, Two Rivers, and in west central Illinois, Clarence Cannon.
Illinois River Complex-Cameron/Billsbach Unit	1,709 acres located along the Illinois River.
Two Rivers National Wildlife Refuge	8,500 acres located near the confluence of the Illinois and Mississippi rivers (56)
Crab Orchard National Wildlife Refuge	43,878 acres (4,050 designated as National Wilderness) located in south central Illinois (57)
Cypress Creek National Wildlife Refuge	14,000 acres located in the Cache River watershed in far southern Illinois, with 35,000 acres planned when completed. (58)

United States Army Corps of Engineers

While the USACE today is engaged in a variety of natural resources programs that make them potential partners for creating sustainable natural areas, their background is very different from other agencies. It is important to provide an overview of their history in order to understand the

often-competing interests that exist within the USACE, from military support to improving waterways, to environmental restoration.

History

The United States Army Corps of Engineers (USACE) can trace its beginnings to June 16, 1775 when the first chief engineer was assigned to General George Washington to support the Revolutionary War effort. In 1802, Congress established a separate Corps of Engineers, whose primary responsibility was to support military operations, although Congress also wanted the USACE to do both military construction and “works of a civil nature.” In the 19th century, this included the construction of coastal fortifications and mapping of much of the American West by the Corps of Topographical Engineers. (59)

The USACE’s role in non-military projects was greatly expanded in 1824 with a Supreme Court ruling that federal authority covered interstate commerce including riverine navigation. The USACE became responsible for creating a reliable river transportation network, which included the removal of sandbars and snags, straightening, deepening and widening rivers for navigation, constructing canals, and ultimately building locks and dams, levees and other structures as their responsibilities expanded to include flood control.

The Rivers and Harbors Act of 1899 gave the USACE the authority to regulate most kinds of obstructions to navigation, including hazards resulting from effluents. The focus of this Act was to improve navigation, but the USACE attempted to use it to control pollutants, which the courts ruled were the responsibility of states. It was not until 1972, with passage of the Clean Water Act, that the USACE was given responsibility to regulate the deposition of dredged and fill material, a program that has become the nation’s primary wetland protection program.

Congress authorized the Upper Mississippi River System Environmental Management Program (UMRS-EMP) through the Water Resources Development Act (WRDA) of 1986. This program, now known as the Upper Mississippi River Restoration program (UMRR-EMP) (60) (61), conducts studies and implements restoration projects in the upper Mississippi river system north of Cairo, Illinois, which also includes the Illinois River. The UMRR-EMP “emphasizes habitat rehabilitation and enhancement projects and long-term resource monitoring” (61).

This brief history illustrates that the USACE has a broad mission that includes “navigation, environmental preservation, flood control, regulatory functions, and recreation,” supported by funding through the WRDA which allows the Corps “to acquire, manage and restore natural areas impacted by its projects or ...flooding” (62). The Corps identifies environmental sustainability as “a prime mission” (63). Thus, the USACE has a clear role in the protection and stewardship of Illinois’ natural resources.

USACE Land Ownership in Illinois

The USACE also plays an important role in the protection of natural resources through land acquisition and establishing cooperative management agreements with other federal agencies and state agencies to manage their lands. The USACE owns two types of land in Illinois: flood control reservoirs and “general plan lands” as outlined in the 1989 Land Use Allocation Plan (LAUP). The USACE operates three flood control reservoirs in Illinois with a total of 112,000 acres, 56,000 water and 56,000 land acres (Table 5).

Table 5: USACE Flood Control Reservoirs, St. Louis District

Name of Site	Land Acreage	Water Acreage	Total Acreage
Lake Shelbyville (64)	23,000	11,100	34,100
Carlyle Lake (65)	13,000	26,000	39,000
Rend Lake (66)	20,000	18,900	38,900
Total Acreage	56,000	56,000	112,000

The USACE’s “general plan lands” are identified in the LAUP and the Shoreline Management Plan (SMP). According to the LUAP, its purpose is to “assure balanced public use of the project’s natural resources based on national purposes and priorities.” LUAP establishes the land use management policies for lands owned by the Rock Island District, those acquired for the Upper Mississippi River Nine-Foot Channel Navigation Project. The SMP builds upon the LAUP and establishes policies regarding “private exclusive use on project-owned shorelines” (USACE, Land Use Allocation Plan-Mississippi River Nine-Foot channel Navigation Project, Pools 11-12, October 25, 1989).

The USACE cooperatively manages these lands with the USFWS and adjoining states, with the USACE administering a total of 9,230.23 acres, the USFWS 74,849.27 acres, and the State of Illinois 46,418.32 acres (Table 6). According to the USACE Rock Island District Office (Dorene Bollman, Outdoor Recreation Planner, personal communication, 2010), the figures in this plan have changed little since 1989.

Table 6: USACE Owned & Administered Lands within the Illinois, Mississippi River, and Rock Island Districts, Pools 11-22 (67)

Ownership Status	Land Acreage	Water Acreage	Total Acreage
Pool 12			
Corps Administered	935.09	376.86	1,311.95
USFWS Administered	3,084.17	4,234.66	7,318.83

Illinois Administered	3,169.89	3,972.42	7,142.31
<i>Pool 13</i>			
Corps Administered	582.53	514.21	1,096.74
USFWS Administered	7,522.07	16,665.66	24,187.73
Illinois Administered	2,395.42	10,287.96	12,683.38
<i>Pool 14</i>			
Corps Administered	418.51	269.05	687.56
USFWS Administered	4,564.08	1,363.60	5,927.68
Illinois Administered	925.75	311.93	1,237.68
<i>Pool 15</i>			
Corps Administered	4.45	0.00	4.45
USFWS Administered	0.00	0.00	0.00
Illinois Administered	4.45	0.00	4.45
<i>Pool 16</i>			
Corps Administered	1,272.34	310.25	1,582.59
USFWS Administered	2,610.01	2,812.27	5,422.28
Illinois Administered	3,314.42	1,946.26	5,260.68
<i>Pool 17</i>			
Corps Administered	517.44	115.58	634.02
USFWS Administered	7,433.47	3,311.51	10,744.98
Illinois Administered	2,120.54	763.97	2,884.51
<i>Pool 18</i>			
Corps Administered	1,383.19	374.94	1,758.13
USFWS Administered	5,461.25	2,895.49	8,356.74
Illinois Administered	3,534.65	1,639.23	5,173.88
<i>Pool 20</i>			
Corps Administered	174.58	61.61	236.09
USFWS Administered	0.00	0.00	0.00
Illinois Administered	13.90	18.40	32.30
<i>Pool 21</i>			

Corps Administered	857.85	174.06	1,031.91
USFWS Administered	6,127.21	1,467.43	7,594.66
Illinois Administered	6342.20	1,422.11	7,764.31
Pool 22			
Corps Administered	734.50	152.29	886.79
USFWS Administered	4,557.63	738.76	5,296.39
Illinois Administered	3,506.84	727.98	4,234.82
Total Acreage			
Corps Administered	6,880.48	2,349.75	9,230.23
USFWS Administered	41,359.89	33,489.38	74,849.27
Illinois Administered	25,328.06	21,090.26	46,418.32

The Rivers Project Master Plan completed in July 2001 provides an overview of the lands administered by the St. Louis District USACE office, although not in the same format as that provided by the Rock Island District Office (Table 7). Acreage for lands managed by IDNR in the St. Louis District is not available in this report. The acreage provided was based upon lease acreage, real estate tract information, and digital mapping. Four land-use classification categories are applicable to the Sustainable Vision: Wildlife Management Areas, Vegetative Management Areas, Low Density Recreation Areas, Environmentally Sensitive Areas, and Mitigation Areas. A large percentage of the lands owned and administered by the Corps are classified as Wildlife Management Areas.

Table 7: Lands Administered by the USACE St. Louis District Office (68)

Land Use Classification	No. of Areas	Acres
Pool 24	<i>Total # in Pool 24 – 21</i>	<i>Total Acres in Pool 24 – 7,224</i>
Wildlife Management Areas	4	3,813
Vegetative Management Areas	3	2,658
Low Density Recreation Areas	8	60
Totals Related to the Sustainable Vision	15	6,531
Pool 25	<i>Total # in Pool 25– 15</i>	<i>Total Acres – 9,748</i>

Wildlife Management Areas	6	9,113
Vegetative Management Areas	1	3
Low Density Recreation Areas	5	62
<i>Totals Related to the Sustainable Vision</i>	12	9,178
<i>Pool 26</i>	<i>Total # in Pool26 – 58</i>	<i>Total Acres in Pool 26 – 26,639</i>
Wildlife Management Areas	14	19,403
Vegetative Management Areas	11	3,754
Low Density Recreation Areas	15	337
Environmentally Sensitive Areas	4	679
Mitigation Areas	2	1,483
<i>Totals Related to the Sustainable Vision</i>	46	25,656
<i>Pool 27</i>	<i>Total # in Pool 27 – 15</i>	<i>Total Acres in Pool 27– 3,508</i>
Wildlife Management Areas	0	0
Vegetative Management Areas	7	1,030
Low Density Recreation Areas	1	2
Environmentally Sensitive Areas	1	40
<i>Totals Related to the Sustainable Vision</i>	9	1,072
<i>Kaskaskia Navigation Project</i>	<i>Total # Kaskaskia – 5</i>	<i>Total Acres in Kaskaskia– 433</i>
Vegetative Management Areas	3	171
<i>Totals Related to the</i>	3	171

<i>Sustainable Vision</i>		
<i>Pools 24-27 & the Kaskaskia Navigation Project Totals</i>	<i>Total # All Pools & Kaskaskia – 115</i>	<i>Total in All Pools & Kaskaskia – 47,641</i>
Wildlife Management Areas	24	32,329
Vegetative Management Areas	25	7,616
Low Density Recreation Areas	29	461
Environmentally Sensitive Areas	5	719
Mitigation Areas	2	1,483
<i>Totals Related to the Sustainable Vision</i>	85	42,608

Given that one of the prime missions of the USACE is environmental sustainability, coupled with the large number of acres it owns and manages, this agency could be a strong partner in the effort to create sustainable natural areas. The Upper Mississippi River Restoration Environmental Management Program (UMRR-EMP) is a logical partner with this effort. The UMRR-EMP has a number of committees, one of which IDNR is represented on, to share information on a wide range of restoration and land management projects. This provides an opportunity for IDNR to share information on the location of the core natural areas in proximity to USACE projects, and work to include USACE lands in natural area networks, where appropriate.

United States Department of Agriculture

The mission of the United States Department of Agriculture (USDA) is to “provide leadership on food, agriculture, natural resources, rural development, and related issues based on sound public policy, the best available science, and efficient management” (69). The responsibilities of the USDA are very diverse, ranging from addressing the competitiveness of U.S. agriculture internationally, the sustainability of the rural economy, the protection and safety of the nation’s food system, improving public health and nutrition, and protecting and enhancing the nation’s natural resource base and environment. It is this last goal that provides opportunities for the USDA to become engaged in protecting Illinois’ natural areas and working to make them sustainable. The USDA objectives associated with this goal provide opportunities for the USDA to be a partner in creating such networks:

- Protect watershed health to ensure clean and abundant water
- Enhance soil quality for agricultural production

- Protect forests and grasslands
- Protect and enhance wildlife habitat to benefit at-risk species

Highlighted below are three agencies under the USDA's authority, which have programs that address the conservation of natural resources and have the potential to contribute to natural area sustainability – the United States Forest Service, the Natural Resources Conservation Service, and the Farm Services Agency.

United States Department of Agriculture Forest Service (USDA FS)

The USDA Forest Service (USDA FS or Forest Service) was founded in 1905 and now manages 193 million acres of publically owned forests and grasslands across the nation. Its mission is “to sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations” (70). Seven goals have been identified in the USDA FS’ 2007-2012 Strategic Plan (71). These goals provide opportunities for the Forest Service to be a partner in the Sustainable Vision goal of creating sustainable natural areas. The Forest Service goals are to:

- Restore, sustain, and enhance the nation’s forests and grasslands
- Provide and sustain benefits to the American people
- Conserve open space
- Sustain and enhance outdoor recreation opportunities
- Maintain basic management capabilities of the Forest Service
- Engage urban America with USDA FS programs
- Provide science-based applications and tools for sustainable natural resource management

Within Illinois, there are two sites owned and managed by the USDA FS, the Shawnee National Forest, created in 1933, and the Midewin National Tallgrass Prairie, created in 1996. The Shawnee National Forest (Shawnee) is comprised of 285,000 acres located in far southern Illinois.

Shawnee National Forest

The Shawnee contains rare natural areas, and the Forest Service cooperates with the State of Illinois in the protection and stewardship of the high-quality natural communities and endangered species found within these areas. Authority for this effort is prescribed by the National Forest Management Act (NFMA) and enacted through the Shawnee National Forest Land and Resource Management Plan (the 2006 Forest Plan).

The 2006 Forest Plan's stated objective is "to maximize long-term, net, public benefits through environmentally sound management" (72) (p.7). The Plan is explicitly intended to guide the Forest Service's determination of resource and recreation use, as well as to protect the physical and biological resources of the Shawnee (72) (p.5). To accomplish this, the Plan details the suitability of lands for resource use and production, outlines "forest-wide multiple-use goals and objectives [and] management requirements", and even has provisions for recommendations to Congress (72) (p. 2).

The Forest Service's cooperation with the State to provide for the protection and stewardship of INAI sites is supported, indirectly, by the plan's purpose. All existing INAI sites within the Shawnee boundaries are incorporated into the 80 natural areas designated by the Forest Service (IDNR Regional Administrator, Shimp, J., personal communication, 2009). These areas are described in Appendix D of the 2006 Forest Plan, and include "14 botanical areas, 58 ecological areas, 8 zoological areas and 10 research natural areas." (73) (p.169) Newly identified areas can be designated administratively.

In general, the Forest Service adopts the boundaries of most categories of natural areas provided by IDNR because the Forest Plan requires boundaries to encompass the features requiring protection. However, this may not apply to Category II natural areas (Illinois endangered and threatened species habitat). "State listed [endangered] plant species... do not have automatic Forest [Service] protection unless they are included on the Regional Forester [Sensitive] Species list." The responsibility falls on the IDNR to identify and make known to the Forest Service these species whereabouts and possible impacts of a project during the planning process.^{xxiv} (IDNR Regional Administrator, Shimp, J., personal communication, 2009).

The management of natural areas designated by the Forest Service within the Shawnee is directed by the Natural Area (NA) Management Prescription, which "provides for the preservation, protection and/or enhancement of the unique scientific, educational or natural values found on ... natural areas" (72) (p.76). The prescription delineates requirements to monitor and correct disturbances to natural areas, and manage vegetation in a manner that supports sustainable natural communities and places priority on building a continuous natural landscape through direct ownership (72) (p. 77-78).

^{xxiv} **FW26.5 (G) State of Illinois-Listed Threatened and Endangered Species**

Some species occurring on the Shawnee are listed by the state as threatened or endangered, but are not federally listed or included on the Regional Forester sensitive species list. These species may require special management to maintain their continued existence on the Shawnee and activities should not jeopardize their continued existence.

FW26.5.1 (G) The effects of any proposed project on a state-listed species should be evaluated considering the project-specific conservation concerns of the Illinois Department of Natural Resources.

FW26.5.2 (G) Known locations of state-listed species should be monitored periodically to identify disturbances and any necessary protective actions. (pg. 43)

The Forest Service also has a designation for Research Natural Areas (RNAs) that are to be permanently protected and maintained in a natural condition. These protected natural areas include unique ecosystems or ecological features; rare or sensitive species of plants and animals and their habitat. RNAs represent minimally disturbed natural ecosystems and serve as biodiversity reserves and as areas for educational activities. Appropriate uses of RNAs include "non-manipulative research, observation, and study" (74). There are ten RNAs in the Shawnee, comprising a total of 5,384 acres (Table 8).

Table 8: Established Research Natural Areas in the Shawnee National Forest (75)

State	Forest	RNA Name	Date	Size (acres)	Description
Illinois	Shawnee (5,384 acres)	Atwood Ridge	1990	955	Dry, mesic forest; barrens; hill prairies
		Barker Bluff	1990	60	Glade and glade / forest complex; escarpment
		Burke Branch	1991	206	Dry to mesic oaks; mesic barrens; juncture of Mississippi Embayment/Shawnee Hills
		Cave Hill	1990	465	Xeric to dry-mesic oak forests; barrens; sandstone glades, cliffs; aquatic and terrestrial cave habitat
		Dennison Hollow	1989	205	Xeric and dry oak forests; barrens; sandstone glades, cliffs
		LaRue-Pine Hills/Otter Pond	1991	2585	14 natural communities (bottomland forest; ponds; swamps; bluffs; upland forests)
		Ozark Hill Prairie	1991	535	Bluff ridge; hill prairie; dry, dry-mesic oaks; beech-maples, sassafras-persimmon forests
		Panther Hollow	1989	180	Sandstone hollows, cliffs; dry, dry-mesic oaks; beech-maple forest
		Stoneface	1990	176	Sandstone cap of thrust fault, cliffs, glades; loess hill prairie; xeric to dry-mesic oak forest
		Whoopie Cat Mountain	1990	17	Limestone cedar glade; dry oak forest; rugged hills

Midewin National Tallgrass Prairie

The Midewin National Tallgrass Prairie is located in Will County and contains 15,545 acres. The Illinois Land Conservation Act^{xxv} created the Midewin National Tallgrass Prairie in 1996. Midewin was part of the former Joliet Army Ammunition Plant, which was then transferred from the U.S. Army to the U.S. Department of Agriculture's Forest Service. This Act requires that Midewin be managed to meet four primary objectives: (76)

1. To conserve, restore, and enhance the native populations and habitats of fish, wildlife, and plants.
2. To provide opportunities for scientific, environmental, and land use education and research.
3. To allow the continuation of existing agricultural uses of lands within Midewin National Tallgrass Prairie for the next 20 years, or for compatible resource management uses thereafter.
4. To provide recreational opportunities which are compatible with the above purposes.

These objectives and the requirements identified in the National Forest Management Act provide opportunities for the USFS to play an important role in contributing to sustainable natural areas at Midewin. Because of past land uses, only three percent of Midewin now contains native plant communities. However, Midewin does support three federally endangered or threatened species, and twenty-six species recognized as sensitive by the Regional Forester of the Eastern Region. All of the Midewin acreage can play an important role in building a system of sustainable natural areas, serving as buffers or linkages between core natural areas.

Natural Resources Conservation Service

Since the founding of the Natural Resources Conservation Service (formerly the Soil Conservation Service) in 1935, this agency has “provided leadership in a partnership effort to help America's private land owners and managers conserve their soil, water, and other natural resources” (77). NRCS' guiding principles for working with the agricultural community include, to:

1. Assess the resources on the land and identify the conservation problems and opportunities.
2. Draw on various sciences and disciplines and integrate all their contributions into a plan for the whole property.
3. Work closely with agricultural land users so that the plans for conservation are consistent with their objectives.

^{xxv} Public Law 104-106

4. Contribute to the overall quality of the life in the watershed or region by implementing conservation on individual farm properties.

NRCS's natural resources conservation programs traditionally helped farmers reduce soil erosion, which led to improved water quality. Later programs increased wildlife habitat, and reduced damages caused by floods and other natural disasters. An overview of NRCS's key programs illustrates its potential role in assisting in creating and maintaining a system of sustainable natural areas:

1. Environmental Quality Incentives Program (EQIP)
EQIP, reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill), offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land (78). This program is focused primarily on lands currently in agricultural use.
2. Wildlife Habitat Incentive Program (WHIP)
WHIP is a voluntary program for private landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forestland, and Native American land (79).
3. Conservation Stewardship Program (CSP)
CPS provides "financial and technical assistance to eligible producers to conserve and enhance soil, water, air, and related natural resources on their land. Eligible lands include cropland, grassland, prairie land, improved pastureland, rangeland, nonindustrial private forest lands, agricultural land under the jurisdiction of an Indian tribe, and other private agricultural land (including cropped woodland, marshes, and agricultural land used for the production of livestock) on which resource concerns related to agricultural production could be addressed (80).
4. Healthy Forest Reserve Program (HFRP)
HFRP "is a voluntary program established for the purpose of restoring and enhancing forest ecosystems to: 1) promote the recovery of threatened and endangered species, 2) improve biodiversity; and 3) enhance carbon sequestration" (81). There are three enrollment options for these conservation easements – 10, 30 and 99 years. "To be eligible for enrollment, land must be private land which will restore, enhance, or measurably increase the likelihood of recovery of a threatened or endangered species, must improve biological diversity, or increase carbon sequestration" (82).

In 2006, NRCS identified programmatic priorities that apply to one or more of the above programs and that are consistent with the Sustainable Vision:

- Reduction in soil erosion and sedimentation from unacceptable high levels on agricultural land and therefore the reduction of non-point source pollution.
- Promotion of at-risk species habitat conservation.
- Promote the restoration of declining or important native wildlife habitats.
- Protect, restore, develop or enhance declining or important aquatic wildlife species' habitats.

NRCS has key programs that could complement the creation of natural areas networks. Although the focus is on existing agricultural lands, some of these lands could serve as buffers to natural areas. These programs could be strengthened by increasing the length of time for the easements to minimize opportunities for landowners to use these programs to “bank” land for future development, and by establishing and enforcing firm guidelines for conservation practices done for the benefit of wildlife habitat or endangered species.

Challenges and Opportunities Federal Agencies

Opportunities exist for federal agencies to play an important role in protecting core natural areas and working to make them sustainable across the state. These opportunities may be immediate, meaning they could be implemented at any time, whereas others may take many years if not decades to accomplish. It is important to take action on both the immediate and long-range opportunities in order to be assured of success. Below are examples of challenges and opportunities facing or affecting each federal agency.

4.20 Challenge: Protecting natural resources given that much of Illinois' natural resources are in private ownership.

U.S. Department of Agriculture Opportunities – All programs

- 4.20.1 Develop incentive programs for landowners to maintain high quality natural areas rather than be required to degrade or destroy such resources in order to receive a subsidy, as is currently the case in the Forest Development Programs

U.S. Department of Agriculture Opportunities – Natural Resources Conservation Service

- 4.20.2 Strengthen existing agricultural programs to benefit the potential sustainability of natural areas. This could include:
- Requiring the use of native vegetation in programs where lands are removed from agricultural production and restored.

- Increasing the duration of easements to avoid the use of agricultural programs for land speculation.

4.20.3 Work with private landowners to encourage them to protect and manage high quality natural areas and to use their non-agricultural lands as buffers to or linkages between natural areas.

National Forest Service – Shawnee National Forest Opportunities

4.20.4 Designate all Category I INAI sites as Research Natural Areas to provide the greatest protection, or for INAI sites not designated as RNAs, ensure they are designated as unsuitable for resource use and/or extraction.

4.20.5 Protect state endangered and threatened species by listing those that occur on USFS lands on the Regional Forester’s [Sensitive] Species List.

4.21 Challenge: Coordinating the protection of natural areas and creation of sustainable networks of natural areas with IDNR and other federal agencies.

National Forest Service – Shawnee National Forest Opportunities

4.21.1 Work with the State of Illinois to consolidate ownership of INAI sites via land trades such as was done in the early 1990s.

4.21.2 Ensure that forest-wide management objectives include creation and maintenance of sustainable high-quality natural areas as a priority, including those sites not now designated as an RNA.

4.21.3 Establish and implement a process to evaluate and grade all Shawnee National Forest lands using INAI grading methodologies, creating a map showing all of the forests, barrens, glades, woodlands, and wetland communities with their natural quality grade included. Priority should then be given to restoration work conducted in the higher graded communities.

U.S. Fish and Wildlife Service Opportunities

4.21.4 Before undertaking major land-disturbing projects, including restoration projects, coordinate with IDNR and local natural resources agencies to determine if key natural areas exist on the site.

U.S. Army Corps of Engineers Opportunities

- 4.21.5 Before undertaking major land-disturbing projects, including restoration projects, coordinate with IDNR and local natural resources agencies to determine if key natural areas exist on the site.
- 4.21.6 Incorporate natural areas and state endangered and threatened species in the EMP restoration plans.
- 4.21.7 Revise federal wetland protection regulations to require an Individual Permit for every permit that involves an INAI site, using the Chicago District's regulations as a model.

Farm Service Agency Opportunities

- 4.21.8 Coordinate with IDNR's Natural Heritage program to determine if prospective easements are located in proximity to a natural area or if the site might play a role in developing a sustainable network of natural areas.
- 4.21.9 Develop ecologically sound wildlife habitat requirements for programs designed to protect wildlife, including endangered species.
- 4.21.10 Establish an outreach and education program to encourage longer-term preservation of sites with short-term conservation easements, including registration as a L&WR.
- 4.21.11 Work to amend the Farm Bill to lengthen the time period of the various easement programs to discourage land banking, a process that uses the federal program to reduce property taxes until the land is sold for development purposes.

U.S. Department of Agriculture Opportunities – Natural Resources Conservation Service

- 4.21.12 Work with IDNR/INPC/ESPB on commonly shared goals, such as the promotion of at-risk species and the restoration of important native wildlife habitats.

4.22 Challenge: Coordinating with federal agencies to identify management needs and manage natural areas that are in federal ownership.

National Forest Service – Shawnee National Forest Opportunities

- 4.22.1 Collaborate with IDNR to identify management needs for INAI sites and use opportunities granted within the *National Forest Management Act* to provide

stewardship. This can be accomplished through the formation of a Shawnee National Forest Natural Areas Advisory Committee, which will require special federal legislation exempting it from the Federal Advisory Committee Act.

4.22.2 Allocate adequate funding to monitor natural areas for disturbances and restore damages per the “Natural Area Management Prescription.”

4.22.3 Create a federally approved programmatic NEPA for burning, selective tree and shrub removal, and invasive species control and other management within INAI sites (or RNAs).

4.22.4 Address the need for management of INAI sites (RNAs) that are located within federally designated Wilderness areas.

4.23 Challenge: Identifying ways of strengthening NRCS programs to protect and sustain natural areas.

4.23.1 *Strengthen existing programs directed towards agricultural lands to benefit the process of sustaining natural areas.*

4.23.2 *Strengthen existing programs directed towards agricultural lands to benefit the process of sustaining natural areas.*

4.23.3 *Work with IDNR/INPC/ESPB on commonly shared goals, such as the promotion of at-risk species and the restoration of important native wildlife habitats.*

Stakeholder I Summary

IDNR and FPD/CDs are key stakeholders in the effort to protect natural areas and to make them sustainable. Under the INAPA, IDNR has the authority to officially identify INAI sites, although FPD/CDs can also identify locally significant natural areas that will play a role in creating sustainable networks. IDNR also owns approximately 50% of the existing INAI sites, giving them tremendous responsibility for protection, stewardship, and defense. FPD/CDs also own and manage a significant number of INAI sites.

The INPC plays a major role in the protection, stewardship, and defense of INAI sites as well. Under the authority of the INAPA, the INPC is responsible for dedicating Nature Preserves, and registering Land & Water Reserves, both invaluable tools in protecting natural areas.

Federal agencies are also important partners in the effort to create sustainable natural areas and networks. Agencies such as the U.S. Forest Service, U.S. Fish & Wildlife Service, U.S. Army Corps of Engineers, and the Natural Resources Conservation Service, own, manage, or provide land management incentives on vast acreages across the state that could play a vital role in creating buffers for and linkages between core natural areas. These agencies also all work with private landowners and could potentially engage them in the effort to create a statewide system of sustainable natural areas.

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The Illinois Sustainable Natural Areas Vision

Chapter 5

Category II, III & IV Stakeholders

Category II Stakeholders

Category II stakeholders include those who may own INAI sites as well as other natural resources that could play an important role in creating sustainable networks of natural areas. State agencies that do not have a primary responsibility to protect natural resources, park districts, nongovernmental organizations, and private landowners are included in this category. With 96% of Illinois' acreage being held in private ownership, private landowners play a significant role in protecting and managing natural areas.

State Agencies – Illinois Historic Preservation Agency (IHPA)

IHPA is a state agency that while not having a primary role in protecting natural resources, can be an important partner in this effort. The IHPA has the legal authority to preserve historical sites, but according to the Advisory Council on Historic Preservation, “[H]istoric properties are now understood and appreciated as part of—not isolated from—the landscape to which they belong” (1). Armed with this new recognition of the relationship between historic sites and the landscapes they are a part of, IHPA can clearly play a role in creating sustainable natural areas.

The IHPA operates over 60 historic sites and memorials across the state. Many of these consist of hundreds of acres of undeveloped land that could serve as a buffers or corridors for core natural areas or possibly even qualify as core natural areas themselves. Examples include cemeteries that are over 100 years old that have been designated as Nature Preserves by the INPC (2), and Cahokia Mounds, which cover about 4,000 acres, much of which is in a natural condition. The following is a challenge that affects IHPA, one for which they can work directly to address.

5.1 Challenge: Using their legal authorities, IHPA can serve as an important partner in protecting and sustaining natural areas by:

- 5.1.1 Dedicating any INAI sites it owns as Nature Preserves or by registering them as Land and Water Reserves.
- 5.1.2 Working with IDNR to manage, maintain, or restore any INAI sites owned by IHPA.

5.1.3 Working with IDNR to identify lands owned by IHPA that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas.

Park Districts

In 1869, the Illinois General Assembly passed legislation that formed the first park districts in the City of Chicago. In 1893, the legislature allowed the formation of park districts outside of the City of Chicago (3). Park districts are municipal corporations created by the will of the community for the purpose of acquiring and maintaining parks. Park districts are separate from city or county government and have only the powers granted to them by the legislature (4). There are now 287 park districts that are members of the Illinois Association of Park Districts.

Park districts can be formed for a wide range of purposes, including aesthetics, to provide recreational and sports activities, and the preservation of natural resources; however, the latter is not their primary responsibility. Their authority to acquire land is granted in the *Park District Code*: “Power is hereby conferred upon any park district to acquire...any and all...lands...for any...park, boulevard, or driveway or for extending, adorning, or maintaining the same if such land is located within such park district, under the provisions of Article 9 of the Illinois Municipal Code (5).”

Although natural resource protection is not a park district’s primary responsibility, several districts have taken action to use the legal authority granted in *The Park District Code*¹ “to dedicate areas as nature preserves as provided in the Illinois Natural Areas Preservation Act,...and to cooperate with the Illinois Nature Preserves Commission in matters relating to the purposes of that Act” (5). Park districts can use this power, in combination with their broad land acquisition rights, to protect and provide stewardship for natural areas. The capacity for defense of these lands is granted in section 5-9 of the act, which allows for the funding and maintenance of a police force.

The Illinois Association of Park Districts (IAPD) is an organization that can serve as an important partner in creating sustainable natural areas. The IAPD’s mission statement describes the organization as “a nonprofit service, research, and education organization that serves park districts, forest preserves, conservation, recreation, and special recreation agencies. The association advances these agencies, their citizen board members, and professional staff in their ability to provide outstanding park and recreation opportunities, preserve natural resources and improve the quality of life for all people in Illinois” (6).

¹ (70 ILCS 1205)

The IAPD “has a record number of 468 member agencies made up of 287 park districts, 9 forest preserves, 7 conservation districts, 1 state agency, 33 city park and recreation agencies, 25 special recreation associations, 100 associate commercial members and 6 associate individual members” (6). The budget of the IAPD has grown substantially from \$173,000 in 1980 to \$2.1 million in 2009. It was instrumental in the passage of the Open Space Lands Acquisition and Development Program in 1986, which has raised \$326.1 million in state funding, matched at the local level to bring \$652.2 million to park districts for the protection of open space and for park development.

The IAPD has supported major statewide land acquisition efforts and can serve as a link between state agencies, NGOs, IDNR, and the INPC to protect core natural areas and create a sustainable network. The following is a challenge that affects IAPD, one for which they can work directly to address.

5.2 Challenge: Using their legal authorities, park districts can provide leadership in protecting and sustaining natural areas by:

- 5.2.1 Dedicating all INAI sites owned by park districts as Nature Preserve or Land and Water Reserves.
- 5.2.2 Working with IDNR to manage, maintain or restore any INAI sites owned by park districts.
- 5.2.3 Working with IDNR to identify those lands owned by park districts that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas.
- 5.2.4 Developing passive recreation plans for the portions of park districts own that contain sensitive natural resources, recognizing the need to protect them and the public’s interest in passive recreation activities such as bird watching.

Non-Governmental Organizations

Nongovernmental Organizations (NGO) are nonprofit, voluntary citizens' group which are organized on local, national or international levels to promote a common interest among its members. NGOs function without representation in the government, although they may receive funding from governmental agencies. Many NGOs play a significant role in the protection of natural resources in Illinois.

Among the largest statewide NGOs involved in owning or managing Illinois lands are The Nature Conservancy (TNC), Illinois Audubon Society (IAS), Ducks Unlimited (DU), Pheasants Forever (PF), and Land Trust Alliance (LTA).

Regional NGOs are also important to the efforts of protecting core natural areas. Groups such as Openlands in northeastern Illinois, Parklands in the central part of the state, and the Southwestern Illinois Resource Conservation and Development District in the Metro East area are examples of regional NGOs. These regional groups are all vital to meeting the goals of the Sustainable Vision but will not be discussed in detail in the Sustainable Vision due to its more limited statewide focus.

Conservation land trusts NGOs play an important role in protecting natural resources. The LTA, in their 2005 Census Report, identified the purpose of a land trust as...“to preserve a certain type of land that is important to the character and soul of each community.” According to the Prairie State Conservation Coalition, effective June 2010, there are 58 organizations designated as conservation land trusts in Illinois.

All of these organizations play important roles in protecting Illinois’ natural resources and can be partners in the effort to protect core natural areas and in making them sustainable. A brief description of the purpose and range of activities conducted by TNC, IAS, DU, PF, and LTA is included here.

The Nature Conservancy

The TNC is an international conservation organization whose mission is “*to preserve the plants, animals and natural communities that represent the diversity of life on earth by protecting the lands and waters they need to survive*” (7). TNC has five offices in Illinois: Peoria; Southern Illinois, associated with the Cache River; Lewiston, associated with the Emiquon Preserve; Franklin Grove, associated with Nachussa Grasslands; and the main office in Chicago.

TNC has protected over 80,000 acres of land and water in Illinois over the past 50 years. In 2009, TNC allocated \$1.12 million in their Land Preservation Fund. (8) TNC’s focus on preserving native biodiversity makes them a natural partner in promoting the sustainability of Illinois natural areas. In fact, TNC initiated the effort to conduct the update to the INAI after its completion over 30 years ago. TNC provided the leadership to assemble the partnership and secure the necessary funding from a number of private foundations to develop the operational plan for the INAI Update. This plan was subsequently funded, with the INAI Update now underway. TNC currently owns and manages over 17,000 acres in Illinois.

Illinois Audubon Society

The IAS is a statewide NGO established in 1897. Their mission is *to promote the perpetuation and appreciation of native flora and fauna of Illinois and the habitats that support them.*

Fundamental to this end are the control of pollution, the conservation of energy and all natural resources, a sound ecological relationship between human populations and their environments, and the education and involvement of the public in such efforts. (9)

IAS works closely with state and federal agencies to pre-acquire land with sensitive natural resources, using funds dedicated for land acquisition. As these lands are sold to government agencies, the funds are returned to their land acquisition fund for future projects. Currently, IAS owns 1,357.5 acres in wildlife sanctuaries across the state. IAS' land acquisition and environmental education efforts make them a strong partner in the effort of creating a sustainable system of natural areas.

Ducks Unlimited

DU is a nationwide NGO that plays a key role in Illinois where they support three regional directors and a regional biologist. The DU mission is to conserve, restore, and manage wetlands and associated habitats for North America's waterfowl (10). Since 2004, DU has invested over \$1 million annually in its Illinois conservation programs. In 2005, working with a variety of partners, DU restored and enhanced 2,752 acres of wetlands and adjacent habitat. These projects are designed to maximize the amount and quality of migration, breeding, and wintering waterfowl habitats as well as improve conditions for waterfowl production (11). However, wetlands in general are under great pressures from a wide range of direct and indirect impacts from urban development and agricultural activities, as well as ecological threats such as invasive species. Wetlands serve to enhance water quality, attenuate flooding, and support some of Illinois most imperiled biodiversity, so DU can play an important role in meeting the goals of the Sustainable Vision.

Pheasants Forever

Pheasants Forever works to protect, restore, and enhance wildlife habitat in an effort to address the fragmentation of grasslands and population losses that have been document for all grassland birds, particularly upland game species. Illinois chapters have devoted \$11 million to restore 280,000 acres of habitat across the state (12).

In 2009, Pheasants Forever initiated their Habitat Wheel Initiative, which is a statewide effort to “identify township-sized focus areas and build and enhance habitat in those focus areas in each

county based on existing habitat and opportunities.” This initiative works in conjunction with the IDNR Wildlife Action Plan. The “wheel” is composed of a center core of 5,760 acres, with a goal of having at least 20% of this as undisturbed nesting cover. The hub represents public lands within the “rim.” The goal is to have 640 acres of public-owned habitat for upland birds in each habitat wheel. This program and the Pheasants Forever goals are complementary to the goals of the Sustainable Vision.

Land Trust Alliance (LTA)

LTA is an important collaborator in protecting core natural areas in two ways. The LTA works to promote the voluntary protection of private lands through the 1,600 land trusts in the country. LTA defines a land trust as “a nonprofit organization that, as all or part of its mission, actively works to conserve land by undertaking or assisting in land or conservation easement acquisition, or by its stewardship of such land or easements.” (13) Land trusts work with private landowners, communities, and other organizations to conserve land “by accepting donations of land, purchasing land, negotiating conservation agreements on land, and stewarding conserved land through the generations to come.” Land trusts can be extremely successful because they are often locally based, so they understand the needs of a community. (13) LTA’s role in supporting local land trusts by providing technical assistance and training to build their capacity is important indirectly to the establishment of sustainable networks of natural areas. LTA supports the creation of service centers to provide assistance to land trusts in an efficient manner. In Illinois, the Prairies State Conservation Coalition (PSCC) could serve in this capacity. PSCC is a coalition of conservation land trusts.

Illinois Conservation Land Trusts

Conservation land trusts play an integral role in furthering the goals of the Sustainable Vision due to their focus on conservation of private lands at the local level. This focus makes them instrumental partners in conserving sites as more than 95% of land in Illinois is privately held (14). Most land trusts are locally based and thus are familiar with the issues and needs of their communities. Since the reduction of government funding, conservation now relies more heavily on private partnerships between landowners and their local conservation land trusts (15).

While many conservation land trusts are extremely successful, small land trusts often face a number of challenges. Grand Victoria Foundation prepared a map showing areas of operation of 36 land conservation organizations in Illinois (Fig. 1). One challenge limiting the success of land trusts statewide is the lack of the presence of land trusts in much of far southern, southeastern, and western Illinois.

Grand Victoria Foundation noted in a memorandum that with “private land conservation organizations ... success is limited by the scarcity of immediately available capital, the unevenness of resources across the state, and the lack of strong networks among organizations that would enable them to quickly deploy money and expertise to complex or rapidly-moving transactions.” To bolster their conservation efforts, land trusts and other conservation organizations need support in multiple areas. The following are challenges that affect nongovernmental organizations, ones for which they can work directly to address.

5.3 Challenge: Strengthening the capacity of land trusts and other natural resource NGOs.

NGO/Conservation Land Trust Opportunities

- 5.3.1 Explore ways of ensuring that all areas of the state have a functioning conservation land trust. This could require creating new land trusts or extending the geographic coverage of existing land trusts.
- 5.3.2 Create a grant program within IDNR for land acquisition by conservation land trusts.
- 5.3.3 Establish a service center to provide support for Illinois’ land trusts, possibly through the Prairie State Conservation Coalition.

5.4 Challenge: Promoting ways conservation land trusts can expand their role in protecting and sustaining natural areas.

- 5.4.1 Dedicating all INAI sites owned by land trusts as Nature Preserves or registering them as Land and Water Reserves.
- 5.4.2 Working with IDNR to manage, maintain or restore any INAI sites conservation land trusts own.
- 5.4.3 Working with IDNR to identify those lands owned by conservation land trusts that could play a role in making natural areas sustainable by serving as buffers or linkages to other natural areas.
- 5.4.4 Assist IDNR and the INPC in identifying and contacting the landowners of high-quality natural areas identified in the INAI Update conducted in 2008-2011.

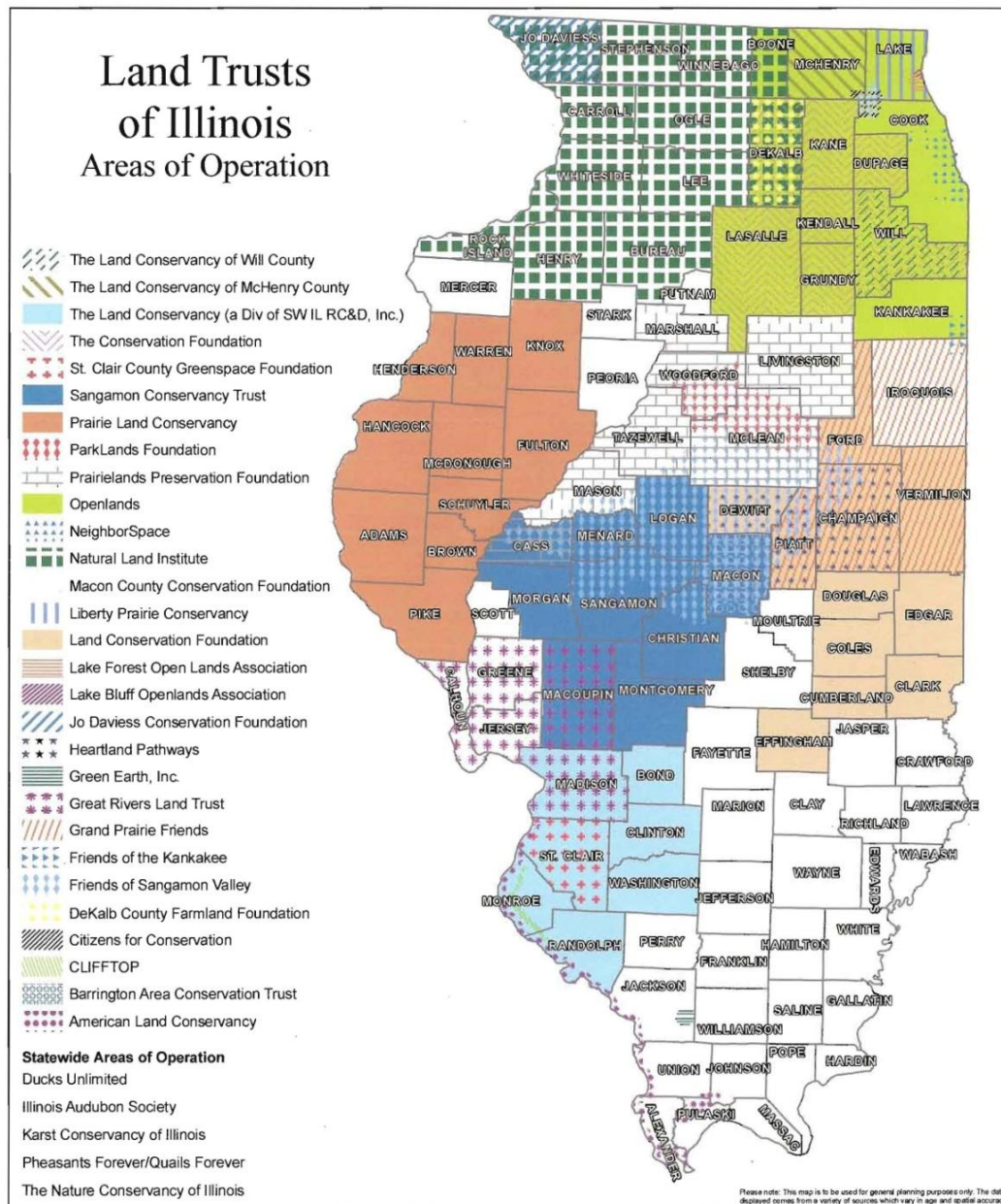


Figure 1: Illinois Conservation Land Trusts and their Geographic Coverage (16)

- 5.4.5 Work with IDNR's Wildlife Action Plan in forming Conservation Opportunity Area (COA) partnerships that could assist in protecting natural areas located within COAs.
- 5.4.6 Work to establish economic incentives at the state and federal levels for the preservation of high-quality natural areas. The 2005 LTA Census indicates that tax incentives for land conservation are correlated to a rise in preservation of private lands.

Private Landowners

In reality stewardship does not call for more land acquisition by governments to preserve ecosystems, but for a change of attitude about everyone's backyard. (17)

“Strategic Plan for the Ecological Resources of Illinois”

The above quote reinforces the importance of reaching out to private landowners – both individual and corporate, farm and nonfarm – to engage them in the process of protecting core natural areas and making them sustainable. Many private landowners are already protecting their natural areas; others are unaware of the need to do so. Engaging more private landowners will increase the likelihood of success at protecting and sustaining natural areas. This will not eliminate the need for governmental entities and land trusts to acquire and manage lands, but it will enhance these efforts tremendously. .

The total land ownership by federal, state, and local units of government and NGOs, “comprises approximately... 3.1% of Illinois, whereas private lands encompass 141,465 km² or 96.9% of the state” (14) (p. 103). Illinois ranks 48th in the nation in terms of publicly held open space per capita in state and national parks. Even adding the land owned by forest preserve, conservation, and park districts does not change this ranking. (18)

Private landowners can assist in creating sustainable natural areas in many ways. The INPC has protection programs available to private landowners, e.g., Nature Preserves dedication or registration of Land and Water Reserves. Both provide assurance that conservation efforts will continue as a perpetual legacy, as does the option of enrolling the property in a conservation easement with a land trust or other NGO. The INPC Natural Heritage Landmark (NHL) can be used to recognize the special nature of INAI sites as well, but does not provide the legal protection of a Nature Preserve dedication (19)², nor does it provide the tax relief and enhanced management offered by the other two (17). Establishment of conservation easements also offers

² from Ch. 105, par. 714

tax relief, as does implementing a conservation stewardship plan in accordance with IDNR's Conservation Stewardship Program.

Private landowners can also assist in creating sustainable buffers and linkages between core natural areas by participating in existing federal programs that provide incentives to protect natural resources. As examples, the Wetlands Reserve Program (WRP) and Wetlands Reserve Enhancement Program (WREP) protect wetlands on agricultural lands; the Wildlife Habitat Incentives Program (WHIP) increases cost-share assistance on long-term agreements and provides technical assistance and cost-share assistance to establish and improve wildlife habitat, and the Grassland Reserve Program helps landowners protect, restore, and enhance grasslands on their property. Most federal programs are oriented toward farmland owners and require a recent crop history for eligibility. Programs of use to nonfarm landowners, many of whom have undertaken conservation measures on their own, are limited.

Participation by private landowners is critical to the protection and sustainability of natural areas. There are challenges to – and opportunities for – them becoming full partners in this effort.

Challenges & Opportunities Private Landowners

5.5. Challenge: Engaging private landowners in protecting and sustaining natural areas on land they own.

Private Landowner Opportunities

- 5.5.1 Dedicate all INAI sites owned by private landowners as Nature Preserves or register the sites as Land and Water Reserves.
- 5.5.2 Work with IDNR to manage any INAI sites private landowners own.
- 5.5.3 Work with IDNR to identify privately owned lands that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas.
- 5.5.4 Private landowners can use federal incentive programs such as the Wetlands Reserve Program (WRP) and Wetlands Reserve Enhancement Program (WREP) created by the Food, Conservation, and Energy Act of 2008 to protect wetlands on agricultural lands.

- 5.5.5 Participate in the Illinois Natural Areas Inventory, allowing access to their property for vegetation surveys, as appropriate.
- 5.5.6 Railroad companies can work with IDNR to manage natural areas located adjacent to railroad rights-of-way.

Illinois Department of Natural Resources/Illinois Nature Preserves Commission Opportunities

- 5.5.7 Develop a program to assist private landowners, especially nonfarm landowners, in protecting and sustaining natural areas.
- 5.5.8 Develop natural area project strategies to attract business and industry to the effort to protect and sustain natural areas. The business community is known to respond more readily to specific proposals, such as purchase of or restoration of a specific site with an estimated cost.
- 5.5.9 Assist private landowners to pursue available assistance by creating a single unified source of information, perhaps a web portal, with a comprehensive catalog of all available program assistance and links to sites providing additional information.

Governor/Legislature

- 5.5.10 Develop incentive programs to encourage private landowners to maintain intact high-quality natural communities.
- 5.5.11 Fully fund the INPC and IDNR's Natural Areas Program to provide the technical assistance needed by private landowners to protect and sustain natural areas.
- 5.5.12 Amend the Recreational Use of Land and Water Areas Act to expand the definition of recreational or conservation purposes to include entry by the public onto land for conservation, resource management, education, bird watching, hiking, and other similar activities.

Category III Stakeholders

As discussed in Chapter 4, this group of stakeholders has the potential to affect natural resources or land use change through legislation, funding, regulations, zoning, ownership, or other external influence, and therefore could play a pivotal role in creating a system of sustainable natural

areas. A few of these stakeholders also meet a second of the four criteria identified in that they own one or more INAI sites.

Governor/Legislature

The governor and the legislature have important roles to play in successfully protecting and sustaining natural areas. These include establishing a state budget that provides funding for the IDNR, INPC, and the ESPB and the drafting, passage, and signing into law of important pieces of legislation. In addition, the governor appoints key positions, such as the directors of agencies, including IDNR. It is vital to the successful protection of the state's natural resources that the governor and legislature recognize the value of these important state assets and their role in protecting them for future generations. These challenges and opportunities have been identified elsewhere in the Sustainable Vision and are included here to reinforce their importance.

Challenges and Opportunities

5.6 Challenge: Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ ESPB activities, including management of natural areas and land acquisition.

- 5.6.1 Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/IESPB, including a statewide land acquisition fund.
- 5.6.2 At a minimum, appropriate the amount of funds generated in special funds and allow these funds to be spent on the purposes identified.
- 5.6.3 As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR. This would professionalize the organization and ensure the state's valuable assets will be protected in perpetuity.

5.7 Providing IDNR the resources needed to increase volunteer activities for the stewardship and defense of natural areas.

- 5.7.1 Support an IDNR initiative to establish a statewide Master Stewards Program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.

- 5.7.2 Provide funding to hire volunteer coordinators at the regional offices to increase and organize volunteers for activities related to IDNR’s conservation programs.

Units of Local Government

Section 1 of the Illinois Constitution defines units of local government as “municipalities, townships, special districts, and units, designated as units of local government by law, which exercise limited governmental powers or powers in respect to limited governmental subjects, but does not include school districts” (20). General purpose governments include counties, municipalities, and townships. Special district governments typically provide a single service, such as fire protection, recreation, and natural resource protection. Illinois has 27 different types of special districts, which includes forest preserve and conservation districts (21).

Illinois has more units of local governments than any other state with a total of 6,835. The next highest states are Pennsylvania with 5,070, Texas at 4,700, and California with 4,607. Illinois also ranks first in the nation with the most municipalities, with 1,288 in the state. Illinois ranks third in the number of township governments with 1,433. Illinois also ranks first in the number of special district governments, with 3,068 (21).

This total of 6,835 local units of government makes it more difficult to develop a consistent and comprehensive strategy to protect and sustain natural areas, so attention must be devoted to those units of government that could play the largest role in meeting the goals of the Sustainable Vision.

The units of local government that meet the criteria for Category III stakeholders include municipalities, counties, and townships. As stated in Chapter 4, this group of stakeholders has the potential to affect natural resources or land use change through legislation, funding, regulations, zoning, ownership, or other external influence, and therefore could play a role in making these sites sustainable. This group does not typically have direct legal authority to identify, protect, manage, or defend natural resources, but has tremendous influence on land use change through their regulatory or zoning powers, funding authorities, or through other programs they administer.

County Government

Article VII, Section 1 of the Illinois Constitution also identifies county government as one type of “unit of local government” (20). County officers are granted those “duties, powers and

functions provided by law.” which are detailed in the Counties Code³. The Illinois Constitution defines all counties with a “chief executive officer elected by the electors of the county” to be a home rule unit of government, granting them the authority to “exercise any power and perform any function pertaining to its government and affairs including, but not limited to, the power to regulate for the protection of the public health, safety, morals and welfare; to license; to tax; and to incur debt” (20) (Article VII, Section 6a).

The Illinois Counties Code also provides for the establishment of home rule powers by counties through referenda (55 ILCS 5/2-5001 et. seq.). Since this provision was enacted, of the dozen or so referenda that have been considered, none have passed. Cook County remains the only home rule county in the state. In the absence of home rule authority, counties possess only the powers specifically granted to them by the legislature. Two of these include:

1. “To purchase and hold real estate for the preservation of forests, prairies and other natural areas and to maintain and regulate the use thereof.”
2. “To take all necessary measures to prevent forest fires and encourage the maintenance and planting of trees and the preservation of forests.”⁴

While we have come to recognize that the term “preventing forest fires” should be used to refer to “preventing wildfires,” and that “prescribed fire” is often a useful tool in managing forests, granting counties the authority to preserve forests and to buy natural areas for protection makes county governments potential key stakeholders in sustaining core natural areas.

A third authority granted to county governments that is important to sustaining natural areas is zoning, which is the most common land use regulation used by county and municipal government. Zoning regulations are adopted to control the development of property within the county or within the municipality’s area of jurisdiction (21). The Counties Code lists specific purposes for which zoning powers made be used (55 ILCS 5/5-12001). The protection of natural areas or ecological services is not included in these enumerated purposes. In the absence of specific enumeration of this purpose, counties must rely on the “general welfare” purpose. This is probably sufficient but provisions adopted to effect conservation purposes may be subject to challenge.

Zoning can be used to protect agricultural lands or sensitive natural resources. County government can also adopt a range of ordinances, including subdivision regulations (765 ILCS 205/0.01 et. seq.) and floodplain regulations (55 ILCS 5/5-40001 et. seq.), to guide development.

³ 55 ILCS 5/5

⁴ 55 ILCS 5/5-1005-8 and 11

These ordinances can encourage or require a host of best management practices for stormwater management, conservation design, or open space protection.

An excellent example of a county ordinance that requires the protection of sensitive natural resources when developing the land is the conservation design ordinance adopted by McHenry County. The ordinance's state purpose is "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" (22). McHenry County's ordinance includes specific criteria under which conservation design practices are required for a commercial or residential development. These include "high-quality natural areas, or wetlands, floodplains, remnant prairies, woodlands or specific soil types that are located on a property." When these resources are not present on a site, a developer may still voluntarily choose to use conservation design practices. This ordinance protects a landowners property rights, but also protects valuable natural resources, reduces flooding, and improves water quality. This ordinance can be found at www.co.mchenry.il.us/departments/planninganddevelopment/Documents/Ordinances/Conservation%20Design%20Addendum.pdf.

Municipal Government

The Illinois Constitution defines municipalities as "cities, villages and incorporated towns" (20)(Section 1). A municipality with a population over 25,000 is a home rule unit, and those with a lesser population are able to become a home rule unit with a vote by the electorate. As with county governments, municipal home rule units have the authority to "exercise any power and perform any function pertaining to its government and affairs including, but not limited to, the power to regulate for the protection of the public health, safety, morals and welfare; to license; to tax; and to incur debt" (20)(Section 6(a)). In the absence of home rule authority, municipalities possess only the powers specifically granted to them by the legislature.

Specific authorities of municipalities are found in the Illinois Municipal Code (23). Section 11-13 provides broad powers to municipalities:

"To the end that adequate light, pure air, and safety from fire and other dangers may be secured, that the taxable value of land and buildings throughout the municipality may be conserved, that congestion in the public streets may be lessened or avoided, that the hazards to persons and *damage to property resulting from the accumulation or runoff of storm or flood waters* (italics added) may be lessened or avoided, and that the public health, safety, comfort, morals, and welfare may otherwise be promoted, and to insure and facilitate the preservation of sites, areas, and structures of historical, architectural and

aesthetic importance; the corporate authorities in each municipality have the following powers.”

The powers enumerated in the municipal code include those to regulate land use, annex new land, own and operate wastewater treatment facilities, and operate their own park systems. The authorities of municipalities extend one and one-half miles beyond their corporate limits. These authorities provide opportunities for municipalities to protect core natural areas as well as provide buffers or linkages to these areas. As discussed in the County Government section, conservation design is one tool municipalities can use to protect natural areas and surface and ground waters. Conservation design best management practices can be applied to both commercial and residential development.

The State of Illinois has authorized municipalities and counties to adopt Local Land Resource Management Plans and ordinances to implement these plans, to “encourage municipalities and counties to protect the land, air, water, natural resources and environment of the State” (24). The goals of this act include actions to:

1. Preserve and maintain the productivity of agricultural lands.
2. Ensure that air and land resource quality meet or exceed legally established standards.
3. Conserve forest lands.
4. Conserve natural resources.
5. Conserve open spaces.
6. Ensure good quality and quantity of water resources.

A Local Land Resource Management Plan comprises “a map of existing and generalized proposed land use and a policy statement in the form of words, numbers, illustrations, or other symbols of communication adopted by the municipal and county governing bodies” (24)⁵. Municipalities are authorized to adopt ordinances to implement these plans.

This act authorized the Illinois Department of Commerce and Economic Opportunity to “make annual grants to counties and municipalities to develop, update, administer and implement Local Land Resource Management Plans” (24)⁶. Thus far, the legislature has not appropriated any funding for this planning process, although a municipality may develop and adopt such plans without funding from the state.

⁵ (50 ILCS 805/3/B)

⁶ (50 ILCS 805/8)

Township Government

Township governments are local units of government that were originally rural. They are a political and geographic subdivision of a county. Township governments have at least two authorities that provide them opportunities to protect and sustain natural areas – zoning authority and the authority to prepare and implement an open space plan.

In those counties that have not adopted a county zoning ordinance, townships may adopt a zoning ordinance to regulate land use within their area of jurisdiction. A township zoning ordinance also does not apply to land located within a municipality that has zoning ordinances or within one and one-half miles of a municipality that has adopted extra-territorial zoning. A township zoning ordinance must be approved by the voters of that township (25).

Townships may also adopt and implement an Open Space Plan (25). Open space is any parcel of land over 50 acres in size where the township may preserve or restrict development. These lands can be protected to: “(i) maintain or enhance the conservation of natural or scenic resources; (ii) protect natural streams or water supply; (iii) promote conservation of soils, wet lands, or shores; (iv) afford or enhance public outdoor recreation opportunities; (v) preserve flora and fauna, geological features, historic sites, or other areas of educational or scientific interest” (25). The plan must identify the funding required to acquire the land, as well as a timetable for completing the acquisitions.

Township governments also have the authority to defend the identified open space through their police powers: “The board may police its property and exercise police powers in respect thereto or in respect to the enforcement of any rule or regulation provided by the ordinances of the township and may employ and commission police officers and other qualified persons to enforce the same” (25).

Township governments may “undertake studies pertaining to the natural history, archaeology, history or conservation of natural resources of the township” (25) and dedicate open space parcels as an Illinois Nature Preserves, pursuant to the Illinois Natural Areas Preservation Act (25).

The following are challenges that affect local units of government, ones for which they can work directly to address.

Challenges and Opportunities
County Government, Municipalities and Township Governments

County, Municipality and Township Challenges and Opportunities

5.8 Challenge: Identifying the ways in which these units of government can protect and sustain natural areas.

- 5.8.1 Dedicate all INAI sites owned by units of local government as Nature Preserves or registered Land and Water Reserves.
- 5.8.2 Work with IDNR to manage any INAI sites owned by units of local government.
- 5.8.3 Work with IDNR to identify those lands each unit of local government owns that could play a role in making natural areas sustainable by serving as buffers or linkages to other natural areas.
- 5.8.4 Conduct comprehensive natural resources inventories of lands within the areas of jurisdiction of local units of government, including all sensitive natural resources, as well as their overall green infrastructure.
- 5.8.5 Revise existing local governments' comprehensive plans to include language supportive of green infrastructure, conducting natural resources inventories, creating overlay districts with special development practices such as conservation design to protect sensitive resources, etc.
- 5.8.6 Review local government ordinances and revise as needed to encourage or require best management practices for stormwater management, conservation design, and wetland protection.
- 5.8.7 Prepare a green infrastructure map within the areas of jurisdiction of each unit of local government.
- 5.8.8 Prepare and adopting Local Land Resource Management Plans pursuant to the Local Land Resource Management Planning Act by municipalities and counties.
- 5.8.9 Prepare and adopting Open Space Plans by township governments.

5.8 Providing county, municipal, and township governments' with the tools and funding needed to protect and sustain natural areas.

- 5.8.10 Support county, municipal, and township governments' ability to protect and sustain natural areas by providing them with additional tools and funding.
- 5.8.11 Provide funding for the implementation of the Local Land Resource Management Planning Act.
- 5.8.12 Adopt legislation to extend protection to wetlands, including isolated wetlands, allowing units of local government to implement such regulatory programs.
- 5.8.13 Amend the Illinois Counties Code, Municipal Code, and Township Code to specify the protection, preservation and restoration of natural areas and the preservation and enhancement of ecological functions as a purpose of the their respective zoning and subdivision ordinances.

Illinois Soil and Water Conservation Districts

According to the Piatt County Soil and Water Conservation District, “a Soil and Water Conservation District (SWCD) is a governmental body created by state law for the express purpose of promoting the protection and conservation of the county’s and the state's soil, water, and related natural resources” (26). SWCDs were created as an outgrowth of the destruction of millions of acres of land in the 1930s as a result of drought and soil erosion and the formation of the Soil Conservation Service within the U.S. Department of Agriculture (USDA) (SCS’ name was changed in 1994 to Natural Resources Conservation Service).

The USDA released a model law for each state to adopt to create local agencies to work with the Natural Resources Conservation Service (NRCS) in implementing a wide range of programs to reduce soil erosion and protect natural resources. The Illinois General Assembly adopted the Soil and Water Conservation Districts Law on July 9, 1937. Between 1938, with the formation of the first SWCD in St. Clair County, and 1959, with the formation of the last one in Sangamon County, a total of 98 SWCDs were created in Illinois (26).

The Piatt County SWCD web site explains that “Although an SWCD is a governmental body, it is not a branch of federal, state, or county government. Each SWCD is a local governmental entity and is very similar to a school district.” Classified as a local unit of government, SWCDs

are not and do not have not for profit status. Each SWCD is governed by a five-member board of directors. SWCD directors are elected by owners and occupiers of land in the district. The board meets regularly to formulate and administer a program of work that is tailored specifically to the conservation and protection of the district's natural resources.” SWCDs are funded through the IDOA. They do not have independent taxing authority. (26)

The authority granted SWCDs to conserve natural resources, wildlife, and forests lends itself to the protection and stewardship of INAI sites. The act goes on to grant specific powers relating to the INAI: (27)(Sec. 22.04, 22.07)

Sec. 22.07b. Natural Area Guardians. The governing body of any soil and water conservation district may designate Natural Area Guardians for the purpose of managing natural areas on the Illinois Natural Areas Inventory and natural areas of regional or local significance.... The powers of the Natural Area Guardians...include the following:

(1) Locating and inventorying natural areas of regional or local significance located in the district.

(2) Managing or restoring natural areas in the district by itself or in cooperation with other organizations.

(3) Assisting landowners in managing natural areas at the request or with the acquiescence of the landowner.

This act sets forth not only the general power to acquire land for conservation, but also gives authority for the assignment of special custodians of INAI sites. Through this legal allowance, great potential exists for SWCDs to act as major players in the statewide identification, protection, and stewardship of INAI sites. The following is a challenge that affects Illinois Soil and Water Conservation Districts or one for which they can work directly to address.

Challenges and Opportunities Illinois Soil and Water Conservation Districts

5.9 Challenge: Identifying additional ways in which SWCDs can assist in protecting and sustaining natural areas.

5.9.1 Dedicate all INAI sites owned by SWCDs as Illinois Nature Preserves or register them as Land & Water Reserves.

5.9.2 Work with IDNR to manage any INAI sites owned by SWCDs.

- 5.9.3 Work with IDNR to identify SWCD programs that have goals complementary to the goals of the Sustainable Vision and work with private landowners to encourage them to protect and sustain natural areas.
- 5.9.4 Assist with the Illinois Natural Areas Inventory process, where possible, by educating landowners on the importance of this effort and encouraging their participation.

Category IV Stakeholders Illinois Educational Institutions

As discussed in Chapter 4, this group of stakeholders meets two of the established criteria – they may own one or more INAI sites and have influence over the land they own, which provides opportunities to assist in creating sustainable natural areas. Two of the stakeholders that fall into this category are school districts – grade schools, high schools, colleges and universities.

Educational institutions have a stake in preserving natural areas that extend beyond that of other stakeholders. Core natural areas and their buffers and corridors can provide educational and research opportunities for students at all levels.

School Districts - Grade Schools and High Schools

There are 879 school districts in Illinois (28). Within each school district are multiple elementary, middle, junior high, and high schools. A school might own a core natural area or have lands that are suitable for buffers or corridors. They can also adopt environmental education programs and incorporate natural resources into their curricula. While the opportunities specific schools have in directly protecting and sustainable natural areas may be limited by their geography, they can all play a significant role in influencing the next generation of students to value natural resources.

Colleges/Universities

There are over 100 colleges and universities within Illinois (29), public and private. The Illinois Board of Higher Education (IBHE) is responsible for planning and coordinating the state's system of higher education, which includes the review of "all new units of instruction, research, and public service, as well as new academic administrative units, for public colleges and universities in the state. The board also undertakes periodic review of all existing units of instruction, research, and public service to advise the appropriate governing board whether such programs continue to be educationally and economically justified" (30).

There are at least two ways in which colleges and universities can play a role in protecting and sustaining natural areas. A college or university might own core natural areas or have significant land holdings that may serve as buffers or corridors linking other natural areas. As an example, the University of Illinois at Urbana-Champaign owns the Allerton Park and Retreat Center near Monticello. This site encompasses 1,500 acres that include formal gardens, hiking trails, a century-old, Georgian-style mansion that is on the National Register of Historic Places, and extensive natural areas including the Sangamon River, floodplains, upland forests, and a 30-acre demonstration prairie (31).

Colleges, universities, and the IHBE can also play an important role in establishing and maintaining educational programs for natural resource professionals that include degrees in ecology, botany, and zoology, all with an emphasis on Illinois' ecosystems along with training in applied field work and research. Without these programs, Illinois natural resource agencies, land trusts, and NGOs do not have a qualified pool from which to hire natural resource professionals.

Community Colleges

Currently, there are 48 community colleges (CCs) across Illinois. Community College Districts are composed of parts of one or more counties (most are multi-county). Their combined enrollment is almost a million students (60% of all college students).

CCs are specialists in Workforce Development. They can grant two-year degrees: Associates Degrees (A.A., A.S.), Associates in Fine Arts (AFA), Associates in Applied Science (A.A.S., usually a technical program degree). They can also grant certificates for completion of a series of courses. Using the certificate process, CCs can train natural resource technicians, which would greatly enhance the stewardship capabilities for natural resources and provide new job opportunities. Entry level for natural resource professionals in many agencies is a master's degree, which is more than is needed to carry out most land management activities, such as cutting brush.

CCs also have a community service mission that colleges and universities do not, primarily because CCs are funded, at least in part, with county tax revenues. As regional institutions with a community service mandate, engaging CCs to develop a range of natural resources training programs would be a valuable and logical role for them to play.

CCs have the resources to develop and conduct natural resources training programs. CCs all have biology and chemistry faculty because there are science general education courses required of all college students. Most CCs have some type of science club. In addition, CCs also deliver

community education or “enrichment” courses, which can focus on anything from conversational foreign language to local natural areas. This would allow CCs to be in a position to recruit and organize natural areas volunteers.

The following is a challenge that affects Illinois’ educational institutions, one for which they can work directly to address.

Challenges and Opportunities Illinois Educational Institutions

5.10 Challenge: Identifying ways in which elementary, middle, junior high, and high schools, and colleges and universities can assist in protecting and sustaining natural areas.

5.10.1 Dedicate all INAI sites owned by educational institutions as an Illinois Nature Preserves or register them as Land and Water Reserves.

5.10.2 Work with IDNR to manage any INAI sites owned by educational institutions.

5.10.3 Work with IDNR to identify lands educational institutions own that could serve as buffers or corridors.

5.10.4 Establish and maintain strong natural resources degree programs at colleges and universities. These degree programs should include an emphasis on Illinois’ ecosystems along with applied fieldwork and research.

5.10.5 Establish and create natural resource two-year degree and certification programs at community colleges to strengthen the stewardship capabilities of natural resource agencies and organizations.

5.10.6 Establish strong environmental education programs at elementary, middle, junior, and high schools, which can include on-site prairies, wetlands, or other Illinois native vegetation to incorporate into school programs.

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The Illinois Sustainable Natural Areas Vision

Chapter 6

Summary and Direction for the Future

Sustainable Vision Summary

While the term “sustainability” was not widely used when IDNR’s Natural Areas Plan was completed in 1980, the concepts embodied in sustainability today were identified as a primary goal:

...to preserve and protect examples of the state’s diverse natural features and species so that present and future generations have the opportunity to observe, study, appreciate, and benefit from the natural heritage from which Illinois developed. (p. 5)

At that time, the primary ways in which core natural areas were to be preserved and protected for future generations were to acquire them through fee simple acquisition or through a conservation easement or enroll them in an Illinois Nature Preserves Commission (INPC) program, and then manage the sites to maintain their quality. Given the many changes that have occurred in the past 30 years, however, it has become clear that these actions alone are not sufficient to ensure the long-term viability of many of these core natural areas. As a result, the purpose of the Sustainable Vision is to explore how core natural areas can be made sustainable.

To achieve this broader purpose, four specific goals were identified in Chapter 1:

1. Identify an implementable framework for creating a sustainable, connected system of natural areas. This goal has a short-term and long-term perspective. In the short term, efforts will be made to protect core natural areas as they exist today, with all their current ecological functions and biodiversity. In the long-term, however, efforts will be made to create larger, resilient, connected systems that may adapt to changing environmental conditions, even if that means a change in ecological function and shifts in biodiversity.
2. Identify all stakeholders and their roles in this effort.
3. Consider the many challenges that exist in protecting natural areas and creating sustainability and identify the opportunities to address these challenges.
4. In a separate *Resourcing the Sustainable Natural Areas Vision*, explore past funding capacity for acquiring natural areas and identify the future funding needed to protect and sustain natural areas.

As discussed in Chapter 3, there are numerous serious ecological and social-cultural threats facing natural areas today. Each of these threats needs to be addressed if natural areas are to be sustained into the next century. Six of the ecological threats facing natural areas discussed include:

- Climate change
- Modifications to hydrological conditions
- Changes to fire regimes
- Landscape/habitat fragmentation
- Invasive and exotic species
- Negative human interactions with the landscape
- Any other forms of degradation

Six cultural-social threats to the sustainability of natural areas were discussed:

- Retirement of a generation of natural resources professionals and the resulting “brain drain”
- Impacts of the global financial crisis
- Working with a flawed natural resources conservation business model
- The need to bolster work within the political process and create a united voice within the conservation community
- The need to minimize or address increased ideological polarization
- The need to enhance constituency engagement and re-connect people to the land

In order to begin addressing these daunting threats, tools or processes were also discussed in Chapter 3 that can be employed in meeting the goals of the Sustainable Vision. Some of these tools, such as creating natural areas complexes and networks using buffer zones and corridors, stewardship, and restoration, are well known and widely used by natural resource professionals. Natural resources monitoring has also been used but gaining support for this important activity is often difficult. The Sustainable Vision has proposed a change in how monitoring is perceived. A comprehensive natural resources auditing process needs to be employed to document the status of the state’s valuable natural resource assets. This more in-depth auditing of natural resources will document changes that are occurring that may threaten core natural areas. Where problems or declines are identified, steps can be taken through the adaptive management process to prevent damage or losses.

Other tools or processes are less commonly used or are controversial. Landowner contact, for example, is not always viewed as strategy to protect and sustain natural areas, yet without both knowing who owns each core natural area and working to establish a relationship with them, it will be difficult to sustain them, particularly if they are in private ownership. The Illinois Nature Preserves Commission, local land trusts, or a

combination of the two can implement a successful landowner contact program. Local land trusts present some advantages for landowner contact in that they may already know the landowner, and landowners are often more receptive to being approached by a local organization.

Another important approach is the use of preserve design tools. These tools can be used to identify the potential buffers and corridors required to create natural area complexes and networks needed to establish a sustainable system of natural areas across the state. Each core natural area needs to be evaluated to determine the best approach to achieving long-term sustainability. This will require consideration of the natural quality of each natural community in each core natural area, as well as documenting adjoining land uses. The goal is to increase the effective area and provision of habitat for species using the core natural areas, as well as provide pathways for movement of plants and animals in response to a changing environment by buffering and linking core natural areas with lands providing more compatible land uses. This analysis will require extensive expertise by a wide range of specialists, particularly since new conservation design principles are likely to emerge out of the relatively young science of Conservation Biology.

A final strategy explored in Chapter 3 is assisted migration. This is the most controversial of the strategies explored. Assisted migration involves the relocation of plant or animal species in response to major changes within their normal ranges of occurrence – for example, in response to the adverse impacts of climate change, considering the often-fragmented landscape that prevents movement via natural corridors. Much research is needed to understand when assisted migration should be used and what the benefits and negative consequences might be.

In order to meet the goals of the Sustainable Vision, it is imperative that a wide range of stakeholders be engaged – some of which are not typical allies in this process. In Chapter 4, four categories of stakeholders are defined and identified. Stakeholders are those agencies, organizations, or individuals who meet one or more of the following criteria.

- As a group, they own one or more existing INAI sites (example: a few park districts own an INAI site so the entire group of park districts are considered as a whole).
- They own additional lands that could aid in creating sustainable natural areas.
- They play a role in any step in the natural resources Identification, Protection, Stewardship, and Defense or adaptive management paradigms.
- They have the potential to affect natural resources or land use change through legislation, funding, regulations, zoning, ownership, or other external influences, and therefore could play a role in making natural areas more sustainable.

Category I Stakeholders are those that own or could own an interest in core natural areas, as well as other lands that could play an important role in this effort, and have direct legal authorities to identify, protect, manage, or defend natural resources. The following stakeholders meet all four criteria identified:

- State Agencies – Illinois Department of Natural Resources (IDNR), Illinois Nature Preserves Commission (INPC), and the Illinois Endangered Species Protection Board (IESPB)
- Forest Preserve Districts/Conservation Districts (FPD/CD)
- Federal Agencies (USFWS, USACE, USFS)

Category II Stakeholders meet three of the four criteria – owning or holding an interest in one or more core natural areas and other lands that could play an important role in this effort, and affect land use through their land ownership. They include:

- State agencies – Illinois Historic Preservation Agency (IHPA)
- Park Districts
- NGOs (The Nature Conservancy, Illinois Audubon Society, land trusts)
- Private Landowners (individuals and corporations)

Category III Stakeholders have the potential to affect natural resources or land use change through legislation, funding, regulations, zoning, ownership, or other external influences, and therefore could play a role in making natural areas more sustainable. This group does not typically have direct legal authority to identify, protect, manage, or defend natural resources, but has tremendous influence on land use change through its regulatory or zoning powers, funding authorities, or through other programs they administer. This group also meets a second of the four criteria identified in that some individuals own or hold some legal interest in one or more core natural areas. This group includes:

- Governor/Legislature
- Municipalities
- County Governments
- Township Governments
- Soil and Water Conservation Districts (SWCD)
- Federal Agencies (NRCS)

Lastly, Category IV Stakeholders meet two of the established criteria – they may own or hold an interest in at least one core natural area and have influence over land which provides opportunities to assist in creating sustainable natural area complexes or networks. This group includes:

- School Districts – Grade Schools and High Schools
- Colleges/Universities
- Community Colleges

A wide range of challenges to meeting the goals of the Sustainable Vision were identified through meetings with stakeholders, solicitation of input via email messages, and from attendees of the Natural Areas Summit in March 2010. These challenges, addressed in Chapters 4 and 5, are aligned with each stakeholder group that has the authorities or capacities to meet them. Challenges represent conditions or forces that may prevent the goals of the Sustainable Vision from being met; opportunities allow these challenges to be overcome. Challenges and opportunities were identified for all stakeholders in all sectors and at all levels – beginning with the governor and legislature.

All stakeholders have a role to play. There are opportunities to dedicate core natural areas as Illinois Nature Preserves, promulgate legislation to facilitate natural areas protection, identification of the funds needed to acquire, manage, and sustain natural areas, and more. All challenges and opportunities have also been assembled in one section of the beginning of this document, as well as being listed following the discussion of each stakeholder group in Chapters 4 and 5.

Conservation of Connectivity

Through the process of meeting with stakeholders, exploring the concepts and requirements associated with creating sustainable networks of natural areas in developing the Sustainable Natural Areas Vision (SNAV), a central theme has emerged – the need for a new planning and protection paradigm – the conservation of connectivity, where we work to connect:

- Natural areas with their surrounding landscapes.
- Conservation planning processes being done by NGOs and federal, state, and local agencies.
- Conservation organizations and agencies to become an energized and effective force in sustaining natural areas.
- People with the land.

This emphasis on connectivity is vital to the future of natural areas.

The new conservation of connectivity paradigm will require us to change how we are protecting natural areas – from an individual site protection approach to one that connects core natural areas to the landscape around them, enlarging them to sustain greater biodiversity, and resilient enough to adapt to climate change and other ecological and cultural threats.

The connectivity paradigm also requires everyone engaged in conservation to coordinate their activities to provide greater focus and unanimity – to strategize, plan, and act collaboratively to create a common voice on conservation issues. Connecting or, more

accurately, re-connecting people to the land is also vital to creating and protecting natural area networks, through formal and informal education programs and fieldtrips. Connectivity is the future of conservation – without it, we will not be successful. The following is a blueprint for future action – all actions are vital to creating a sustainable system of natural areas across the state. Connectivity is central to each of these recommended actions.

Recommended Future Actions to Achieve Connectivity

Landscape Connections – connecting core natural areas with the surrounding landscapes.

1. *Use Preserve Design Criteria to Identify Sustainability Strategies*

Conduct a statewide assessment of all core natural areas to determine how to protect and sustain them. This will require knowledge of the specific community types and quality associated with each site, adjoining land uses, and the availability of suitable land in close proximity for buffers and corridors. Basic guidelines for landscape connections need to be identified and revised as new information on genetics, connectivity requirements, plant disease transmission, and other threats are known. Knowledge of existing programs affecting land use and the engagement of a wide array of stakeholders are also required. The Illinois Natural History Survey, in collaboration with IDNR, INPC, IESPB, environmental planners, and other key stakeholders, could coordinate this work.

2. *Develop an Initiative to Build an Effective Natural Areas Program within IDNR/INPC*

Using the information in the *Resourcing the Sustainable Natural Areas Vision* document, develop a strategy to expand the role of IDNR and strengthen the role of the INPC in protecting and sustaining natural areas. This will require hiring additional staff, increasing funding for stewardship and defense, expanding volunteer programs, and the engaging private sector land managers. Support from the governor, legislature, and NGOs will be required.

3. *Develop Comprehensive Natural Resources Auditing Programs*

In order to evaluate the success of protecting and sustaining these important state assets, it is vital that a natural resources auditing program be established. This needs to include comprehensive auditing of each core natural area and the establishment of buffers and corridors to ensure that the preserve design strategies are working well. Where problems are identified, adjustments can be made before they become too severe to resolve. Another important program to maintain and expand is the CTAP, which audits the status of the state's natural resource assets. IDNR, INPC, IESPB,

and other natural resources agencies can work together to create this natural resources auditing process, with the Illinois Natural History Survey providing its expertise.

4. *Identify Key Ecological Research Needs*

The ecological problems facing natural areas were discussed in Chapter 3. These include challenges of changes to natural fire regimes and hydrologic conditions, the influx of invasive and exotic species, and the most daunting of all, the threats posed by climate change. Other potential threats that warrant exploration include the effects of artificial lighting on natural communities and the potential impacts of plant diseases and viruses. There is a need for a new landscape science where guidance for connecting natural areas to the surrounding landscapes is explored. Many other threats exist and new ones will arise.

In order to identify and address these threats, funding is required to prioritize the issues and to conduct the required research or assessments. The Illinois Natural History Survey and Southern Illinois University's Cooperative Wildlife Research Lab are well suited to address these research needs.

5. *Establish a Sustainable Communities Institute to Identify Key Cultural-Social Needs for Creating Sustainable Networks of Natural Areas*

Two of the threats to the state's natural resources are incompatible urban land uses and the conflict that often occurs among natural resource protection and economic development, housing, or transportation needs. It is important to understand these problems, to explore solutions, and to educate local officials and developers in implementing more sustainable development practices that are compatible with the goals of the Sustainable Vision. Establishing a Sustainable Communities Institute can work to resolve these problems. This institute needs to have a statewide focus.

The goal of the Sustainable Communities Institute would be to provide local governments and developers with the tools needed to create economically, environmentally, and socially sustainable communities, as well as to identify other cultural-social threats to protecting and sustaining natural areas. Technical assistance can be delivered to local governments using a program created by Chicago Wilderness, the Sustainable Watershed Action Team. This effort is consistent with the Green Cities Campaign identified in the IDNR Wildlife Action Plan. The institute could function as an independent NGO or be affiliated with a highly credible organization, such as UIUC's Institute of Natural Resources Sustainability or Department of Urban and Regional Planning.

Connecting Planning Efforts across Organizations and Agencies

6. *Develop a Sustainable Natural Areas Legislative Agenda*

Create a process to review the legislative opportunities identified in the Sustainable Vision and develop the strategies needed to see them adopted. This will require support from the governor, legislature, IDNR, FPD/CDs, and a wide array of other stakeholders.

7. *Evaluation and Sharing of the INAI*

Complete a thorough assessment of the completed Illinois Natural Areas Inventory Update. This includes the statewide assessment for new natural areas that qualify for the inventory, as well as the reassessment and remapping of existing Category I sites, both to be completed in 2011. The update has identified many more Potential Natural Areas (PNA's) than can possibly be visited over its duration, but their locations have been recorded and aerial surveillance continues to suggest they may qualify for the INAI. Identification of landowners of many PNAs has been a barrier to visiting all PNAs. The exclusive use of unlisted cell phones, caller screening, the proliferation of junk mail, and an increasing trend toward absentee landownership has made landowner contact a more difficult process than it was in the original inventory. In order to contain the cost of the re-evaluation of the original category I INAI natural areas, only one example of each A or B natural community was re-graded for comparison with the original inventory.

To begin identifying strategies to protect and sustain these sites, it is vital to evaluate the ownership status of each core natural area, the geographic distribution of these sites across the state, and the acreage, location, and natural quality of specific natural community types. This work could most efficiently be done by the Illinois Natural History Survey by coordinating the work with the Critical Trends Assessment Project (CTAP) and working with environmental planners, in collaboration with IDNR, Conservation and Forest Preserve Districts, INPC, and IESPB.

Upon completion of the INAI Update and the evaluation of the results, this information needs to be shared among all stakeholders. In order to be successful in creating the sustainable networks of natural areas, it is vital that stakeholders know the locations of core natural areas, as well as the linkages and buffers needed to create the connections.

8. *Establish a Gubernatorial Land and Water Resources Cabinet*

A Land and Water Resources Cabinet, established by the Governor, would serve as a forum for agency directors to identify common goals and resolve conflicts around

land use issues, including those related to protecting and sustaining natural areas. Agencies that would serve on this cabinet could include, IDNR, Illinois Department of Transportation, Illinois Department of Commerce and Economic Opportunity, Illinois Historic Preservation Agency, Illinois Department of Agriculture, Illinois Environmental Protection Agency, Illinois Toll Highway Authority, and the Capital Development Board. An example of a common interest among many agencies could be biological carbon sequestration on public lands, including highway corridors. Other examples could include ensuring the production of high-quality, local food for Illinois residents, the provision of outdoor recreation opportunities, protection of other natural resources assets, and improving the quality of life of all Illinois citizens.

Members of this cabinet could meet to identify long-range goals of their agencies related to land use, as well as programs that could conflict with the goals of creating sustainable natural areas across the state. Members would be made aware of the economic and quality-of-life values of natural areas and their importance to a sustainable future. Strategies for achieving the goals of the Sustainable Vision, while still meeting the goals of their agencies would be a priority of this cabinet.

Connecting Conservation Professionals and Volunteers

9. Develop/enhance Strategic Partnerships, Including a Network of Nontraditional Allies

Successful partnerships among stakeholders are vital for the implementation of the opportunities identified in the Sustainable Vision. Such partnerships already exist, such as Chicago Wilderness in northeastern Illinois, the Conservation 2000 partnerships, which are established on a watershed basis, and the newly emerging Conservation Opportunity Areas forming out of the IDNR Wildlife Action Plan. These partnerships can be strengthened and expanded to include nontraditional partners that influence land use in some way. New partnerships are also needed in portions of the state where none now exist. Such partnerships should also include nontraditional allies. All of these partnerships can establish common agendas and coordinate their efforts to protect and sustain natural areas.

10. Hold an Annual Workshop for Conservation Planners

Convene an annual workshop to bring together conservation and environmental planners, ecologists, researchers, and others involved in the effort to create sustainable networks of natural areas. These workshops would provide the forum for professionals to share successes, learn from the efforts of others, and provide the energy and momentum that is important to meeting the daunting challenge of meeting the goal of creating the sustainable networks of natural areas. A successful role model for these workshops is the Vital Lands

Summits sponsored by the Vital Lands Illinois program of the Grand Victoria Foundation. These summits have brought together and energized the land trust community.

Reconnecting People with the Land

11. Establish a Comprehensive Landowner Contact Initiative

Once the ownership status is known for each core natural area, landowners can be contacted to inform them of the uniqueness of their natural area, lead them on a tour, and discuss future management needs. This is particularly important for privately held natural areas. Landowners can be encouraged to dedicate these areas as Illinois Nature Preserves or register them as Land and Water Reserves. Management strategies can also be discussed with landowners.

A landowner contact program can be coordinated among the INPC and local land trusts, with the Prairie State Conservation Coalition serving as a coordinator of the land trusts. The INPC and the land trusts can work together to develop strategies to protect and sustain core natural areas. The INPC brings expertise in landowner contact and knowledge of the many ways in which these sites can be protected, and land trusts bring knowledge of the local culture and ecological conditions. Many times, landowners respond more favorably to being contacted from neighbors rather than a state agency.

12. Establish New and Support Existing Recreation and Education Programs

Richard Louv's book, *Last Child in the Woods*, sparked a national discussion that resulted in the 2009 federal No Child Left Inside Act. This act could provide:

- Funding to train teachers to deliver high quality Environmental Education and utilize the local environment as an extension of the classroom.
- Incentives for states to develop State Environmental Literacy Plans to insure that every student is prepared to understand the environmental challenges of the future.
- Encouragement for teachers, administrators, and school systems to make time and resources available for environmental education for all students.

Louv's concern with the disconnect between children and nature has led to a wide range of federal, state, and not-for-profit outreach programs, in organizations such as the U.S. Fish and Wildlife Service, IDNR, and Chicago Wilderness. These programs do not stop at environmental education; many promote the understanding that children and nature go together, and that the absence of that connection is damaging to both. There are specific steps that can be taken to address the need to reconnect children (and adults) with nature. Among them are:

- Fully funding the OSLAD and LAWCON grant programs that provide funding to local governments such as park districts for a wide range of recreational opportunities.
- Fully funding IDNR's outdoor education and recreation programs such as urban fishing, ENTICE environmental education workshops, naturalist interpreters at state parks, and more.
- Supporting not-for-profit programs, such as Chicago Wilderness' Leave No Child Inside initiative.

Immediate Actions to Initiate

Planning for each of these 12 initiatives should be undertaken immediately in order that they are ready for implementation at the first opportunity. Those needing extensive funding may require waiting until the economy improves, but developing the plan now will enable action to be taken more quickly in the future. Several of the initiatives could be implemented immediately, such as the formation of the Land and Water Resources Cabinet by the Governor, the development of the legislative agenda, and the building and strengthening of partnerships.

Several of these initiatives require attention as soon as possible in order that other initiatives can be implemented. The thorough assessment of the INAI once it is completed is one and the development of a site-by-site strategy for creating sustainable natural areas using preserve design criteria is a second. Expanding and strengthening the roles of IDNR, INPC, and the IESPB will be required to accomplish these enormous tasks. An assessment of the many other opportunities identified in the Sustainable Vision should also be undertaken to develop a strategy for implementing them as well.

Citing an inscription from a church in Sussex, England from 1730 is an appropriate way of bringing the Sustainable Natural Areas Vision to a close: A vision without a task is but a dream; a task without vision is drudgery; a vision with a task is the hope of the world. This "vision," with its accompanying tasks or opportunities, will provide the hope needed for the future of Illinois' natural areas. If not, as George Fell said at the time of the first Illinois Natural Areas Inventory over 30 years ago: *"those that follow will no longer have the chance. They will only be able to care for what we leave them."* And, with climate change, invasive species, urban development, and the many other threats that exist, there may be precious few natural areas remaining in decades to come. The time to act is now!

The Illinois Sustainable Natural Areas Vision

Appendix I – Acronyms Alphabetical

Acronym	Name
C2000	Conservation 2000
CAFO	Confined Animal Feeding Operation
CD	Conservation District
CERP	Comprehensive Environmental Review Program
CERP	Comprehensive Environmental Review Program
CMAP	Chicago Metropolitan Agency for Planning
CMS	Central Management Services
COA	Conservation Opportunity Area
CoD	Corps of Discovery
CPO	Conservation Police Officer
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
CTAP	Critical Trends Assessment Program
CWCP	Comprehensive Wildlife Conservation Plan & Strategy
DHB	District Heritage Biologist
EQIP	Environmental Quality Incentives Program
FPD	Forest Preserve District
GI	Green Infrastructure
GIS	Geographic Information Systems
GIV	Green Infrastructure Vision
HFRP	Healthy Forest Reserve Program
IAPD	Illinois Association of Park Districts
IAS	Illinois Audubon Society
IBHE	Illinois Board of Higher Education
IDNR	Illinois Department of Natural Resources
IDOA	Illinois Department of Agriculture
IDOA	Illinois Department of Agriculture
IDOC	Illinois Department of Conservation
IEPA	Illinois Environmental Protection Agency

IESPA	Illinois Endangered Species Protection Act
IESPB	Illinois Endangered Species Protection Board
IHPA	Illinois Historic Preservation Agency
INAI	Illinois Natural Areas Inventory
INAPA	Illinois Natural Areas Preservation Act
INHS	Illinois Natural History Survey
INPC	Illinois Nature Preserves Commission
IPSD	Identification, Protection, Stewardship, Defense
IWAP	Illinois Wildlife Action Plan
L&WR	Land & Water Reserve
LAUP	Land Use Allocation Plan
LTA	Land Trust Alliance
NAAF	Natural Areas Acquisition Fund
NAEC	Natural Areas Evaluation Committee
NAPS	Natural Areas Preservation Specialist
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NGO	Non-Governmental Organizations
NHL	Natural Heritage Landmark
NIPC	Northeastern Illinois Planning Commission
NIPF	Non-industrial Private Forest
NPS	National Park Service
NRCS	Natural Resources Conservation Service
OSLAD	Open Space Lands Acquisition & Development
PDCA	Plan-Do-Check-Act
RNA	Research Natural Area
SAFE	State Acres For Wildlife Enhancement
SCS	Soil Conservation Service
SMP	Shoreline Management Plan
SPERI	Strategic Plan for the Ecological Resources of Illinois
Sustainable Vision	Illinois Natural Areas Sustainable Vision
SWCD	Soil & Water Conservation District
SWGPP	State Wildlife Grant Program
TNC	The Nature Conservancy
UIUC	University of Illinois at Urbana-Champaign
UMRR-EMP	Upper Mississippi River Restoration Environmental Management

	Program
UMRS-EMP	Upper Mississippi River System Environmental Management Program
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish & Wildlife Service
WCRP	Wildlife Conservation & Restoration Program
WHIP	Wildlife Habitat Incentive Program
WRDA	Water Resources Development Act
WREP	Wetlands Reserve Enhancement Program
WRP	Wetland Reserve Program

Appendix II – Natural Areas Summit Attendees, March 9, 2010

<u>Name</u>	<u>Affiliation</u>
Adams, Kent	National Wild Turkey Federation
Anderson, Brian	INHS
Anderson, Jim	Lake County Forest Preserve District
Beck, Judy	Illinois Association of Park Districts
Byers, Steve	INPC
Cizar, Elizabeth	Grand Victoria Foundation
Clay, Tom	Ill Audubon Society
Collins, Glynnis	Prairie Rivers Network
Drucker, Harry	TNC
Elam, Jesse	CMAP
Flanagan, Molly	Joyce Foundation
Fraker, Guy	Parklands Foundation
Frazier, Jenny	American Land Conservancy
Girard, Tanner	
Glosser, Deanna	EPSI/INAI Update
Harty, Fran	PSCC
Hawkins, Andrew	Will Co FPD
Heidorn, Randy	INPC
Herkert, Jim	IDNR
Jeffords, Mike	INHS
Krasinski, Jolie	Clean Energy Foundation
Kuehl, Aaron	Pheasants Forever & Quail Forever
LaGessee, Vern	PSCC
Lobbess, Dan	The Conservation Foundation
Mankowski, Ann	IESPB
Masters, Linda	Openlands
McDonald, Brook	The Conservation Foundation
McFall, Don	IDNR
Megquier, Bob	Openlands
Milone, Sarah	Environmental Planning Solutions, Inc.
Neidy, Erik	Dupage County FPD
Nyboer, Randy	INAI Update
Paulson, Jerry	NLI
Ringhausen, Alley	Great Rivers Land Trust
Robinson, Andy	ICL

Rogner, John	IDNR
Royce, Elisa	American Land Conservancy
Russell, Diane	ICL
Schenck, Eric	Ducks Unlimited
Tecic, Diane	IDNR
Treacy, Terri	Illinois Audubon Society
Walk, Jeff	TNC
Weilbacher, Ed	Southwestern Illinois RC&D
Wilker, John	IDNR
Williamson, Nancy	IDNR
Winter, Nancy	TNC
Witter, Karen	Illinois State Museum

Appendix III – Sustainable Natural Areas Vision Definitions

It is important to define key terms used throughout ISNAV because there are multiple definitions for all of these terms. Some of these terms have legal definitions that apply to a specific situation of type of natural area. For example, the term “buffer” has a legal definition as it applies to the Illinois Nature Preserves Commission, and the terms “restoration” and “reconstruction” are defined by IDNR as they related to INAI sites. A definition is needed that applies to a broader group of natural areas, although it is important to acknowledge that many definitions can be found for all of these terms.

The following definitions describe how these terms are used throughout the Sustainable Vision, though any modifiers may further limit their meanings. For example “buffer” used by itself has the meaning below, but dedicated nature preserve buffer refers to any lands dedicated under the Illinois Natural Areas Preservation Act as buffer. You may assume that all terms relate to those used in Illinois unless another state is referenced, e.g., Missouri nature preserves.

Buffer – An area of land that serves to protect or facilitate the management or appropriate use of a natural area, passively or actively:

Passive buffers separate a natural area from a nearby incompatible land use, providing a barrier for potentially damaging activities or provides access to a natural area for stewardship.

Active buffers provide habitat for general plant and animal species or have the potential to qualify as an INAI site, with appropriate management.

Core Natural Area – A core natural area is defined as a site identified and approved by IDNR as any category of natural area for the Illinois Natural Areas Inventory. These sites have specific boundaries and therefore can be mapped to begin the process of identifying buffers, corridors or other linkages.

Ecological Restoration – The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. The SER International Primer on Ecological Restoration; Society for Ecological Restoration International; Science & Policy Working Group (Version 2, October, 2004) (1); http://www.ser.org/content/ecological_restoration_primer.asp#3

Natural Resources Auditing – A systematic process of objectively obtaining and evaluating empirical evidence regarding the ecological status of natural resources to determine if there is a high degree of correspondence between the current ecological status and the previous goals established for these resources.

"Nature Preserve" – A natural area, and land necessary for its protection, any estate, interest or right in which has been dedicated under the Illinois Natural Areas Preservation Act to be

maintained as nearly as possible in its natural condition and to be used in a manner and under limitations consistent with its continued preservation, without impairment, disturbance or artificial development, for the public purposes of present and future scientific research, education, esthetic enjoyment and providing habitat for plant and animal species and communities and other natural objects. (525 ILCS 30/3.11) (from Ch. 105, par. 703.11)(Source: P.A. 82-445.)

Reconstruction – The application of approved management techniques that includes but are not limited to native species establishment, reconstruction of soils, topography, and/or hydrology, and general natural community reconstruction (e.g. prairie in formerly plowed land). For the purposes of the INAI, these more intensive management practices are applied to a Grade D and/or E natural communities for the improvement of the natural quality of that community.

Restoration – The application of approved stewardship techniques that results in the improvement of the natural quality of that plant community. Restoration activities include but are not limited to native species augmentation/enrichment, removal of invasive species, and restoration of natural processes (e.g. fire, hydrology). For the purposes of INAI sites, restoration involves managing a formerly Grade C natural community to improve the quality. (IDNR, Standards & Guidelines for the Illinois Natural Areas Inventory, November 2006.)

Stewardship – The land management policies and practices required to maintain the ecological integrity necessary to support the intended target(s) of protection efforts and compatible visitor use if appropriate. It is ‘cyclical’ in the sense that its major components - planning, implementation, and assessment - operate in a feedback loop to not only be sure that appropriate and timely management actions are carried out but that those actions have the desired outcomes on-the-ground (ISNAV, Chapter 2).

Sustainable Network – A sustainable network is a system of natural areas managed to retain or restore a diverse, structurally complex community of native plants and animals characteristic of a natural division and section; buffered by lands of lesser natural quality. Ancillary habitats that meet the life history needs of species would be provided, nested within large blocks of natural vegetation associated with Conservation Opportunity Areas. This would provide watershed scale benefits like slowing surface runoff and wind erosion, moderating air and water pollution. These areas are connected by corridors along Illinois major rivers that connect Conservation Opportunity Areas and allow the migration of both animal and plants species in response to large-scale threats like climate change. These networks also provide social benefits such opportunities for outdoor recreation or nature study, or that provide access for hunting, fishing, and hiking.

Appendix IV - Challenges and Opportunities Organized
by Chapter

SNAV Reference Number	Challenges & Opportunities	Responsible Entity					
		Governor/ Legislature	State Gov't	Local Gov't	Federal Gov't	NGOs	Public
4.1	Hiring and retaining qualified professional staff within IDNR/INPC/ESPB.	X	X				
4.1.1	<i>Develop a “succession” plan to outline strategies for replacing key staff as they retire or leave the agency, as well as training new staff.</i>		IDNR				
4.1.2	<i>Collaborate with universities to create quality field ecology programs to provide opportunities for interested students and to provide a quality pool of potential employees.</i>		IDNR				
4.1.3	<i>Establish more Heritage- related internships to interest more young people in careers in the natural resources field.</i>		IDNR				
4.1.4	<i>Provide on-going training for existing staff to ensure the most current methodologies and practices are incorporated into the agency’s activities.</i>		IDNR				
4.1.5	<i>Direct CMS to update IDNR staff position descriptions and qualification requirements at all levels of the agency to ensure that only qualified candidates are hired.</i>	Governor	IDNR CMS				
4.2	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ESPB activities, including management of natural areas & land acquisition.	X	X			X	

4.2.1	<i>Work with Partners for Parks and Wildlife and the Conservation Congress to generate possibly sources of funding.</i>		IDNR			All	
4.2.2	<i>Build constituent support in major urban areas by having a greater presence and involvement, including with Hispanic, African-American and other minority groups.</i>		IDNR				
4.2.3	<i>Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/ IESPB, including a statewide land acquisition fund.</i>	Both					
4.2.4	<i>At a minimum, appropriate the amount of funds generated in special funds, and allow these funds to be spent on the purposes identified.</i>	Both					
4.2.5	<i>As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR.</i>	Both					
4.2.6	<i>When considering an expansion of gambling venues such as casinos, require every facility to include a foundation that supports environmental, social, and cultural issues and projects. The Grand Victoria Foundations is an example.</i>	Both					
4.3	Increasing and strengthening IDNRs visibility and constituent support across the state, but particularly in major urban areas.		X				

4.3.1	<i>Establish an urban outreach team as part of the “Green Cities” initiative to determine how to best enhance IDNR’s role in urban areas.</i>		IDNR				
4.3.2	<i>Identify the natural resource and recreation needs/interests of urban residents, particularly within the minority community and then have the IDNR Director/Deputy Directors schedule meetings with the legislative minority caucuses to discuss IDNR’s role in meeting these needs.</i>		IDNR				
4.3.3	<i>Work to understand/gauge public support for conservation efforts – the work DHB/NAPS do may mean little into the future if there is no public support for conservation.</i>		IDNR				
4.3.4	<i>Work with the Farm Bureau and realtors to make them understand that fighting invasive species is an investment in their land.</i>		IDNR				
4.3.5	<i>Continue to mobilize the Conservation Congress to consider major issues within Illinois facing IDNR.</i>		IDNR				
4.4	Ensuring all significant natural resources are identified and made available to key stakeholders in the identification process in order to protect Illinois’ biodiversity.		X				

4.4.1	Conduct an in-depth analysis of the INAI when both the Update and Category I assessment are completed as was done in the Natural Areas Plan to determine ownership, set goals, etc.		IDNR				
4.4.2	Prepare an INAI Technology Plan to identify immediate and short-range equipment and software needs to address the changes in technology and support by vendors in order to maintain a healthy database.		IDNR				
4.4.3	Work with local partners to fully develop the concept of “local natural areas” as now included in the Standards & Guidelines to address issues such as the need for sites to accommodate migratory birds/insects, corridors to allow adaptation to climate change, etc.		IDNR				
4.5	Identifying a flexible, responsive, and fully funded statewide land acquisition effort.	X	X			X	
4.5.1	Create a granting program for registered 501(c) (3) land trusts in Illinois to use for matching foundation grants for land acquisition, capacity building, stewardship, and defense of easements.		IDNR			Land Trusts	
4.5.2	Create and fully fund a statewide land acquisition program within IDNR that focuses on high quality natural areas and the effort to make these sites sustainable.	Both					
4.6	Protecting natural resources given that much of Illinois’ natural resources are in private ownership.	X	X	X	X	X	

4.6.1	<i>Develop incentive programs for landowners to maintain high quality natural areas, e.g., provide a payment similar to CREP for enrolling land into a Nature Preserves System program.</i>	Both	IDNR INPC				
4.6.2	<i>Evaluate programs such as the Urban Forestry Program and Conservation Stewardship Program to include coordination with the Nature Preserves Commission staff to provide landowners the opportunity to protect their land as NPs or L&WRs and to minimize opportunities to use these programs to “bank” land to be sold in a few years.</i>		IDNR INPC				
4.6.3	<i>Institutionalize stewardship within communities to build local support for natural areas by creating “Make a Difference Day” events for clean-up/management.</i>		IDNR INPC	Municipal- ities		All	
4.6.4	<i>After the assessment of the ownership status of INAI sites is completed, contact all private landowners of the unprotected sites to discuss protection strategies for these sites.</i>		IDNR INPC				
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>		IDNR INPC	All	All	All	

4.6.6	<i>Hold a bi-annual Natural Areas Summit to discuss the status of natural areas and the creation of sustainable networks, including the threats that continue to exist and management and funding needs</i>		IDNR INPC				
4.7	Working with local units of government (municipalities & county governments), which have a role to play in establishing the sustainable natural areas network, yet often have minimal understanding of the ecological functions or their role in protecting them.		X				
4.7.1	<i>Establish a pro-active outreach program for local units of government, a “Green Cities” initiative as defined in the Illinois Wildlife Action Plan to educate them & encourage adoption of sustainable development practices.</i>		IDNR				
4.8	Integrating the protection of natural resources into economic development plans and proposals, which is vital both to the protection of natural resources and successful economic development.		X	X			
4.8.1	<i>Explore creating a Natural Areas Inventory Trail for publically owned sites – would serve as both an educational effort and a tourism activity.</i>		IDNR				

4.8.2	<i>Work to gain the support of tourism agencies in southern Illinois to increase interest in natural areas. A public guide for INAI sites would be helpful – with a slogan such as "Escape to IL Natural Areas" to attract visitors and increase support.</i>		IDNR DCEO				
4.8.3	<i>Work with other state agencies to encourage the inclusion of natural resource protection in their planning efforts, grant programs, and other activities.</i>		IDNR				
4.8.4	<i>Establish a Gubernatorial appointed committee composed of the directors of IDNR, IDOT, IEP, the Attorney General's Office, IDOA, and the Illinois Toll Highway Authority to develop a coordinating committee to identify where agencies have overlapping and competing programs that limit the protection of natural resources. This committee can identify ways of working together to protect and sustain natural areas</i>	Governor					
4.8.5	<i>Integrate natural resource protection in local comprehensive, economic development, and other planning efforts.</i>			Municipal & County Govt's			
4.9	Strengthening the Nature Preserve system to better engage landowners enrolled in INPC programs, to increase enrollment of lands in protection programs, and to identify ways to protect lands that do not meet the INPC's strict criteria.		X				

4.9.1	<i>Add categories to the Nature Preserve System that would target corporations and other private landowners with large holdings of high quality natural areas, e.g., a “legacy” concept that would be appealing to corporations or family landowners.</i>		INPS IDNR				
4.9.2	<i>Send an annual newsletter to all Category I INAI and Nature Preserve private landowners to allow them to be more engaged in being stewards of their natural area.</i>		INPC IDNR				
4.9.3	<i>Fully develop the Local Natural Areas designation to recognize natural areas that are worthy of protecting but that do not meet the standards for inclusion on the INAI.</i>		INPC IDNR				
4.9.4	<i>Identify a formal dedication category for “corridors” similar to what exists for buffers to encourage landowners to participate in creating both buffers and corridors.</i>		INPC IDNR				
4.10	Sustaining viable populations of endangered & threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population, so over time these populations may be lost.	X	X	X		X	
4.10.1	<i>Use prescribed and focused preserve design to ensure the inclusion of Category II sites in the sustainable network of natural areas.</i>		IDNR INPC ESPB				
4.10.2	<i>Acquire the necessary lands to ensure the survival of Category II sites.</i>	Both	IDNR INPC ESPB			All	

4.10.3	<i>Adopt and implement appropriate management strategies for Category II sites.</i>		IDNR INPC ESPB	FPD/CD		All	
4.10.4	<i>Based on criteria established by the ESPB and IDNR, conduct a review of, and outline the recovery potential for Illinois' endangered and threatened species.</i>		IDNR INPC ESPB				
4.10.5	<i>Review all current Category II sites and identify boundaries, and develop criteria for future Category II boundary delineations.</i>		IDNR INPC ESPB				
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.		X	X		X	
4.11.1	<i>Conduct a full assessment of the ownership status (public, private-protected, private unprotected) of all INAI sites and develop a strategy for approaching private landowners to discuss protection strategies.</i>		INPC IDNR				
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>		INPC IDNR	All		All	Landowners
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.	X	X	X	X	X	

4.12.1	<i>Establish and implement a policy to maintain and preserve the natural quality as the highest priority for all property owned and managed by IDNR.</i>		IDNR				
4.12.2	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to their sites.</i>		INPC IDNR	FPD/CD	USFWS	Land Trusts	
4.12.3	<i>Establish multiple natural areas restoration/management teams within each IDNR Division of Natural Heritage Region – “Heritage Teams”.</i>		INPC IDNR				
4.12.4	<i>Establish and maintain the highly acclaimed Natural Heritage Residency program, which was a component of a university-approved Master’s degree curriculum in ecology, botany, zoology.</i>		INPC IDNR				
4.12.5	<i>Create a student apprenticeship/internship program to provide additional technicians for management. Friends of the Forest Preserves & the Field Museum have good programs. The program could offer college credits to participants.</i>		INPC IDNR				
4.12.6	<i>Create a new status for INAI sites that declined in qualify for the INAI – a “remediation needed” category that indicates the need for a management plan. This will help in establishing management priorities.</i>		INPC IDNR				

4.12.7	<i>Build the capacity for the private natural area stewardship industry (companies that provide perform land management activities) so IDNR & others have qualified firms to hire across the state-requires funding. There is also a need for a credentialing process to ensure hiring qualified firms.</i>	Both	INPC IDNR DCEO				
4.12.8	<i>Establish and implement a process to evaluate and grade all lands owned and managed by IDNR using INAI grading methodologies, creating a map showing all of the forests, barrens, glades, woodlands, and wetland communities with their natural quality grade included. Priority should then be given to restoration work conducted in the higher graded communities.</i>		IDNR INPC				
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>	Both	IDNR INPC	FPD/CD	USFS USFWS USACE	Land Trusts	
4.13	Developing efficient and productive volunteer stewardship programs within IDNR/INPC to assist in the stewardship of sustainable natural area networks.	X	X				
4.13.1	<i>Establish one or more positions for Volunteer Stewardship Coordinators to identify, train, and direct volunteer stewardship activities in coordination with the DNB & INPC.</i>		INPC IDNR				

4.13.2	<i>Establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.</i>	Both	IDNR				
4.14	Addressing management needs, including funding, for the immediate and costly investments needed to protect the state's natural resource assets from current ecological threats, e.g., climate change and invasive species, and the many socio-cultural threats that exist.		X				
4.14.1	<i>Ensure that all IDNR land management policies are based on sound science. Coordination with INHS staff on research/ project results would be useful.</i>		INPC IDNR				
4.14.2	<i>Prepare management plans for targeted INAI sites and their buffers once the evaluation of the INAI data to determine the number of acres of INAI sites and the number of acres of habitat type by county is completed.</i>		INPC IDNR				
4.14.3	<i>Develop the climate change component of the Wildlife Action Plan to evaluate the scale of the problem, explore potential solutions, and to secure federal funding as it becomes available to target the impacts of climate change.</i>		INPC IDNR				

4.14.4	<i>Address how we deal with sites that no longer qualify for the INAI due to invasive species or other management problems. One option is to highlight these sites by requiring remediation plans be developed to try to restore them to their original inventory quality.</i>		INPC IDNR				
4.14.5	<i>Prepare a summary of the reasons existing INAI sites have been reduced in quality. There are concerns that problems identified with existing INAI sites will reflect poorly on staff (IDNR, FPD, CD, etc) even if the problems are beyond their control given existing staffing and funding levels</i>		INPC IDNR				
4.14.6	<i>Re-evaluate how IDNR is structured to address these key issues and others, such as non-game and E&T species. (See Ch 4 for details)</i>		INPC IDNR				
4.14.7	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to sites owned by IDNR</i>		INPC IDNR				
4.15	Improving Illinois' aquatic resources, many of which are in poor condition or are declining in quality		X				
4.15.1	<i>Conduct a state-wide inventory of aquatic resources and update the INAI accordingly</i>		IDNR				

4.15.2	Based on the results of the statewide inventory, initiate a “wade-able” streams program to protect those headwaters with the greatest needs		IDNR				
4.16	Building support for conducting widespread auditing of the status of natural resources to ensure the state’s valuable assets are being protected.	X	X				
4.16.1	Develop a natural resources auditing program that is politically acceptable and fundable. “Auditing” or “performance measurement” is critical when analyzing the status of the state’s natural resource assets in order to make appropriate changes as needed (adaptive management)		IDNR				
4.16.2	Fully fund and expand the highly successful Critical Trends Assessment Program at the INHS to document the status of natural resources across the state	Both	IDNR				
4.17	Identifying the management needs and the resources and use to defend existing Nature Preserves and Land and Water Reserves.	X	X				
4.17.1	Post notification, in English and Spanish, of penalties for violation at protected sites (civil fines up to \$10,000) and charge the allowed criminal penalties (Class A misdemeanor) to violators of the INAPA		IDNR INPC				

4.17.2	<i>4.17.2 Educate Conservation Police Officers, county sheriffs, and other police officers about their authority to enforce the INAPA and train them to recognize infringements on or violations of the INAPA.</i>		IDNR INPC				
4.17.3	<i>Recognize the need for passive or pro-active defense, by providing the staff resources needed to participate in pre-development meetings with developers and local government officials to negotiate natural areas protection agreements.</i>	Both	IDNR INPC				
4.17.4	<i>When appropriate, solicit and encourage the Illinois Attorney General or the local State's attorney to take legal action to have the threat stopped or to force someone to take actions that would prevent a threat from happening</i>		IDNR INPC				
4.17.5	<i>Provide training for Endangered Species Consultation program staff to fully understand the adverse impacts that can occur from actions such as pipeline installation, oil exploration, mining operations, subdivision development, wind turbines, and more, and find ways of exploring alternative, less damaging approaches to clients.</i>		IDNR INPC				
4.17.6	<i>Upon designation of a natural area as an INAI site, identify and monitor potential threats from local activities (such as the damming of a river upstream from the site or nearby crop dusting) which may adversely affect them</i>		IDNR INPC				

4.17.7	<i>Address how to handle INAI sites that are found, through an auditing process, to no longer qualify for inclusion on the INAI. One option is to create a new category that requires a remediation plan to identify corrective management needs.</i>		IDNR INPC				
4.18	Increasing the number of local open space/natural resource agencies (Forest Preserve & Conservation Districts) because of the valuable role they play in natural resource protection. Only a few counties in Illinois have these agencies, and no new ones have been formed for almost 40 years.	X		X			
4.18.1	<i>Provide technical assistance to stakeholders in counties where FPD/CDs do not exist when local support exists to establish a new FPD or CD</i>			FPD/CD			
4.18.2	<i>Amend the Downstate Forest Preserve District Act to allow multiple counties to form a forest preserve district. This could facilitate the formation of such districts in areas of the state with reduced financial resources.</i>	Both					
4.18.3	<i>Amend the Downstate Forest Preserve District Act to remove the provision that allows townships to vote to withdraw from a legally established forest preserve district approved by the voters within a county.</i>	Both					
4.18.4	<i>Remove the amendment to the Conservation District Act that allows referendums to be conducted to convert CD's to FPD's.</i>	Both					

4.19	Identifying additional ways to permanently protect core natural areas.		X	X		X	X
4.19.1	<i>Dedicate all INAI sites owned by FPD/CDs as Illinois Nature Preserves as a first priority or as a Land & Water Reserve as a second priority.</i>		All	FPD/CD		Land Trusts	Landowners
4.19.2	<i>Identify locally significant natural areas that can serve as important links to INAI sites.</i>			FPD/CD			
4.19.3	<i>Establish comprehensive natural resources auditing programs.</i>		IDNR	FPD/CD			
4.20	Protecting natural resources given that much of Illinois' natural resources are in private ownership.	X	X		X		
4.20.1	<i>Develop incentive programs for landowners to maintain high quality natural areas rather than be required to degrade or destroy such resources in order to receive a subsidy, such as the Forest Development</i>	Both	IDNR		USDA		
4.20.2	<i>Strengthen existing agricultural programs to benefit the potential sustainability of natural areas. This includes: Requiring the use of native vegetation in programs and increasing the duration of easements.</i>				USDA NRCS		
4.20.3	<i>Work with private landowners to encourage them to protect and manage high quality natural areas and to use their non-agricultural lands as buffers to or linkages between natural areas.</i>		IDNR		NRCS		

4.20.4	<i>Designate all Category I INAI sites as Research Natural Areas to provide the greatest protection, or for INAI sites not designated as RNAs, ensure they are designated as unsuitable for resource use and/or extraction.</i>				USFS		
4.20.5	<i>Protect state endangered and threatened species by listing those that occur on USFS lands on the Regional Forester's [Sensitive] Species List.</i>				USFS		
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.		X		X		
4.21.1	<i>Work with the State of Illinois to consolidate ownership of INAI sites via land trades such as was done in the early 1990s</i>		IDNR		USFS		
4.21.2	<i>Ensure that forest-wide management objectives include creation and maintenance of sustainable high-quality natural areas as a priority, including those sites not now designated as an RNA</i>				USFS		
4.21.3	<i>Establish and implement a process to evaluate and grade all Shawnee National Forest lands using INAI grading methodologies, creating a map showing all of the forests, barrens, glades, woodlands, and wetland communities with their natural quality grade included. Priority should then be given to restoration work conducted in the higher graded communities</i>				USFS		

4.21.4 & 4.21.5	<i>Before undertaking major land-disturbing projects, including restoration projects, coordinate with IDNR and local natural resources agencies to determine if key natural areas exist on the site.</i>				USFWS & USACE		
4.21.6	<i>Incorporate natural areas and state endangered species in the EMP restoration plans.</i>				USACE		
4.21.7	<i>Revise federal wetland protection regulations to require an Individual Permit for every permit that involves an INAI site, using the Chicago District's regulations as a model</i>				USACE		
4.21.8	<i>Coordinate with IDNR's Natural Heritage program to determine if prospective easements are located in proximity to a natural area or if the site might play a role in a sustainable network of natural areas</i>				FSA		
4.21.9	<i>Develop ecologically sound wildlife habitat requirements for programs designed to protect wildlife, including endangered species</i>				FSA		
4.21.10	<i>Establish an outreach and education program to encourage longer-term preservation of sites with short-term conservation easements, including dedications as a L&WR.</i>				FSA		
4.21.11	<i>Work to amend the Farm Bill to lengthen the time period of the various easement programs to discourage land banking.</i>				FSA		

4.21.12	<i>Work with IDNR/INPC/ESPB on commonly shared goals, such as the promotion of at-risk species and the restoration of important native wildlife habitats.</i>				NRCS		
4.22	Coordinating with federal agencies to identify management needs and manage natural areas that are in federal ownership.		X		X		
4.22.1	<i>Collaborate with IDNR to identify management needs for INAI sites and use opportunities granted within the National Forest Management Act to provide stewardship.</i>		IDNR		USFS		
4.22.2	<i>Allocate adequate funding to monitor natural areas for disturbances and restore damages found per the “Natural Area Management Prescription”</i>				USFS		
4.22.3	<i>Create a federally approved programmatic NEPA for burning, selective tree and shrub removal, and invasive species control and other management within INAI sites (RNAs)</i>				USFS		
4.22.4	<i>Address the need for management of INAI sites (RNAs) that are located within federally designated Wilderness areas</i>				USFS		
4.23	Identifying ways of strengthening NRCS programs to protect and sustain natural areas.				X		
4.23.1	<i>Strengthen existing programs directed towards agricultural lands to benefit the process of sustaining natural areas.</i>				NRCS		

4.23.2	Work with private landowners to encourage them to protect and manage high quality natural areas and to use their non-agricultural lands as buffers or linkages to existing sites.				NRCS		
4.23.3	Work with IDNR/INPC/ESPB on commonly shared goals, such as the promotion of at-risk species and the restoration of important native wildlife habitats.				NRCS		
5.1	Identifying ways in which IHPA can assist in protecting and sustaining natural areas		X				
5.1.1	Dedicate any INAI sites owned by the agency as a Nature Preserve or register as a Land & Water Reserve		IHPA				
5.1.2	Work with IDNR to manage any INAI sites they own to maintain or restore them		IHPA				
5.1.3	Work with IDNR to identify those lands IHPA owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas		IHPA				
5.2	Identifying ways in which park districts can assist in protecting and sustaining natural areas			X			
5.2.1	Dedicate all INAI sites owned by park districts as a Nature Preserve or Land & Water Reserve			Park Districts			
5.2.2	Work with IDNR to manage any INAI sites owned by park districts to maintain or restore them			Park Districts			

5.2.3	<i>Work with IDNR to identify those lands owned by park districts that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>			Park Districts			
5.2.4	<i>Develop passive recreation plans for the portions of lands they own that contain sensitive natural resources, recognizing the importance of the need to protect them and the public's interest in passive activities such as bird watching</i>			Park Districts			
5.3	Strengthening the capacity of land trusts and other natural resource NGOs	X	X			X	
5.3.1	<i>Explore ways of ensuring that all areas of the state have a functioning land trust. This could require creating new land trusts or extending the geographic coverage of existing land trusts</i>					Land Trusts	
5.3.2	<i>Create a grant program for land acquisition within IDNR for land trusts</i>	Both	IDNR			Land Trusts	
5.3.3	<i>Establish a service center to provide support for Illinois' land trusts, possibly through the Prairie State Conservation Coalition.</i>					Land Trusts	
5.4	Identifying and promoting ways in land trusts can assist in protecting and sustaining natural areas	X	X			X	

5.4.1	<i>Dedicate all INAI sites owned by land trusts as a Nature Preserve or register as a Land & Water Reserve</i>					Land Trusts	
5.4.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>		IDNR			Land Trusts	
5.4.3	<i>Work with IDNR to identify those lands land trusts own that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>		IDNR/ INPC			Land Trusts	
5.4.4	<i>Work with IDNR's Wildlife Action Plan in forming Conservation Opportunity Area (COA) Partnerships that serve to protect natural areas located within COAs</i>		IDNR			Land Trusts	
5.4.5	<i>Work to establish economic incentives at the state and federal level for the preservation of high-quality natural areas. The 2005 LTA Census indicates that tax incentives for land conservation are correlated to a rise in preservation of private lands through land trust use of conservation easements among other items</i>	Legislature	IDNR			Land Trusts	
5.4.6	<i>Assist IDNR and the INPC in identifying and contacting the landowners of high quality natural areas identified in the INAI Update conducted in 2008-2011</i>		IDNR/ INPC			Land Trusts	
5.5	Engaging private landowners in protecting and sustaining natural areas on land they own.	X	X				X

5.5.1	<i>Dedicate all INAI sites owned by them as a Nature Preserve or register the sites as a Land & Water Reserve</i>						Landowners
5.5.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>		IDNR				Landowners
5.5.3	<i>Work with IDNR to identify the lands they own that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>		IDNR				Landowners
5.5.4	<i>Private landowners can use Federal incentive programs such as the Wetlands Reserve Program (WRP) & Wetlands Reserve Enhancement Program (WREP) created by the Food, Conservation, and Energy Act of 2008 to protect wetlands on agricultural lands.</i>						Landowners
5.5.5	<i>Participate in the Illinois Natural Areas Inventory, allowing access to their property for vegetation surveys, as appropriate.</i>		IDNR/ INPC				Landowners
5.5.6	<i>Railroad companies can work with IDNR to manage natural areas located adjacent to railroad rights-of-way.</i>						Railroad Companies
5.5.7	<i>Develop a specific program to assist private landowners, especially non-farm landowners, in protecting and sustaining natural areas.</i>	Both	IDNR/ INPC				

5.5.8	<i>Develop natural area project-based strategies to attract business and industry in the effort to protect and sustain natural areas. The business community is known to respond more readily to specific proposals, such as purchase or restore a specific site with an estimated cost</i>	Both	INPC IDNR				
5.5.9	<i>Assist private landowners to pursue available assistance by creating a single unified source of information, perhaps a web portal, with a comprehensive catalog of all available program assistance and links to sites providing additional information.</i>	Both	IDNR/ INPC				
5.5.11	<i>Fully fund the INPC and IDNR's Natural Areas Program to provide the technical assistance needed by private landowners to protect and sustain natural areas.</i>	Both					
5.5.12	<i>Amend the Recreational Use of Land and Water Areas Act to expand the definition of recreational or conservation purpose to include entry by the public onto land for conservation, resource management, education, bird watching, hiking, and other similar activities</i>	Both					
5.6	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ESPB activities, including management of natural areas & land acquisition	X				X	

5.6.1	<i>Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/IESPB, including a statewide land acquisition fund</i>	Both				All	
5.6.2	<i>At a minimum, appropriate the amount of funds generated in special funds, and allow these funds to be spent on the purposes identified</i>	Both				All	
5.6.3	<i>As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR. This would professionalize the organization and ensure the state's valuable assets will be protected in perpetuity</i>	Both				All	
5.7	Providing IDNR the resources needed to increase volunteer activities for the stewardship and defense of natural areas	X					
5.7.1	<i>Support an IDNR initiative to establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.</i>	Both	IDNR				
5.7.2	<i>Provide funding to hire volunteer coordinators at the regional offices to increase and organize volunteers for activities within IDNR</i>	Both	IDNR				
5.8	Identifying the ways in which these units of government can protect and sustain natural areas	X		X			

5.8.1	<i>Dedicate all INAI sites owned by these governments as a Nature Preserve or register as a Land & Water Reserve</i>			All			
5.8.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>			All			
5.8.3	<i>Work with IDNR to identify those lands each owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>			All			
5.8.4	<i>Conduct a comprehensive natural resources inventory of lands within their area of jurisdiction to include all sensitive natural resources, as well as the overall green infrastructure</i>			Municipal & County Govt's			
5.8.5	<i>Revise existing comprehensive plans to include language supportive of green infrastructure, conducting natural resources inventories, creating overlay districts with special development practices such as conservation design to protect sensitive resources, etc</i>			Municipal & County Govt's			
5.8.6	<i>Review all ordinances and revise as needed to encourage or require best management practices for stormwater management, conservation design, and wetland protection</i>			Municipal & County Govt's			
5.8.7	<i>Prepare a green infrastructure map within their area of jurisdiction</i>			Municipal & County Govt's			

5.8.8	<i>Prepare and adopting Local Land Resource Management Plans pursuant to the Local Land Resource Management Planning Act by municipalities and counties.</i>			Municipal & County Govt's			
5.8.9	<i>Prepare and adopting Open Space Plans by Township governments.</i>			Township Govt's			
5.8.10	<i>Support county, municipal, and township governments' ability to protect and sustain natural areas by providing them with additional tools and funding</i>	Both					
5.8.11	<i>Provide funding for the implementation of the Local Land Resource Management Planning Act</i>	Both					
5.8.12	<i>Adopt legislation to extend protection to wetlands, including isolated wetlands, allowing units of local government to implement such regulatory programs</i>	Both					
5.8.13	<i>Amend the Illinois Counties Code, Municipal Code and Township Code to specify the protection, preservation and restoration of natural areas and the preservation and enhance of ecological functions as a purpose of the their respective zoning and subdivision ordinances.</i>	Both					
5.9	Identifying additional ways in which SWCDs can assist in protecting and sustaining natural areas			X			
5.9.1	<i>Dedicate all INAI sites owned by SWCDs as a Illinois Nature Preserve or register as a Land & Water Reserve</i>			SWCD			

5.9.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>			SWCD			
5.9.3	<i>Work with IDNR to identify SWCD programs that have complementary goals of SNAP and work with private landowners to encourage them to protect and sustain natural areas</i>			SWCD			
5.9.4	<i>Assist with the Illinois Natural Areas Inventory process, where possible, by educating landowners on the importance of this effort and encouraging their participation</i>			SWCD			
5.1	Identifying ways in which elementary, middle, junior and high schools, and colleges and universities can assist in protecting and sustaining natural areas		X				X
5.10.1	<i>Dedicate all INAI sites owned by educational institutions as an Illinois Nature Preserve or register as a Land & Water Reserve</i>						Educational Institutions
5.10.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>		IDNR				Educational Institutions
5.10.3	<i>Work with IDNR to identify lands they own that could serve as buffers or corridors</i>		IDNR				Educational Institutions
5.10.4	<i>Establish and maintain strong natural resources programs at colleges and universities. This should include an emphasis on Illinois' ecosystems and applied field work and research</i>						Educational Institutions

5.10.5	<i>Establish and create natural resource two-year degree and certification programs at community colleges to strengthen the stewardship capabilities of natural resource agencies and organizations.</i>						Educational Institutions
5.10.6	<i>Establish strong environmental education programs at elementary, middle, junior, and high schools, which can include on-site prairies, wetlands or other Illinois native vegetation to incorporate into school programs</i>						Educational Institutions

Appendix V - Challenges and Opportunities Organized by Stakeholder

Governor/ Legislature

SNAV Reference Number	Challenges & Opportunities
4.1	Hiring and retaining qualified professional staff within IDNR/INPC/ESPB.
4.1.5	<i>Direct CMS to update IDNR staff position descriptions and qualification requirements at all levels of the agency to ensure that only qualified candidates are hired.</i>
4.2	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ESPB activities, including management of natural areas & land acquisition.
4.2.3	<i>Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/ IESPB, including a statewide land acquisition fund.</i>
4.2.4	<i>At a minimum, appropriate the amount of funds generated in special funds, and allow these funds to be spent on the purposes identified.</i>
4.2.5	<i>As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR.</i>
4.2.6	<i>When considering an expansion of gambling venues such as casinos, require every facility to include a foundation that supports environmental, social, and cultural issues and projects. The Grand Victoria Foundations is an example.</i>
4.5	Identifying a flexible, responsive, and fully funded statewide land acquisition effort.
4.5.2	<i>Create and fully fund a statewide land acquisition program within IDNR that focuses on high quality natural areas and the effort to make these sites sustainable.</i>
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.1	<i>Develop incentive programs for landowners to maintain high quality natural areas, e.g., provide a payment similar to CREP for enrolling land into a Nature Preserves System program.</i>
4.8	Integrating the protection of natural resources into economic development plans and proposals, which is vital both to the protection of natural resources and successful economic development.

4.8.4	<i>Establish a Gubernatorial appointed committee composed of the directors of IDNR, IDOT, IEP, the Attorney General's Office, IDOA, and the Illinois Toll Highway Authority to develop a coordinating committee to identify where agencies have overlapping and competing programs that limit the protection of natural resources. This committee can identify ways of working together to protect and sustain natural areas</i>
4.10	Sustaining viable populations of endangered & threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population, so over time these populations may be lost.
4.10.2	<i>Acquire the necessary lands to ensure the survival of Category II sites.</i>
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.
4.12.7	<i>Build the capacity for the private natural area stewardship industry (companies that provide perform land management activities) so IDNR & others have qualified firms to hire across the state-requires funding. There is also a need for a credentialing process to ensure hiring qualified firms.</i>
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.13	Developing efficient and productive volunteer stewardship programs within IDNR/INPC to assist in the stewardship of sustainable natural area networks.
4.13.2	<i>Establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.</i>
4.16	Building support for conducting widespread auditing of the status of natural resources to ensure the state's valuable assets are being protected.
4.16.2	<i>Fully fund and expand the highly successful Critical Trends Assessment Program at the INHS to document the status of natural resources across the state</i>
4.17	Identifying the management needs and the resources and use to defend existing Nature Preserves and Land and Water Reserves.

4.17.3	<i>Recognize the need for passive or pro-active defense, by providing the staff resources needed to participate in pre-development meetings with developers and local government officials to negotiate natural areas protection agreements.</i>
4.18	Increasing the number of local open space/natural resource agencies (Forest Preserve & Conservation Districts) because of the valuable role they play in natural resource protection. Only a few counties in Illinois have these agencies, and no new ones have been formed for almost 40 years.
4.18.2	<i>Amend the Downstate Forest Preserve District Act to allow multiple counties to form a forest preserve district. This could facilitate the formation of such districts in areas of the state with reduced financial resources.</i>
4.18.3	<i>Amend the Downstate Forest Preserve District Act to remove the provision that allows townships to vote to withdraw from a legally established forest preserve district approved by the voters within a county.</i>
4.18.4	<i>Remove the amendment to the Conservation District Act that allows referendums to be conducted to convert CD's to FPD's.</i>
4.20	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.20.1	<i>Develop incentive programs for landowners to maintain high quality natural areas rather than be required to degrade or destroy such resources in order to receive a subsidy, such as the Forest Development</i>
5.3	Strengthening the capacity of land trusts and other natural resource NGOs
5.3.2	<i>Create a grant program for land acquisition within IDNR for land trusts</i>
5.4	Identifying and promoting ways in land trusts can assist in protecting and sustaining natural areas
5.4.5	<i>Work to establish economic incentives at the state and federal level for the preservation of high-quality natural areas. The 2005 LTA Census indicates that tax incentives for land conservation are correlated to a rise in preservation of private lands through land trust use of conservation easements among other items</i>
5.5	Engaging private landowners in protecting and sustaining natural areas on land they own.

5.5.7	<i>Develop a specific program to assist private landowners, especially non-farm landowners, in protecting and sustaining natural areas.</i>
5.5.8	<i>Develop natural area project-based strategies to attract business and industry in the effort to protect and sustain natural areas. The business community is known to respond more readily to specific proposals, such as purchase or restore a specific site with an estimated cost</i>
5.5.9	<i>Assist private landowners to pursue available assistance by creating a single unified source of information, perhaps a web portal, with a comprehensive catalog of all available program assistance and links to sites providing additional information.</i>
5.5.11	<i>Fully fund the INPC and IDNR's Natural Areas Program to provide the technical assistance needed by private landowners to protect and sustain natural areas.</i>
5.5.12	<i>Amend the Recreational Use of Land and Water Areas Act to expand the definition of recreational or conservation purpose to include entry by the public onto land for conservation, resource management, education, bird watching, hiking, and other similar activities</i>
5.6	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ ESPB activities, including management of natural areas & land acquisition
5.6.1	<i>Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/IESPB, including a statewide land acquisition fund</i>
5.6.2	<i>At a minimum, appropriate the amount of funds generated in special funds, and allow these funds to be spent on the purposes identified</i>
5.6.3	<i>As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR. This would professionalize the organization and ensure the state's valuable assets will be protected in perpetuity</i>
5.7	Providing IDNR the resources needed to increase volunteer activities for the stewardship and defense of natural areas
5.7.1	<i>Support an IDNR initiative to establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.</i>

5.7.2	<i>Provide funding to hire volunteer coordinators at the regional offices to increase and organize volunteers for activities within IDNR</i>
5.8	Identifying the ways in which these units of government can protect and sustain natural areas
5.8.10	<i>Support county, municipal, and township governments' ability to protect and sustain natural areas by providing them with additional tools and funding</i>
5.8.11	<i>Provide funding for the implementation of the Local Land Resource Management Planning Act</i>
5.8.12	<i>Adopt legislation to extend protection to wetlands, including isolated wetlands, allowing units of local government to implement such regulatory programs</i>
5.8.13	<i>Amend the Illinois Counties Code, Municipal Code and Township Code to specify the protection, preservation and restoration of natural areas and the preservation and enhance of ecological functions as a purpose of the their respective zoning and subdivision ordinances.</i>

IDNR/INPC/IESPB

SNAV Reference Number	Challenges & Opportunities
4.1	Hiring and retaining qualified professional staff within IDNR/INPC/ESPB.
4.1.1	<i>Develop a "succession" plan to outline strategies for replacing key staff as they retire or leave the agency, as well as training new staff.</i>
4.1.2	<i>Collaborate with universities to create quality field ecology programs to provide opportunities for interested students and to provide a quality pool of potential employees.</i>
4.1.3	<i>Establish more Heritage-related internships to interest more young people in careers in the natural resources field.</i>
4.1.4	<i>Provide on-going training for existing staff to ensure the most current methodologies and practices are incorporated into the agency's activities.</i>
4.1.5	<i>Direct CMS to update IDNR staff position descriptions and qualification requirements at all levels of the agency to ensure that only qualified candidates are hired.</i>
4.2	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ESPB activities, including management of natural areas & land acquisition.

4.2.1	<i>Work with Partners for Parks and Wildlife and the Conservation Congress to generate possibly sources of funding.</i>
4.2.2	<i>Build constituent support in major urban areas by having a greater presence and involvement, including with Hispanic, African-American and other minority groups.</i>
4.3	Increasing and strengthening IDNRs visibility and constituent support across the state, but particularly in major urban areas.
4.3.1	<i>Establish an urban outreach team as part of the “Green Cities” initiative to determine how to best enhance IDNR’s role in urban areas.</i>
4.3.2	<i>Identify the natural resource and recreation needs/interests of urban residents, particularly within the minority community and then have the IDNR Director/Deputy Directors schedule meetings with the legislative minority caucuses to discuss IDNR’s role in meeting these needs.</i>
4.3.3	<i>Work to understand/gauge public support for conservation efforts – the work DHB/NAPS do may mean little into the future if there is no public support for conservation.</i>
4.3.4	<i>Work with the Farm Bureau and realtors to make them understand that fighting invasive species is an investment in their land.</i>
4.3.5	<i>Continue to mobilize the Conservation Congress to consider major issues within Illinois facing IDNR.</i>
4.4	Ensuring all significant natural resources are identified and made available to key stakeholders in the identification process in order to protect Illinois’ biodiversity.
4.4.1	<i>Conduct an in-depth analysis of the INAI when both the Update and Category I assessment are completed as was done in the Natural Areas Plan to determine ownership, set goals, etc.</i>
4.4.2	<i>Prepare an INAI Technology Plan to identify immediate and short-range equipment and software needs to address the changes in technology and support by vendors in order to maintain a healthy database.</i>
4.4.3	<i>Work with local partners to fully develop the concept of “local natural areas” as now included in the Standards & Guidelines to address issues such as the need for sites to accommodate migratory birds/insects, corridors to allow adaptation to climate change, etc.</i>
4.5	Identifying a flexible, responsive, and fully funded statewide land acquisition effort.

4.5.1	<i>Create a granting program for registered 501(c) (3) land trusts in Illinois to use for matching foundation grants for land acquisition, capacity building, stewardship, and defense of easements.</i>
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.1	<i>Develop incentive programs for landowners to maintain high quality natural areas, e.g., provide a payment similar to CREP for enrolling land into a Nature Preserves System program.</i>
4.6.2	<i>Evaluate programs such as the Urban Forestry Program and Conservation Stewardship Program to include coordination with the Nature Preserves Commission staff to provide landowners the opportunity to protect their land as NPs or L&WRs and to minimize opportunities to use these programs to "bank" land to be sold in a few years.</i>
4.6.3	<i>Institutionalize stewardship within communities to build local support for natural areas by creating "Make a Difference Day" events for clean-up/management.</i>
4.6.4	<i>After the assessment of the ownership status of INAI sites is completed, contact all private landowners of the unprotected sites to discuss protection strategies for these sites.</i>
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.6.6	<i>Hold a bi-annual Natural Areas Summit to discuss the status of natural areas and the creation of sustainable networks, including the threats that continue to exist and management and funding needs</i>
4.7	Working with local units of government (municipalities & county governments), which have a role to play in establishing the sustainable natural areas network, yet often have minimal understanding of the ecological functions or their role in protecting them.
4.7.1	<i>Establish a pro-active outreach program for local units of government, a "Green Cities" initiative as defined in the Illinois Wildlife Action Plan to educate them & encourage adoption of sustainable development practices.</i>
4.8	Integrating the protection of natural resources into economic development plans and proposals, which is vital both to the protection of natural resources and successful economic development.

4.8.1	<i>Explore creating a Natural Areas Inventory Trail for publically owned sites – would serve as both an educational effort and a tourism activity.</i>
4.8.2	<i>Work to gain the support of tourism agencies in southern Illinois to increase interest in natural areas. A public guide for INAI sites would be helpful – with a slogan such as "Escape to IL Natural Areas" to attract visitors and increase support.</i>
4.8.3	<i>Work with other state agencies to encourage the inclusion of natural resource protection in their planning efforts, grant programs, and other activities.</i>
4.9	Strengthening the Nature Preserve system to better engage landowners enrolled in INPC programs, to increase enrollment of lands in protection programs, and to identify ways to protect lands that do not meet the INPC's strict criteria.
4.9.1	<i>Add categories to the Nature Preserve System that would target corporations and other private landowners with large holdings of high quality natural areas, e.g., a "legacy" concept that would be appealing to corporations or family landowners.</i>
4.9.2	<i>Send an annual newsletter to all Category I INAI and Nature Preserve private landowners to allow them to be more engaged in being stewards of their natural area.</i>
4.9.3	<i>Fully develop the Local Natural Areas designation to recognize natural areas that are worthy of protecting but that do not meet the standards for inclusion on the INAI.</i>
4.9.4	<i>Identify a formal dedication category for "corridors" similar to what exists for buffers to encourage landowners to participate in creating both buffers and corridors.</i>
4.10	Sustaining viable populations of endangered & threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population, so over time these populations may be lost.
4.10.1	<i>Use prescribed and focused preserve design to ensure the inclusion of Category II sites in the sustainable network of natural areas.</i>
4.10.2	<i>Acquire the necessary lands to ensure the survival of Category II sites.</i>
4.10.3	<i>Adopt and implement appropriate management strategies for Category II sites.</i>
4.10.4	<i>Based on criteria established by the ESPB and IDNR, conduct a review of, and outline the recovery potential for Illinois' endangered and threatened species.</i>

4.10.5	<i>Review all current Category II sites and identify boundaries, and develop criteria for future Category II boundary delineations.</i>
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.1	<i>Conduct a full assessment of the ownership status (public, private-protected, private unprotected) of all INAI sites and develop a strategy for approaching private landowners to discuss protection strategies.</i>
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.
4.12.1	<i>Establish and implement a policy to maintain and preserve the natural quality as the highest priority for all property owned and managed by IDNR.</i>
4.12.2	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to their sites.</i>
4.12.3	<i>Establish multiple natural areas restoration/management teams within each IDNR Division of Natural Heritage Region – “Heritage Teams”.</i>
4.12.4	<i>Establish and maintain the highly acclaimed Natural Heritage Residency program, which was a component of a university-approved Master’s degree curriculum in ecology, botany, zoology.</i>
4.12.5	<i>Create a student apprenticeship/internship program to provide additional technicians for management. Friends of the Forest Preserves & the Field Museum have good programs. The program could offer college credits to participants.</i>
4.12.6	<i>Create a new status for INAI sites that declined in qualify for the INAI – a “remediation needed” category that indicates the need for a management plan. This will help in establishing management priorities.</i>
4.12.7	<i>Build the capacity for the private natural area stewardship industry (companies that provide perform land management activities) so IDNR & others have qualified firms to hire across the state-requires funding. There is also a need for a credentialing process to ensure hiring qualified firms.</i>

4.12.8	<i>Establish and implement a process to evaluate and grade all lands owned and managed by IDNR using INAI grading methodologies, creating a map showing all of the forests, barrens, glades, woodlands, and wetland communities with their natural quality grade included. Priority should then be given to restoration work conducted in the higher graded communities.</i>
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.13	Developing efficient and productive volunteer stewardship programs within IDNR/INPC to assist in the stewardship of sustainable natural area networks.
4.13.1	<i>Establish one or more positions for Volunteer Stewardship Coordinators to identify, train, and direct volunteer stewardship activities in coordination with the DNB & INPC.</i>
4.13.2	<i>Establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.</i>
4.14	Addressing management needs, including funding, for the immediate and costly investments needed to protect the state's natural resource assets from current ecological threats, e.g., climate change and invasive species, and the many socio-cultural threats that exist.
4.14.1	<i>Ensure that all IDNR land management policies are based on sound science. Coordination with INHS staff on research/ project results would be useful.</i>
4.14.2	<i>Prepare management plans for targeted INAI sites and their buffers once the evaluation of the INAI data to determine the number of acres of INAI sites and the number of acres of habitat type by county is completed.</i>
4.14.3	<i>Develop the climate change component of the Wildlife Action Plan to evaluate the scale of the problem, explore potential solutions, and to secure federal funding as it becomes available to target the impacts of climate change.</i>
4.14.4	<i>Address how we deal with sites that no longer qualify for the INAI due to invasive species or other management problems. One option is to highlight these sites by requiring remediation plans be developed to try to restore them to their original inventory quality.</i>

4.14.5	<i>Prepare a summary of the reasons existing INAI sites have been reduced in quality. There are concerns that problems identified with existing INAI sites will reflect poorly on staff (IDNR, FPD, CD, etc) even if the problems are beyond their control given existing staffing and funding levels</i>
4.14.6	<i>Re-evaluate how IDNR is structured to address these key issues and others, such as non-game and E&T species. (See Ch 4 for details)</i>
4.14.7	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to sites owned by IDNR</i>
4.15	Improving Illinois' aquatic resources, many of which are in poor condition or are declining in quality
4.15.1	<i>Conduct a state-wide inventory of aquatic resources and update the INAI accordingly</i>
4.15.2	<i>Based on the results of the statewide inventory, initiate a "wade-able" streams program to protect those headwaters with the greatest needs</i>
4.16	Building support for conducting widespread auditing of the status of natural resources to ensure the state's valuable assets are being protected.
4.16.1	<i>Develop a natural resources auditing program that is politically acceptable and fundable. "Auditing" or "performance measurement" is critical when analyzing the status of the state's natural resource assets in order to make appropriate changes as needed (adaptive management)</i>
4.16.2	<i>Fully fund and expand the highly successful Critical Trends Assessment Program at the INHS to document the status of natural resources across the state</i>
4.17	Identifying the management needs and the resources and use to defend existing Nature Preserves and Land and Water Reserves.
4.17.1	<i>Post notification, in English and Spanish, of penalties for violation at protected sites (civil fines up to \$10,000) and charge the allowed criminal penalties (Class A misdemeanor) to violators of the INAPA</i>
4.17.2	<i>4.17.2 Educate Conservation Police Officers, county sheriffs, and other police officers about their authority to enforce the INAPA and train them to recognize infringements on or violations of the INAPA.</i>

4.17.3	<i>4.17.3 Recognize the need for passive or pro-active defense, by providing the staff resources needed to participate in pre-development meetings with developers and local government officials to negotiate natural areas protection agreements.</i>
4.17.4	<i>When appropriate, solicit and encourage the Illinois Attorney General or the local State's attorney to take legal action to have the threat stopped or to force someone to take actions that would prevent a threat from happening</i>
4.17.5	<i>Provide training for Endangered Species Consultation program staff to fully understand the adverse impacts that can occur from actions such as pipeline installation, oil exploration, mining operations, subdivision development, wind turbines, and more, and find ways of exploring alternative, less damaging approaches to clients.</i>
4.17.6	<i>Upon designation of a natural area as an INAI site, identify and monitor potential threats from local activities (such as the damming of a river upstream from the site or nearby crop dusting) which may adversely affect them</i>
4.17.7	<i>Address how to handle INAI sites that are found, through an auditing process, to no longer qualify for inclusion on the INAI. One option is to create a new category that requires a remediation plan to identify corrective management needs.</i>
4.19	Identifying additional ways to permanently protect core natural areas.
4.19.1	<i>Dedicate all INAI sites owned by FPD/CDs as Illinois Nature Preserves as a first priority or as a Land & Water Reserve as a second priority.</i>
4.19.3	<i>Establish comprehensive natural resources auditing programs.</i>
4.20	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.20.1	<i>Develop incentive programs for landowners to maintain high quality natural areas rather than be required to degrade or destroy such resources in order to receive a subsidy, such as the Forest Development</i>
4.20.3	<i>Work with private landowners to encourage them to protect and manage high quality natural areas and to use their non-agricultural lands as buffers to or linkages between natural areas.</i>
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.

4.21.1	<i>Work with the State of Illinois to consolidate ownership of INAI sites via land trades such as was done in the early 1990s</i>
4.22	Coordinating with federal agencies to identify management needs and manage natural areas that are in federal ownership.
4.22.1	<i>Collaborate with IDNR to identify management needs for INAI sites and use opportunities granted within the National Forest Management Act to provide stewardship.</i>
5.3	Strengthening the capacity of land trusts and other natural resource NGOs
5.3.2	<i>Create a grant program for land acquisition within IDNR for land trusts</i>
5.4	Identifying and promoting ways in land trusts can assist in protecting and sustaining natural areas
5.4.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.4.3	<i>Work with IDNR to identify those lands land trusts own that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.4.4	<i>Work with IDNR's Wildlife Action Plan in forming Conservation Opportunity Area (COA) Partnerships that serve to protect natural areas located within COAs</i>
5.4.5	<i>Work to establish economic incentives at the state and federal level for the preservation of high-quality natural areas. The 2005 LTA Census indicates that tax incentives for land conservation are correlated to a rise in preservation of private lands through land trust use of conservation easements among other items</i>
5.4.6	<i>Assist IDNR and the INPC in identifying and contacting the landowners of high quality natural areas identified in the INAI Update conducted in 2008-2011</i>
5.5	Engaging private landowners in protecting and sustaining natural areas on land they own.
5.5.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.5.3	<i>Work with IDNR to identify the lands they own that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.5.5	<i>Participate in the Illinois Natural Areas Inventory, allowing access to their property for vegetation surveys, as appropriate.</i>
5.5.7	<i>Develop a specific program to assist private landowners, especially non-farm landowners, in protecting and sustaining natural areas.</i>

5.5.8	<i>Develop natural area project-based strategies to attract business and industry in the effort to protect and sustain natural areas. The business community is known to respond more readily to specific proposals, such as purchase or restore a specific site with an estimated cost</i>
5.5.9	<i>Assist private landowners to pursue available assistance by creating a single unified source of information, perhaps a web portal, with a comprehensive catalog of all available program assistance and links to sites providing additional information.</i>
5.7	Providing IDNR the resources needed to increase volunteer activities for the stewardship and defense of natural areas
5.7.1	<i>Support an IDNR initiative to establish a statewide Master Stewards program within IDNR to train and support individuals who want to volunteer to steward natural areas in the area where they live and work.</i>
5.7.2	<i>Provide funding to hire volunteer coordinators at the regional offices to increase and organize volunteers for activities within IDNR</i>
5.1	Identifying ways in which elementary, middle, junior and high schools, and colleges and universities can assist in protecting and sustaining natural areas
5.10.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.10.3	<i>Work with IDNR to identify lands they own that could serve as buffers or corridors</i>

State Government-CMS

SNAV Reference Number	Challenges & Opportunities
4.1	Hiring and retaining qualified professional staff within IDNR/INPC/ESPB.
4.1.5	<i>Direct CMS to update IDNR staff position descriptions and qualification requirements at all levels of the agency to ensure that only qualified candidates are hired.</i>

State Government-DCEO

SNAV Reference Number	Challenges & Opportunities
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4.8	Integrating the protection of natural resources into economic development plans and proposals, which is vital both to the protection of natural resources and successful economic development.
4.8.2	<i>Work to gain the support of tourism agencies in southern Illinois to increase interest in natural areas. A public guide for INAI sites would be helpful – with a slogan such as "Escape to IL Natural Areas" to attract visitors and increase support.</i>

State Government-IHPA

SNAV Reference Number	Challenges & Opportunities
5.1	Identifying ways in which IHPA can assist in protecting and sustaining natural areas
5.1.1	<i>Dedicate any INAI sites owned by the agency as a Nature Preserve or register as a Land & Water Reserve</i>
5.1.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.1.3	<i>Work with IDNR to identify those lands IHPA owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>

Federal Government-USFWS

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.
4.12.2	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to their sites.</i>

4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.
4.21.4 & 4.21.5	<i>Before undertaking major land-disturbing projects, including restoration projects, coordinate with IDNR and local natural resources agencies to determine if key natural areas exist on the site.</i>

Federal Government-USDA

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.20	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.20.1	<i>Develop incentive programs for landowners to maintain high quality natural areas rather than be required to degrade or destroy such resources in order to receive a subsidy, such as the Forest Development</i>
4.20.2	<i>Strengthen existing agricultural programs to benefit the potential sustainability of natural areas. This includes: Requiring the use of native vegetation in programs and increasing the duration of easements.</i>

Federal Government-USDA-USFS

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>

4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.20	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.20.4	<i>Designate all Category I INAI sites as Research Natural Areas to provide the greatest protection, or for INAI sites not designated as RNAs, ensure they are designated as unsuitable for resource use and/or extraction.</i>
4.20.5	<i>Protect state endangered and threatened species by listing those that occur on USFS lands on the Regional Forester's [Sensitive] Species List.</i>
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.
4.21.1	<i>Work with the State of Illinois to consolidate ownership of INAI sites via land trades such as was done in the early 1990s</i>
4.21.2	<i>Ensure that forest-wide management objectives include creation and maintenance of sustainable high-quality natural areas as a priority, including those sites not now designated as an RNA</i>
4.21.3	<i>Establish and implement a process to evaluate and grade all Shawnee National Forest lands using INAI grading methodologies, creating a map showing all of the forests, barrens, glades, woodlands, and wetland communities with their natural quality grade included. Priority should then be given to restoration work conducted in the higher graded communities</i>
4.22	Coordinating with federal agencies to identify management needs and manage natural areas that are in federal ownership.
4.22.1	<i>Collaborate with IDNR to identify management needs for INAI sites and use opportunities granted within the National Forest Management Act to provide stewardship.</i>
4.22.2	<i>Allocate adequate funding to monitor natural areas for disturbances and restore damages found per the "Natural Area Management Prescription"</i>
4.22.3	<i>Create a federally approved programmatic NEPA for burning, selective tree and shrub removal, and invasive species control and other management within INAI sites (RNAs)</i>
4.22.4	<i>Address the need for management of INAI sites (RNAs) that are located within federally designated Wilderness areas</i>

Federal Government-USDA-NRCS

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.20	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.20.2	<i>Strengthen existing agricultural programs to benefit the potential sustainability of natural areas. This includes: Requiring the use of native vegetation in programs and increasing the duration of easements.</i>
4.20.3	<i>Work with private landowners to encourage them to protect and manage high quality natural areas and to use their non-agricultural lands as buffers to or linkages between natural areas.</i>
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.
4.21.12	<i>Work with IDNR/INPC/ESPB on commonly shared goals, such as the promotion of at-risk species and the restoration of important native wildlife habitats.</i>
4.23	Identifying ways of strengthening NRCS programs to protect and sustain natural areas.
4.23.1	<i>Strengthen existing programs directed towards agricultural lands to benefit the process of sustaining natural areas.</i>
4.23.2	<i>Work with private landowners to encourage them to protect and manage high quality natural areas and to use their non-agricultural lands as buffers or linkages to existing sites.</i>
4.23.3	<i>Work with IDNR/INPC/ESPB on commonly shared goals, such as the promotion of at-risk species and the restoration of important native wildlife habitats.</i>

Federal Government-USACE

SNAV Reference Number	Challenges & Opportunities
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4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.
4.21.4 & 4.21.5	<i>Before undertaking major land-disturbing projects, including restoration projects, coordinate with IDNR and local natural resources agencies to determine if key natural areas exist on the site.</i>
4.21.6	<i>Incorporate natural areas and state endangered species in the EMP restoration plans.</i>

Federal Government-FSA

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.21	Coordinating the protection of natural areas and creation of sustainable networks with federal agencies.
4.21.8	<i>Coordinate with IDNR's Natural Heritage program to determine if prospective easements are located in proximity to a natural area or if the site might play a role in a sustainable network of natural areas</i>
4.21.9	<i>Develop ecologically sound wildlife habitat requirements for programs designed to protect wildlife, including endangered species</i>

4.21.10	<i>Establish an outreach and education program to encourage longer-term preservation of sites with short-term conservation easements, including dedications as a L&WR.</i>
4.21.11	<i>Work to amend the Farm Bill to lengthen the time period of the various easement programs to discourage land banking.</i>

Local Governments - Forest Preserve/Conservation Districts

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.10	Sustaining viable populations of endangered & threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population, so over time these populations may be lost.
4.10.3	<i>Adopt and implement appropriate management strategies for Category II sites.</i>
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.
4.12.2	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to their sites.</i>
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.18	Increasing the number of local open space/natural resource agencies (Forest Preserve & Conservation Districts) because of the valuable role they play in natural resource protection. Only a few counties in Illinois have these agencies, and no new ones have been formed for almost 40 years.

4.18.1	<i>Provide technical assistance to stakeholders in counties where FPD/CDs do not exist when local support exists to establish a new FPD or CD</i>
4.19	Identifying additional ways to permanently protect core natural areas.
4.19.1	<i>Dedicate all INAI sites owned by FPD/CDs as Illinois Nature Preserves as a first priority or as a Land & Water Reserve as a second priority.</i>
4.19.2	<i>Identify locally significant natural areas that can serve as important links to INAI sites.</i>
4.19.3	<i>Establish comprehensive natural resources auditing programs.</i>
5.8	Identifying the ways in which these units of government can protect and sustain natural areas
5.8.1	<i>Dedicate all INAI sites owned by these governments as a Nature Preserve or register as a Land & Water Reserve</i>
5.8.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.8.3	<i>Work with IDNR to identify those lands each owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>

Local Governments - Municipalities/Counties

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.3	<i>Institutionalize stewardship within communities to build local support for natural areas by creating "Make a Difference Day" events for clean-up/management.</i>
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.8	Integrating the protection of natural resources into economic development plans and proposals, which is vital both to the protection of natural resources and successful economic development.
4.8.5	<i>Integrate natural resource protection in local comprehensive, economic development, and other planning efforts.</i>

4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
5.8	Identifying the ways in which these units of government can protect and sustain natural areas
5.8.1	<i>Dedicate all INAI sites owned by these governments as a Nature Preserve or register as a Land & Water Reserve</i>
5.8.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.8.3	<i>Work with IDNR to identify those lands each owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.8.4	<i>Conduct a comprehensive natural resources inventory of lands within their area of jurisdiction to include all sensitive natural resources, as well as the overall green infrastructure</i>
5.8.5	<i>Revise existing comprehensive plans to include language supportive of green infrastructure, conducting natural resources inventories, creating overlay districts with special development practices such as conservation design to protect sensitive resources, etc</i>
5.8.6	<i>Review all ordinances and revise as needed to encourage or require best management practices for stormwater management, conservation design, and wetland protection</i>
5.8.7	<i>Prepare a green infrastructure map within their area of jurisdiction</i>
5.8.8	<i>Prepare and adopting Local Land Resource Management Plans pursuant to the Local Land Resource Management Planning Act by municipalities and counties.</i>

Local governments - Townships

SNAV Reference Number	Challenges & Opportunities
5.8	Identifying the ways in which these units of government can protect and sustain natural areas
5.8.1	<i>Dedicate all INAI sites owned by these governments as a Nature Preserve or register as a Land & Water Reserve</i>
5.8.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>

5.8.3	<i>Work with IDNR to identify those lands each owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.8.9	<i>Prepare and adopting Open Space Plans by Township governments.</i>

Local Governments - Park Districts

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
5.2	Identifying ways in which park districts can assist in protecting and sustaining natural areas
5.2.1	<i>Dedicate all INAI sites owned by park districts as a Nature Preserve or Land & Water Reserve</i>
5.2.2	<i>Work with IDNR to manage any INAI sites owned by park districts to maintain or restore them</i>
5.2.3	<i>Work with IDNR to identify those lands owned by park districts that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.2.4	<i>Develop passive recreation plans for the portions of lands they own that contain sensitive natural resources, recognizing the importance of the need to protect them and the public's interest in passive activities such as bird watching</i>
5.8	Identifying the ways in which these units of government can protect and sustain natural areas
5.8.1	<i>Dedicate all INAI sites owned by these governments as a Nature Preserve or register as a Land & Water Reserve</i>

5.8.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.8.3	<i>Work with IDNR to identify those lands each owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>

Local Governments - SWCDs

SNAV Reference Number	Challenges & Opportunities
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
5.8	Identifying the ways in which these units of government can protect and sustain natural areas
5.8.1	<i>Dedicate all INAI sites owned by these governments as a Nature Preserve or register as a Land & Water Reserve</i>
5.8.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.8.3	<i>Work with IDNR to identify those lands each owns that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.9	Identifying additional ways in which SWCDs can assist in protecting and sustaining natural areas
5.9.1	<i>Dedicate all INAI sites owned by SWCDs as a Illinois Nature Preserve or register as a Land & Water Reserve</i>
5.9.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.9.3	<i>Work with IDNR to identify SWCD programs that have complementary goals of SNAP and work with private landowners to encourage them to protect and sustain natural areas</i>

5.9.4	<i>Assist with the Illinois Natural Areas Inventory process, where possible, by educating landowners on the importance of this effort and encouraging their participation</i>
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NGOs - Land Trusts

SNAV Reference Number	Challenges & Opportunities
4.2	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ESPB activities, including management of natural areas & land acquisition.
4.2.1	<i>Work with Partners for Parks and Wildlife and the Conservation Congress to generate possibly sources of funding.</i>
4.5	Identifying a flexible, responsive, and fully funded statewide land acquisition effort.
4.5.1	<i>Create a granting program for registered 501(c) (3) land trusts in Illinois to use for matching foundation grants for land acquisition, capacity building, stewardship, and defense of easements.</i>
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.3	<i>Institutionalize stewardship within communities to build local support for natural areas by creating "Make a Difference Day" events for clean-up/management.</i>
4.10	Sustaining viable populations of endangered & threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population, so over time these populations may be lost.
4.10.2	<i>Acquire the necessary lands to ensure the survival of Category II sites.</i>
4.10.3	<i>Adopt and implement appropriate management strategies for Category II sites.</i>
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
4.12	Adequately managing the large number of natural areas that are widely dispersed, given that IDNR and other natural resources agencies have too few staff or resources.

4.12.2	<i>Work with natural resource partners, including forest preserve and conservation districts and land trusts, to assist in or assume management of sites in proximity to their sites.</i>
4.12.9	<i>Hold an annual workshop for conservation planners, ecologists and others engaged in creating the sustainable networks of natural areas.</i>
4.19	Identifying additional ways to permanently protect core natural areas.
4.19.1	<i>Dedicate all INAI sites owned by FPD/CDs as Illinois Nature Preserves as a first priority or as a Land & Water Reserve as a second priority.</i>
5.3	Strengthening the capacity of land trusts and other natural resource NGOs
5.3.1	<i>Explore ways of ensuring that all areas of the state have a functioning land trust. This could require creating new land trusts or extending the geographic coverage of existing land trusts</i>
5.3.2	<i>Create a grant program for land acquisition within IDNR for land trusts</i>
5.3.3	<i>Establish a service center to provide support for Illinois' land trusts, possibly through the Prairie State Conservation Coalition.</i>
5.4	Identifying and promoting ways in land trusts can assist in protecting and sustaining natural areas
5.4.1	<i>Dedicate all INAI sites owned by land trusts as a Nature Preserve or register as a Land & Water Reserve</i>
5.4.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.4.3	<i>Work with IDNR to identify those lands land trusts own that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.4.4	<i>Work with IDNR's Wildlife Action Plan in forming Conservation Opportunity Area (COA) Partnerships that serve to protect natural areas located within COAs</i>
5.4.5	<i>Work to establish economic incentives at the state and federal level for the preservation of high-quality natural areas. The 2005 LTA Census indicates that tax incentives for land conservation are correlated to a rise in preservation of private lands through land trust use of conservation easements among other items</i>
5.4.6	<i>Assist IDNR and the INPC in identifying and contacting the landowners of high quality natural areas identified in the INAI Update conducted in 2008-2011</i>

NGOs - All

SNAV Reference Number	Challenges & Opportunities
4.2	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ESPB activities, including management of natural areas & land acquisition.
4.2.1	<i>Work with Partners for Parks and Wildlife and the Conservation Congress to generate possibly sources of funding.</i>
4.6	Protecting natural resources given that much of Illinois' natural resources are in private ownership.
4.6.3	<i>Institutionalize stewardship within communities to build local support for natural areas by creating "Make a Difference Day" events for clean-up/management.</i>
4.6.5	<i>Make INAI information accessible to federal agencies, local officials, developers, and others as one way of protecting them through local comprehensive planning, and a wide range of regulatory programs.</i>
4.10	Sustaining viable populations of endangered & threatened species given that many Category II sites are of inadequate size to sustain a minimum viable population, so over time these populations may be lost.
4.10.2	<i>Acquire the necessary lands to ensure the survival of Category II sites.</i>
4.10.3	<i>Adopt and implement appropriate management strategies for Category II sites.</i>
4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
5.6	Securing adequate, stable, long-term funding, and staffing for IDNR/INPC/ ESPB activities, including management of natural areas & land acquisition
5.6.1	<i>Recognize the ecological, economic, and quality-of-life values of natural resources and appropriately fund IDNR/INPC/IESPB, including a statewide land acquisition fund</i>
5.6.2	<i>At a minimum, appropriate the amount of funds generated in special funds, and allow these funds to be spent on the purposes identified</i>

5.6.3	<i>As a preferred alternative, create a Conservation Commission with a dedicated funding source for IDNR. This would professionalize the organization and ensure the state's valuable assets will be protected in perpetuity</i>
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Private Corporations - Railroad Companies

SNAV Reference Number	Challenges & Opportunities
5.5	Engaging private landowners in protecting and sustaining natural areas on land they own.
5.5.6	<i>Railroad companies can work with IDNR to manage natural areas located adjacent to railroad rights-of-way.</i>

Private Landowners

4.11	Permanently protecting INAI sites, many of which are at risk of degradation or destruction, often by urban land uses authorized by local units of government.
4.11.2	<i>Dedicate all INAI sites as a Nature Preserve owned by any entity as a first priority and as a Land & Water Reserve as a second priority.</i>
4.19	Identifying additional ways to permanently protect core natural areas.
4.19.1	<i>Dedicate all INAI sites owned by FPD/CDs as Illinois Nature Preserves as a first priority or as a Land & Water Reserve as a second priority.</i>
5.5	Engaging private landowners in protecting and sustaining natural areas on land they own.
5.5.1	<i>Dedicate all INAI sites owned by them as a Nature Preserve or register the sites as a Land & Water Reserve</i>
5.5.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.5.3	<i>Work with IDNR to identify the lands they own that could play a role in making natural areas sustainable – serving as buffers or linkages to other natural areas</i>
5.5.4	<i>Private landowners can use Federal incentive programs such as the Wetlands Reserve Program (WRP) & Wetlands Reserve Enhancement Program (WREP) created by the Food, Conservation, and Energy Act of 2008 to protect wetlands on agricultural lands.</i>

5.5.5	<i>Participate in the Illinois Natural Areas Inventory, allowing access to their property for vegetation surveys, as appropriate.</i>
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Educational Institutions

SNAV Reference Number	Challenges & Opportunities
5.1	Identifying ways in which elementary, middle, junior and high schools, and colleges and universities can assist in protecting and sustaining natural areas
5.10.1	<i>Dedicate all INAI sites owned by educational institutions as an Illinois Nature Preserve or register as a Land & Water Reserve</i>
5.10.2	<i>Work with IDNR to manage any INAI sites they own to maintain or restore them</i>
5.10.3	<i>Work with IDNR to identify lands they own that could serve as buffers or corridors</i>
5.10.4	<i>Establish and maintain strong natural resources programs at colleges and universities. This should include an emphasis on Illinois' ecosystems and applied field work and research</i>
5.10.5	<i>Establish and create natural resource two-year degree and certification programs at community colleges to strengthen the stewardship capabilities of natural resource agencies and organizations.</i>
5.10.6	<i>Establish strong environmental education programs at elementary, middle, junior, and high schools, which can include on-site prairies, wetlands or other Illinois native vegetation to incorporate into school programs</i>