Conservation in a Highly Fragmented Landscape:

The Central Tallgrass Prairie Ecoregional Conservation Plan

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The Nature Conservancy®

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The Central Tallgrass Prairie Ecoregion Planning Team

Table of Contents

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With the adoption of *Conservation by Design* in 1995, The Nature Conservancy recognized the importance of working at larger scales to achieve our mission which is: *the long-term survival of all viable native species and community types through the design and conservation of portfolios of sites within ecoregions*. The Conservancy set forth to design conservation plans on an ecoregional basis by working closely with various conservation partners. These plans are intended to provide a framework within which the Conservancy and our partners, such as the Natural Heritage Programs, can make decisions regarding conservation actions to be taken at the local level, confident in the knowledge that site by site activities in ecoregions are not isolated but part of a larger, coherent design.

The highly fragmented nature of the Central Tallgrass Prairie (CTP) Ecoregion presented certain challenges for the Planning Team. How do you meet a goal of providing for the long-term viability of all native species and communities when large-scale natural landscapes account for such a small percentage of the region? How does The Nature Conservancy achieve mission success in an area where the remaining natural areas are often isolated from one another by miles of agricultural fields and are typically degraded by the threats imposed on them through fragmentation and detrimental land use practices?

One of the clear messages the planning team would like the reader to walk away with is that the conservation situation in the Central Tallgrass Prairie Ecoregion is desperate. The vast majority of the landscape has been converted to agricultural uses. Less than 5% of the ecoregion is considered "untilled" or "intact" from an ecological perspective. Few areas remain that retain some vestige of the natural communities that once dominated the landscape, and these remnants are typically under great stress either from adjacent incompatible land uses, invasive species, fire suppression, hydrologic alterations, or other threats. We cannot afford to lose any more of our natural heritage, and, in fact, there is a great need to restore some of the most severely damaged community types.

This plan presents a framework for thinking about conservation in a fragmented landscape and offers some suggestions about how to proceed in the near term to move in the direction of successful biodiversity conservation – it is a first step. The ultimate message in this plan is one of hope, but it is a hope tempered by a recognition that the road ahead is long and steep and the commitment required to one day achieve our mission is great. Through implementation we will learn more about how to restore natural functions to larger areas of the landscape. Future iterations of this plan will incorporate this knowledge and move us closer to achieving this mission.

Definitions

Ecoregion: a relatively large unit of land and water defined by the influences of shared climate and geology, the main factors determining the distribution of plants and animals in the area.

Portfolio: the suite of sites within an ecoregion that would collectively conserve the native species and community types found in that ecoregion.

Viability: the ability of a species or community to persist over time.

Natural Heritage Program/ Conservation Data Centers: State, regional, and/or national programs that develop and maintain data sets on location-specific information for imperiled plant and animal species, natural communities, natural areas, and areas under special management. Data are made available to a variety of users for the purposes of environmental review, conservation planning, scientific research, and monitoring of the status of biodiversity within the program's jurisdiction.

1. The Place and Its People

This section provides a brief overview of the ecoregion – the place, its history, and current socioeconomic characteristics.

1.1 Overview of the Ecoregion

The Central Tallgrass Prairie ecoregion encompass 110,468 square miles (286,112 km^2) extending from eastern Nebraska and northeastern Kansas east to northwestern Indiana. It comprises the eastern lobe of the Prairie Parkland Province and two ecoregion sections (Central Dissected Till Plains and Central Till

Plains) as delineated by Bailey et al. (1994). It covers parts of seven states: Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska and South Dakota (Figure 1). For purposes of this planning exercise, South Dakota staff did not participate, although the plan did consider ecoregional sites within the 366 square miles of South Dakota that are in the ecoregion.

The ecoregion is characterized by flat to gently rolling topography with steep bluffs bordering major river valleys (Bailey 1995), three of which traverse the region: the Mississippi, Missouri and Illinois. The Central Tallgrass Prairie is influenced to some degree by the rain shadow of the Rocky Mountains that created habitat favoring grasses. Wide temperature fluctuations and persistent winds characterize the climate, with an annual precipitation from 27 to 40 inches.

During the Pleistocene Epoch, glaciers advanced and retreated at least four times across all or portions of this ecoregion, depositing large areas of glacial drift and loess and creating the characteristic rolling topography. The area of most recent glaciation (about 12,000 years ago) is located in the Grand Prairie region of central Illinois (i.e., east of the Illinois River) and northwestern Indiana. The older drift area of the Kansan and Nebraskan glaciation (600,000 to 700,000 years ago), west of the Illinois River extending into Iowa, Missouri, Kansas and Nebraska, exhibits greater dissection of the terrain and soils of less depth and fertility due to more extensive leaching and erosion.

1.1.1 Grand Prairies

The Central Tallgrass Prairie ecoregion was named for the natural communities that historically dominated the area. Tallgrass prairies ranged from wet prairie in deep organic-rich soils that were constantly at or near saturation, to dry upland prairies on thin soils in excessively drained sandy and rocky sites. Prairies in the western part of the ecoregion, such as the northern portion of the Flint Hills, are on relatively thin soils over sedimentary rocks. Over millennia, some of the wetter prairies formed vast accumulations of carbon-rich organic soils, creating some of the most agriculturally productive sites in the temperate world. The very productivity of these soils proved the undoing of the prairie landscape, as the intensive agriculture that characterizes the region today became established.

The primary ecological processes driving the natural systems of the tallgrass prairie were climate, grazing and fire, each operating at multiple scales, frequencies and intensities (Weaver and Albertson 1956, Vogl 1974, Anderson 1982, Singh et al. 1983, Axelrod 1985, Risser 1985, Anderson 1990). Grazing and fire interacting with climate, landform, and soils produced variable regional vegetation patterns. People living on the landscape influenced these patterns (by hunting, setting fires, etc.) and thus played a large role in shaping the pre-Euro-American settlement landscape.

As a whole, grassland systems evolved under the influence of grazing (Roe 1951), with grasses subjected to grazing pressure for millions of years (Singh et al. 1983). Bison, elk and white-tailed deer were the principal large grazers in the ecoregion. They moved to locations with preferred forage in response to patterns of precipitation, drought and fire (Risser 1990). Their transitory grazing patterns allowed the vegetation to recover from intermittent, and sometimes intensive, grazing events.

Fire played a dominant role in the maintenance of most terrestrial communities in the Central Tallgrass Prairie. The region has been periodically subjected to fires of natural and human origin over at least the past 10,000 years (Wells 1965, Pyne 1982, Higgins 1986, Ladd 1991). Historically, fires burned extensively throughout much of the ecoregion, stopping at natural firebreaks, such as gallery forests along streams or irregular terrain, or when fuel conditions changed sufficiently to restrict the spread of fire (Wells 1970). Fire--like grazing and climate--promoted the development of a vegetation mosaic across the prairie landscape, leading to greater landscape diversity than would otherwise have been the case. The mosaic of burned and unburned areas created by landscape-scale fires secondarily impacted landscape processes. Ungulates, for example, preferentially graze vegetation in burned areas because of greater productivity and nutritive quality of forage following fire (Risser 1985, Risser 1990, Collins and Gibson 1990, Ostlie et al. 1996).

1.1.2 Great Rivers

The Central Tallgrass Prairie ecoregion might also be called the Great Rivers Ecoregion, as it is dissected and bordered by sections of the Mississippi, Missouri, and Illinois Rivers. With an extensive and diverse

aquatic network that ranges from small headwater streams and wetlands to large floodplain river systems, this region supports a broad array of diverse aquatic systems that has had a dominant influence on the region's biological diversity. For example, the Upper Mississippi River System (UMRS) supports 485 species of mussels, fishes, amphibians, reptiles, birds, and mammals, including 40% of North America's migratory waterfowl and shorebirds (Sparks et al. 1998). This large river network, with its associated large floodplain systems and extensive tributaries, has enabled the long-range migrations of the American eel, supported unique ancient fishes such as the paddlefish and the lake sturgeon, and evolved unusual endemic plant species such as the federally threatened decurrent false aster.

Aquatic systems responded in concert with terrestrial ecological processes. In particular, a strong and influential "natural flow regime" (Poff et al. 1997) evolved in the region. Annual flooding and drought, such as the spring flood and summer low-flow period on the Illinois and Mississippi Rivers (Sparks et al. 1998), characterized this region. This natural flow regime was predictable yet dynamic, to which a diverse set of aquatic species adapted and prospered.

The Upper Mississippi, Illinois, and lower Missouri rivers belong to a select, world-class group of large floodplain river ecosystems that include the Amazon and Nile (Sparks 1995). The extensive and intricate floodplain systems are composed of a mosaic of backwater habitat including floodplain lakes and wetlands, as well as an extensive web of main and side channel connections, that support diverse riverine plant and animal communities.

1.1.3 Amber Waves of Grain

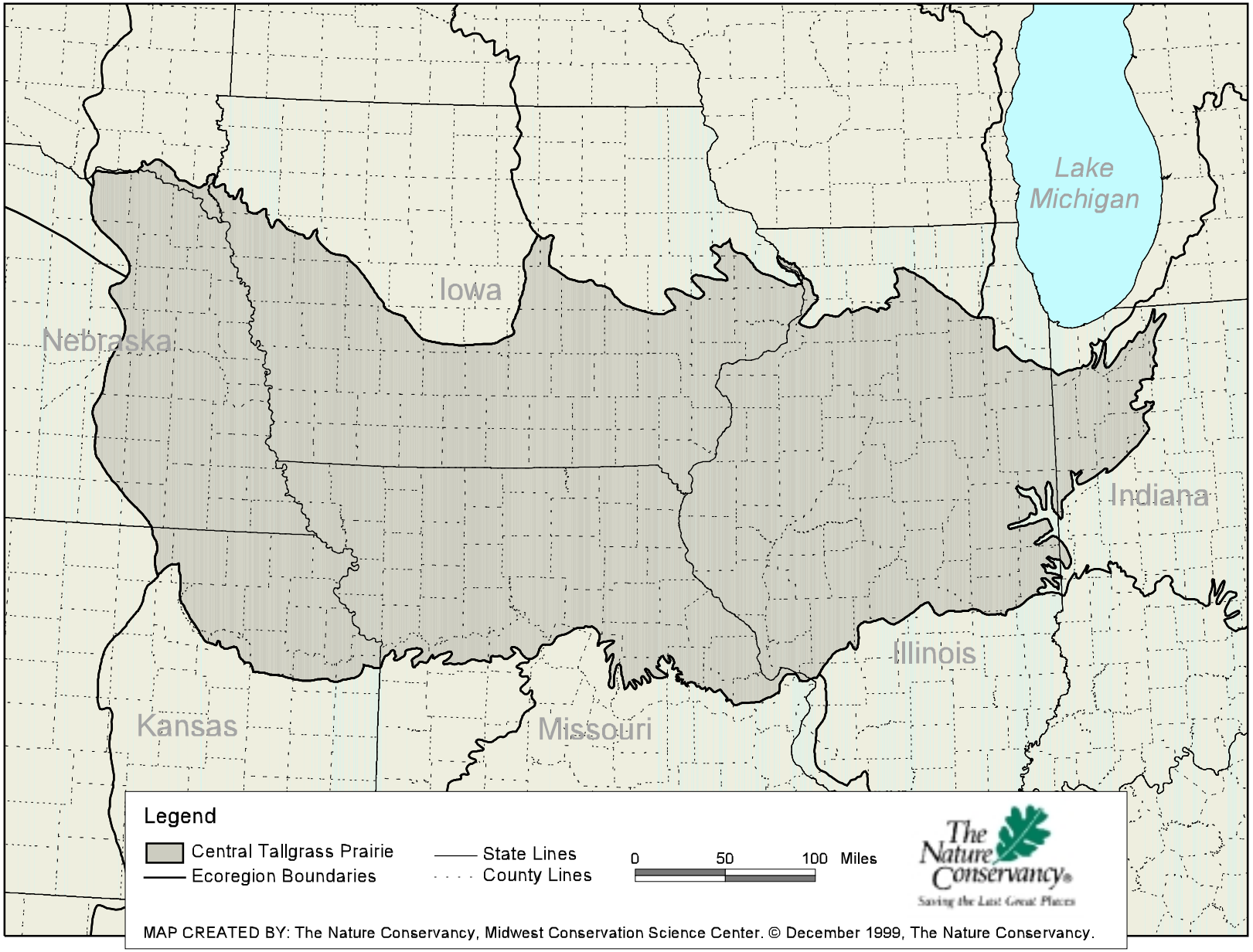
Euro-American settlement over the past 150 years has had a major impact on the landscape. In fact, few places in the world have experienced the recent human-made alteration to the extent documented in the prairie regions of the central United States (Noss et al. 1995). While urban development has had impacts on natural communities in the region, these effects pale in comparison to the wholesale conversion of the rich prairie landscape into vast monocultures of corn and soybeans. Even though the region is considered by some the most agriculturally productive area in the world, this productivity has been gained at the expense of our natural heritage. Today, remnant communities cover less than one percent of the ecoregion. Much of this remaining habitat is degraded, threatened by soil erosion and invasive species, and devoid of species that are sensitive, have large area needs or are migratory, such as some species of grassland birds. Additionally, much of the remaining prairie in the ecoregion is concentrated in just a few places such as the Loess Hills of Iowa and Missouri and the Flint Hills of Kansas.

Agriculture also impacts the quality of remaining natural communities through habitat fragmentation, intensive grazing pressure and fire suppression, causing deterioration of these natural remnants. The remaining uncultivated lands generally are less diverse and tend to be on the least agriculturally productive sites. They also tend to be widely scattered and disjointed from one another. The disproportionate loss of community types has resulted in species once common becoming rare. For example, the western prairie fringed orchid was a historically widespread and locally common species of calcareous mesic to wet-mesic prairies and sedge meadows, ranging from southern Manitoba to northern Oklahoma. The wholesale conversion of its habitat to agriculture has caused the species to be placed on the U.S. Threatened Species list (Ostlie et al., 1996).

Fire suppression has contributed to the invasion of woody species into many prairies, savannas, and woodlands. The resultant loss of diversity in the understory is well documented at many sites. In addition, fire can prevent or delay the spread of exotic and invasive species, which is a predominant threat across many, if not most of the terrestrial natural areas in the ecoregion.

The natural flow of the region's large rivers has been significantly impacted by a multitude of factors related to the extensive agricultural conversion of the landscape. Factors frequently cited include: the construction of extensive levees to allow floodplain farming; lock and dam systems to facilitate the shipping of grain and other commodities; and altered hydrology from the channelization of streams to facilitate land drainage and habitat conversion in the uplands. Combined with degraded water quality, these threats seriously impact the region's aquatic diversity.

Figure 1: Central Tallgrass Prairie Ecoregion



1.2 Human Context

Socioeconomic data were collected at the state and county level for the six states that comprise the majority of the Central Tallgrass Prairie Ecoregion (Illinois, Indiana, Iowa, Kansas, Missouri, and Nebraska). The three South Dakota counties that are partly in the ecoregion were not included in the analysis (population ~ 45,000 in 1995). Data were obtained from United States Bureau of the Census and United States Bureau of Economic Analysis data files.

Overall trends. Counties in Northern Missouri and West-Central Illinois tended to be smaller and have poorer, less educated, and older populations than counties in the other states. These counties also tended to have the fewest residents of counties in the ecoregion. Agriculture is a strong part of the economy in most of the non-urban counties in the ecoregion, with 12.1% of CTP residents employed in the agricultural sector in 1989 and agriculture contributing up to 46% of overall county earnings in some places (the rate was generally highest in Nebraska counties).

Population. The population of all CTP counties was 12,457,189 in 1995, representing about 40% of the population of the six primary CTP states. Population is concentrated in and around the urban counties containing Kansas City, Chicago, and Omaha, as well as the urban centers of medium-sized cities like Peoria and Springfield, Illinois, Des Moines and Cedar Rapids, Iowa, and Columbia, Missouri. The smallest populations were found in the counties that stretch from southeastern Nebraska across northern Missouri and southern Iowa and into western Illinois. Population increases between 1990-1995 were steepest in the counties containing or adjoining urban areas. Population declines during that period were seen across the ecoregion primarily in counties that did not contain or were not adjacent to an urban area.

Farm Employment. In 1979, CTP residents were more likely to be engaged in farming than their counterparts across each state. By 1989, farm employment had decreased in five of the six states, but had increased from 7.1% to 10% in Nebraska. The CTP farm sector employment rate declined during those years from 16.6% to 12.1%.

Education. People living within the CTP ecoregion on average have less education than the general populations of the six states that the ecoregion crosses. On average, people living within the counties in the ecoregion are less likely to have a bachelor's degree and less likely to have a high school diploma than the overall state averages.

Income. CTP residents had a lower per capita income than the general populations of the six states that the ecoregion crosses: $17,109 in CTP versus the statewide range from $18,275 in Iowa to $22,560 in Illinois. For all six states, the average income for CTP counties in each state was also lower than the state average.

Age. CTP residents were somewhat older than the state averages in 1990: the median age within the CTP counties was 35.4 in 1990, while the median age across the six states ranged from 32.8 years in Indiana and Illinois to 34 years in Iowa. There was a higher senior citizen population in the CTP counties than in the states generally.

Poverty. In 1979, the average poverty rate within the CTP counties (11.8%) was somewhat higher than the average in five of the six states, Missouri being the exception (12.2%). Illinois counties were most likely to see an increase in poverty between 1979-1989 (all but eight counties had an increase), while Nebraska counties were least likely to have an increase (10/34 counties had an increase). In 1989, a high poverty rate was concentrated in a band running across the northernmost Missouri and southernmost Iowa counties and into west central Illinois.

2. Building a Foundation for Conservation Design

A brief summary of the process followed to develop the plan, an overview of the planning guidelines used, as well as a summary of the key conservation design issues considered are provided here.

2.1 Planning Teams

Five teams of people worked together to develop the CTP ecoregional plan: a Core Planning Team, the Assessment & Design Team, an Aquatics Team, a Restoration Team, and the Strategy Team. Table 1 shows the membership and general responsibilities for each of the teams that worked together to develop the plan.

Table 1: Ecoregional Planning Team Membership

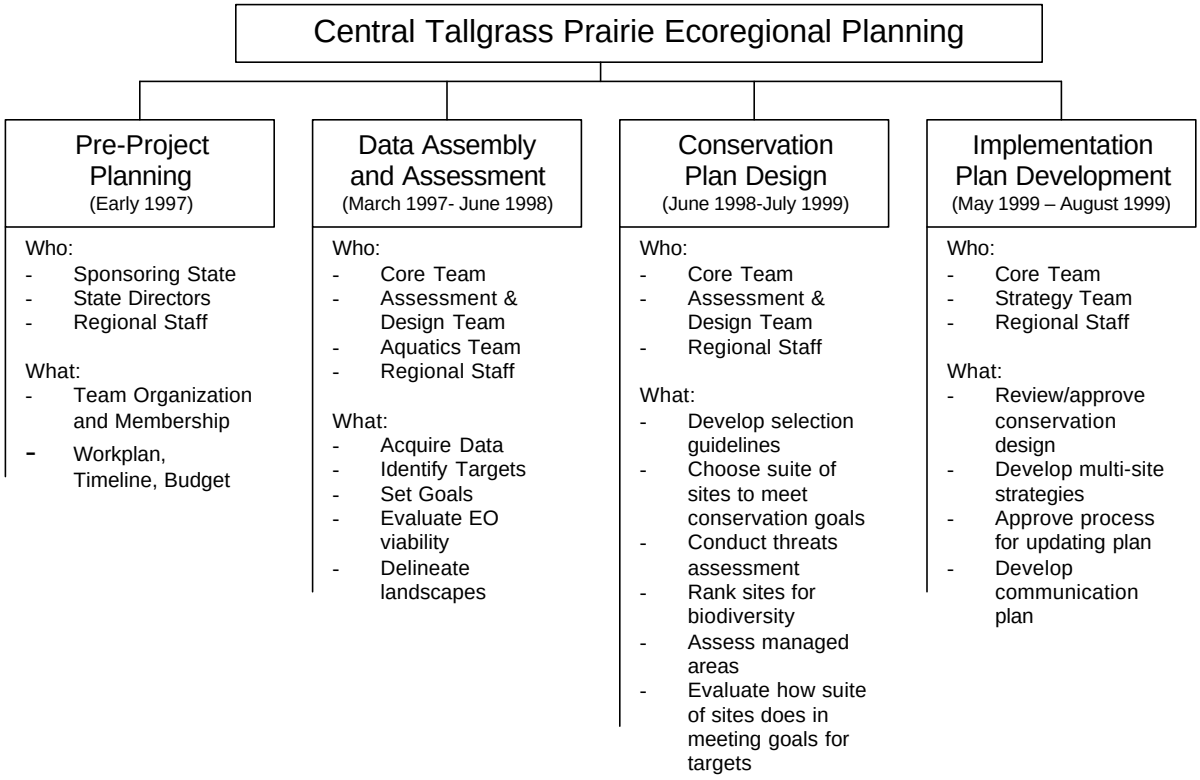
Core Team	**Assessment & Design Team**	**Aquatics Team**	**Restoration Team**	**Strategy Team**
Responsible for coordinating all aspects of the project	*Responsible for data collection and site selection*	*Responsible for recommending aquatic sites*	*Responsible for evaluating restoration as a conservation strategy*	*Responsible for approving plan and developing multi-site strategies*
Science, Stewardship and Planning staff from Illinois, Missouri, and Iowa	Conservancy Science & Stewardship staff from CTP states	TNC Great Lakes Program Aquatic Ecologist	Science, Stewardship staff from Illinois, Indiana, Iowa, Missouri, and Nebraska	State Director (or designee) from each CTP state
Great Plains Program Science Director	Conservancy MRO Science staff	Aquatic experts from all six states	Great Plains Program Science Director	Protection and Government Relations staff from Illinois
Heritage staff from Kansas	Heritage staff from CTP states	TNC MRO Technical staff	USFWS Biologist	Core Team
Midwest Resource Office Science staff	Other partners from state/federal agencies		Heritage staff from Indiana and Nebraska	Development staff from Nebraska
	Core Team			

2.2 Planning Process

The process followed was comparable to that followed by other ecoregional planning teams across the country, and therefore will not be described in detail here. Those interested may refer to the Northern Tallgrass Prairie Ecoregional Plan or Central Shortgrass Prairie Plan for descriptions of a similar process.

Figure 2 shows the major phases of the project, the approximate timeframe for each phase, and the relationship and responsibilities of the teams in developing the plan. Additional teams have been created to oversee implementation and on-going portfolio revisions (Implementation Team and Site Selection Advisory Team).

Figure 2: Process and Timeframe for CTP Plan Development



2.3 Planning Data and Guidelines

The Assessment and Design Team completed the following critical assessment products prior to selection of sites. A few of these are summarized below.

* List of ecoregional conservation targets (species and natural communities);
* Database of ecoregional target occurrences;
* Viability guidelines for target occurrences;
* Ecoregional conservation goals for each target;
* Untilled landscape identification;
* Data gap documentation.

2.3.1 Conservation Targets

The targets identified included all native community types, all G1-G3 ranked species, and several uncommon plant varieties and animal subspecies ranked T1-T3 (see sidebar) with occurrences in the ecoregion. This amounted to 98 terrestrial communities and 71 species. Fifty aquatic sites were also selected as discussed in the following text box. Specific information about the terrestrial community and species targets, their pattern and distribution, is included in Appendices A (communities) and B (species). G-ranks are defined in the accompanying sidebar.

Definition of G-ranks and T-ranks

Global ranks, shortened to "G-ranks," indicate the relative abundance and stability of species and natural communities globally. For example, a rank of "G1" indicates that a particular species or community is critically imperiled, represented by no more than five occurrences (or 1,000 or fewer individuals) worldwide. A rank of "G5" is given to those species and communities that are stable and abundant globally.

"T-ranks" follow the same basic logic as G-ranks, but are used to describe the relative abundance of animal subspecies or plant varieties, and are always listed with the G-rank for the species (as in G5T1, which would indicate a rare subspecies of a common species).

Discussion: Selecting Aquatic Targets

There is growing interest in the conservation community to incorporate both aquatic and terrestrial systems together in planning processes. This was particularly true of the CTP plan, in which large and small river systems play a dominant role in the landscape. A team of experts was asked to participate on the Aquatics Team to assist in identifying priority aquatic conservation sites as targets within the Central Tallgrass Prairie ecosystem. It is important to note that the process developed by this team to identify areas of important aquatic diversity was done in advance of the recently-developed national specifications for target identification outlined in the Conservancy's *Geography of Hope Update #6* (The Nature Conservancy 1999).

To provide a framework for selection of aquatic conservation priorities, team members were provided with a map of the watersheds of the Central Tallgrass Prairie Ecoregion with an overlay showing streams of the ecoregion. In addition, they were sent two documents to guide their thinking on identifying sites: "Incorporating Aquatic Species and Communities Into Ecoregional Planning" (Higgins and Richter 1998); and "Protocol for Delineation and Description of Macrohabitats and the Aggregation of Valley Segments and Lake Types into Macrohabitat Classes" (Higgins et al. 1998). Conference calls with the experts covered the initial identification as well as a complete review and discussion of potential sites.

A site nomination form was created to facilitate the exchange of information on sites recommended by members of the Aquatics Team. The form included general information on the site, assessment of the biodiversity value of the site in relation to the ecoregion, and questions on such topics as funding, management, and community concerns. Members also were asked to provide a list of threats and community types and species at each site. A conference call was convened that reviewed this information across the region to improve consistency between individuals and to place the chosen sites into a classification framework based primarily on size and ecoregional subsection representation. Connectivity, or the size of the connecting water body, and gradient were also considered important and were incorporated at many of the sites. Finally, an information request was sent to mussel experts to assist in the identification of sites for conservation of mussels in the ecoregion. In addition to target species locations, the mussels experts were asked to identify representative, high quality, diverse mussel assemblages.

Based on the above information, 50 aquatic sites were identified as the top priorities for aquatic conservation, and were included in the plan. A summary of the expert information provided for each aquatic site is found in Appendix C.

2.3.2 Viability Guidelines

In the context of ecoregional conservation, viability is the likelihood that a conservation target or its component occurrences (e.g., a specific population) will be maintained over a given period of time. Specific attention to this concept is of prime importance if ecoregional plans are to be assembled in such a way that the Conservancy will meet its conservation goals in a given ecoregion.

Definition of "Ranks"

Element Occurrence Ranks (sometimes called EORANKS) provide a succinct assessment of predicted viability based on pattern, condition, size and landscape context. They allow for a meaningful comparison of all occurrences of a given target across its range. The following predicted viability scale is used:

A = Excellent; B = Good; C = Fair; D = Poor

Typically, we think of occurrences in terms of their *condition*, which may or may not correspond to the occurrence's long-term viability. *Viability* is a function of an occurrence's condition, size and landscape context. The problem before ecoregional planning teams has been how best to incorporate these concepts in the site selection process.

Ranking criteria were developed and applied to each target occurrence throughout the ecoregion as a way of quantifying viability. The element occurrence ranking criteria (EORANKS, see side bar) initially established for terrestrial communities in the Central Tallgrass Prairie ecoregion were largely based on current conditions, and as such were driven by a desire to differentiate among the small, often poor quality occurrences observable today. However, ranking guidelines based on current condition are poor indicators of viability, particularly in heavily impacted areas. In order to improve the viability assessment of element occurrences and their representative sites, new EORANK specifications for terrestrial communities were drafted based on the best available knowledge of historic context. These new criteria were used as a surrogate for viability to perform a site-level viability assessment (see Appendix D for details). This approach assumed that a) the estimate of historic condition was accurate, and b) that such historic conditions represent viable occurrences of each species or community. This site-

level viability assessment lead to a substantial reduction in the number of sites initially selected for inclusion in this plan.

2.3.3 Conservation Goals

Conservation goals are needed to assess how successful the suite of sites contained in the ecoregional plan is at achieving the primary objective of the plan – the long-term survival of all viable native species and community types. While it is clear that viability is ensured by protecting multiple, viable or recoverable occurrences of each conservation target, it is currently not possible to say with absolute certainty the exact number or distribution of any species or community type that will be necessary for persistence in perpetuity. However, it is possible to develop sound, generalized goals based on the related principles of extinction, colonization, and viability drawn from the field of conservation biology.

Standardized conservation goals were set for each conservation target based on distribution patterns relative to the ecoregion (Table 2). Each target was placed into one of four categories: endemic, limited, widespread, and peripheral (see sidebar for definitions). For both terrestrial community types and species goals, the same general principles were applied. In the most acute cases when the geographic range of a conservation target was restricted to the ecoregion (i.e., endemic), the greatest number of viable occurrences were necessary to meet the conservation goal. In these cases, the number 10 was chosen based on work with large vertebrates, in which 10 occurrences of at least 200 individuals were necessary for viability of the species (Cox et al. 1994). As distributions were progressively expanded outside the ecoregion (i.e., from limited to peripheral), proportionally fewer numbers of occurrences were required to be conserved within this ecoregion.

Distribution Definitions

Endemic targets occur primarily or exclusively in the ecoregion

Limited targets typically occur within the ecoregion but also occur within a few adjacent ecoregions

Widespread targets occur within the ecoregion and are common in many other ecoregions as well

Peripheral targets occur rarely within the ecoregion – the core of their range is in other ecoregions

Undetermined indicates those targets for which there is insufficient information to evaluate distribution

Recovery plans were consulted for most of the federally listed species that have approved plans in order to establish numeric, site-based goals for this plan. Of the eight species plans reviewed, four provided some guidance toward setting goals, yet only one, the western prairie fringed orchid, yielded enough data to link recovery goals to ecoregional planning goals. For example, for the Piping Plover and the Interior Least Tern, recovery plan goals were stated in terms of total numbers of individuals or breeding pairs, and not in terms of numbers of populations or sites. While all sites with viable occurrences of each species identified in the ecoregion were included in the plan, ecoregional goals were set based on the generic distribution-based goals described above (i.e., since both species are peripheral in this ecoregion, a goal of two occurrences was set). Similarly, distribution-based goals were used for the eastern prairie fringed orchid because there were not enough data for accurate assessment. However, in the case of the western prairie fringed orchid, the recovery plan goal was to protect 90% of all individuals existing in each ecoregional section. Sufficient information was available on population sizes at specific locations to determine that nine sites should be selected, and a goal for the species should be set at 10 to parallel the highest degree of protection suggested in the recovery plan. In further iterations of the ecoregional plan, a closer look at recovery plan goals and their relationship to ecoregional goals is merited.

At the time this plan was prepared, even less direction was available for establishing terrestrial community goals. Although considerable progress has been made since this plan was initiated, it was originally unclear how the pattern of occurrence of each community type should influence the establishment of conservation goals. Therefore, the distinctions between matrix, large patch, small patch, and linear communities were not used to further modify conservation goals. Consequently, the goals in this plan should be considered as very conservative. For example, current recommendations suggest more than doubling the conservation goals for small patch communities used in this plan.

Explicit guidelines to include a specific number of target occurrences for each ecoregional section or subsection were not developed for this plan. However, during the assembly process, efforts were made

to select sites for each target that provided the maximum geographic distribution across the ecoregion where possible. In only a few cases were enough potential selections available to enable choices about site selection that would maximize distribution across the ecoregion.

Table 2: CTP Ecoregional Conservation Goals

Distribution	Conservation Goal
Endemic	10 viable occurrences
Limited	7 viable occurrences
Widespread	4 viable occurrences
Peripheral	2 viable occurrences

2.4 Site Selection

To ensure that target occurrences selected to meet conservation goals were likely to remain viable over the long term, and because long-term viability is often tied to large-scale processes (e.g., fire, grazing, and climate), a site selection process with a weighted focus on *ecological context* was adapted from processes used in other ecoregional planning efforts. The process relied on expert knowledge and was aided by the use of GIS software during the selection process. The GIS technology allowed for a rapid check of the progress made toward meeting conservation goals. Ecological context was factored into this assembly process in two ways:

1) Target occurrences with excellent and good predicted viability were selected before less-viable examples. Because a primary factor in ranking occurrences is landscape context, target occurrences within a good landscape context were likely to be incorporated before those in poorer settings.
2) The site selection sequence placed emphasis on natural communities (selecting occurrences of communities before species), and within natural communities on types that dominated the landscape (selecting occurrences of matrix before those of large patch or small patch types). (See sidebar.)

Inherent within this assembly process were two assumptions related to the viability of target occurrences:

1) Long-term viability potential for a given target occurrence increases with the size of the natural area within which it is imbedded.
2) In general, long-term benefits continue to accrue at progressively larger sites even after minimum viability requirements have been met for a given target occurrence. These "added benefits" beyond the minimum thresholds are realized by further reducing risk of extinction, or by extending the time period over which the target is considered "viable." For example, compare two areas, both with minimally viable populations of a particular species. If all else is equal, the larger area should support a larger population, which will be more secure in the long-term.

Pattern Definitions

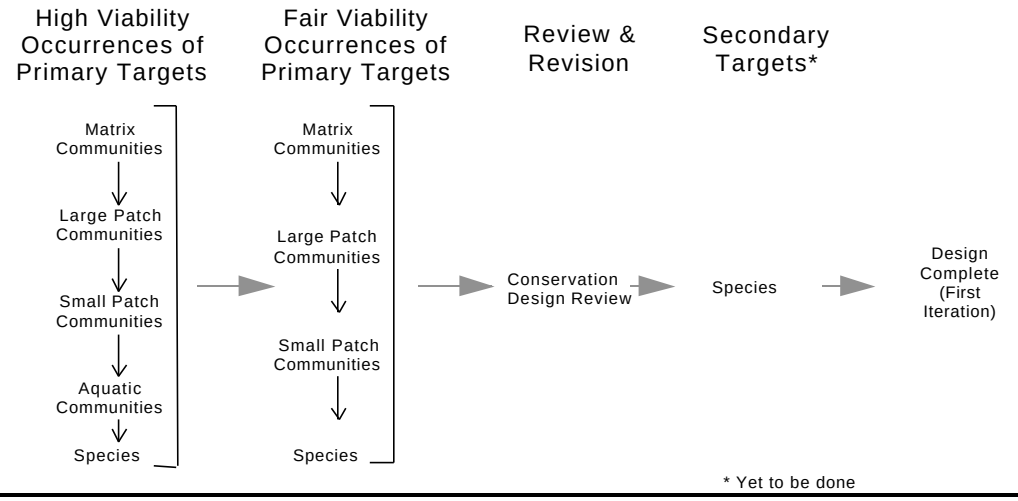
Matrix Communities: Matrix communities were the characteristic vegetation types of the ecoregion, occurring in patches of greater than 10,000 acres. They are dependent upon large-scale processes now perhaps found only at the largest sites in the ecoregion. As a result, viable sites selected for these targets tend to be among the largest.

Large Patch Communities: Large patch communities typically formed blocks of 200-10,000 acres within the above matrix. Viable sites for large patch communities are typically large enough to also support small patch community types and species.

Small Patch and Linear Communities: Small patch and linear communities tended to be less than 200 acres in size and were sustained by localized processes such as microclimatic variability. Thus, small patch and linear community viability requirements may be met at sites too small for large patch and matrix types.

Figure 3 depicts the site selection process. Initial site selections were made for the high viability examples of matrix community types that once dominated the landscapes in the ecoregion, followed by large patch, and then small patch types. Site selections were then added to incorporate aquatic communities and to meet species' goals . A second round of site selection identified those examples of only fair viability.

Figure 3: CTP Site Selection Sequence



The Assessment and Design Team completed the first three phases of site selection – identifying high and fair viability occurrences, as well as reviewing and revising the site selections. Secondary targets will be used to evaluate the plan's adequacy in conserving endemic and migratory species. Future changes to correct any deficiencies with regard to conservation of the secondary targets will be addressed by the Site Selection Advisory Team (Section 5.4.1).

3. Designing an Ecoregional Plan at Multiple Geographic Scales

It is generally acknowledged that to effectively conserve biological diversity, it is necessary to work at multiple spatial scales (e.g., Noss and Cooperrider, 1994). This idea played an important role in the development of this ecoregional plan. This section is provided to give a brief overview of the evolving role of differing spatial scales in ecoregional planning, introduces the concept of functional systems, and describes the application of this concept to designing an ecoregional plan that explicitly considers multiple spatial scales.

3.1 A Brief History of Ecoregional Planning and Concepts of Geographic Scale

Early in the ecoregional planning process, Conservancy ecologists pioneered the concept of geographic scale in characterizing terrestrial community patch size (i.e., matrix, large patch, small patch and linear). This concept helped ecologists set occurrence viability guidelines for community types based on the scale at which they historically occurred within the ecoregion. Using this approach, the Northern Appalachians (The Nature Conservancy 1998) and Northern Tallgrass Prairie (The Nature Conservancy 1998) ecoregional planning teams used different approaches (i.e., large roadless area and untilled landscape delineation, respectively) to identify areas of sufficient size where large-scale natural processes were still likely to occur and matrix communities were intact, and consequently, likely to be viable. Subsequently, the Northern Great Plains Steppe ecoregional team (The Nature Conservancy 1999) first utilized the concept of an *ecological backdrop* by incorporating the full array of untilled landscapes prior to actually selecting ecoregional sites. As such, it was the first plan to pay explicit attention to intact areas throughout an ecoregion and the role these areas might play in the long-term viability of all selected sites and associated conservation targets. Poiani et al. (in press) summarized and expanded upon many of these

and other concepts as a means to help planners and ecologists address the issues of viability and functionality in biodiversity conservation.

3.2 The Concept of Functional Systems

In their paper, Poiani et al. described four geographic scales at which species and ecosystems occur in nature: local, intermediate, coarse and regional (Table 3). Different ecosystems and species occur at each of these geographic scales. At the smallest scale (local), small patch ecosystems and local-scale species operate in areas of up to 250 acres, while at the largest scale (regional), regional-scale species generally require in excess of 2.5 million acres (3900 square miles).

Table 3. Geographic scale in the Central Tallgrass Prairie, adapted from Poiani et. al (in press).

Geographic Scale	Ecosystem/Species Type	Functional Size (acres)	Representative CTP Ecosystems/Species
Local	small-patch ecosystems; local-scale species	0 – 250	Algific Slope, Northern Monkshood
Intermediate	large-patch ecosystems; intermediate-scale species	250 – 25,000	Oak Woodland, Decurrent False Aster
Coarse	Matrix ecosystems; Coarse-scale species	25,000 – 2,500,000	Tallgrass Prairie, Greater Prairie Chicken
Regional	Regional-scale species	> 2,500,000	American Bison

Recognition of these different geographic scales and the species/ecosystems operating at each of them is critical for successful conservation planning and implementation. However, conservation of biodiversity at multiple levels of biological organization and geographic scale also requires adequate identification and protection of the associated multi-scale ecological processes that support and sustain ecosystems and species (Poiani et al. in press). Specific conservation areas generally contain ecosystems and species at multiple geographic scales that nest together in complex configurations. Such nesting and co-occurrence contribute greatly to an area's ecological complexity and integrity (Poiani et al. in press). Sites that meet these requirements have been termed *functional conservation areas,* "geographic domains that maintain functional ecosystems, species, and supporting ecological processes within their natural ranges of variability." Three types of functional areas were identified as follows:

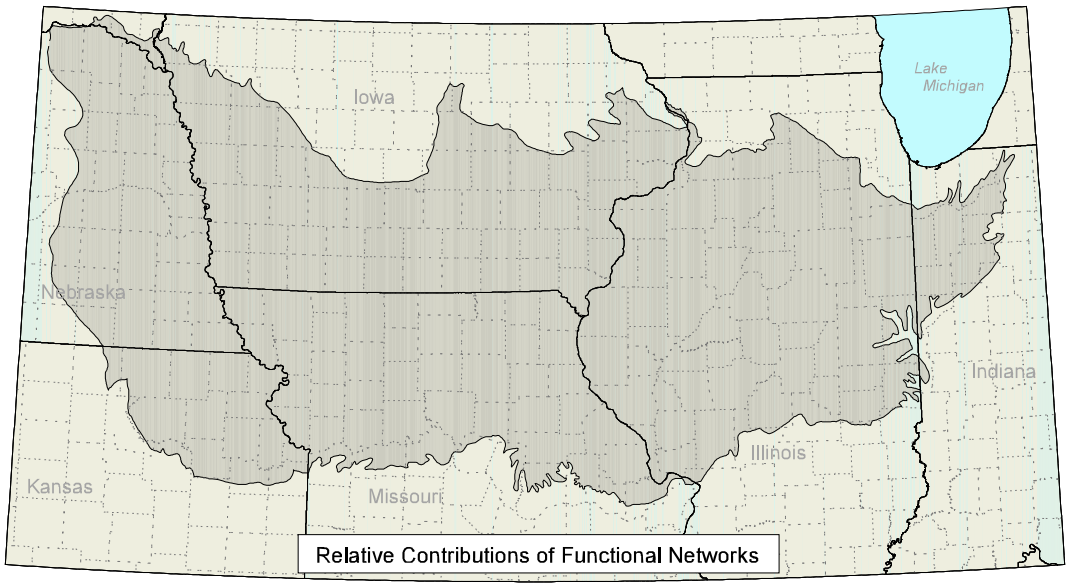
Functional Sites: attempt to conserve a small number of ecosystems and/or species within their natural ranges of variability *at one or two scales* below regional;

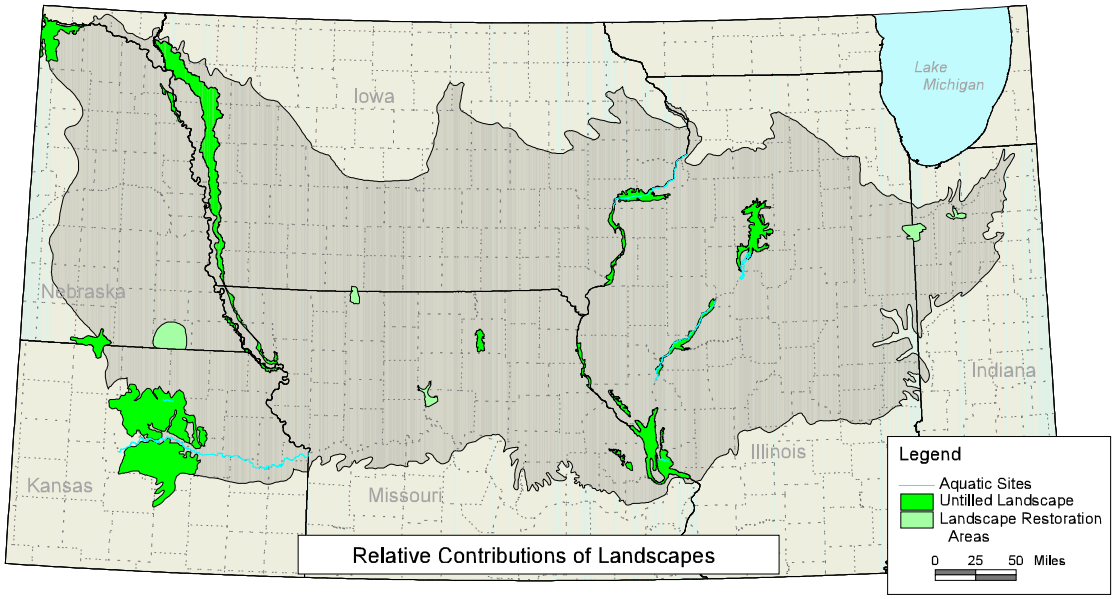
Functional Landscapes: attempt to conserve many ecosystems and species within their natural range of variability *at all scales* below regional; and

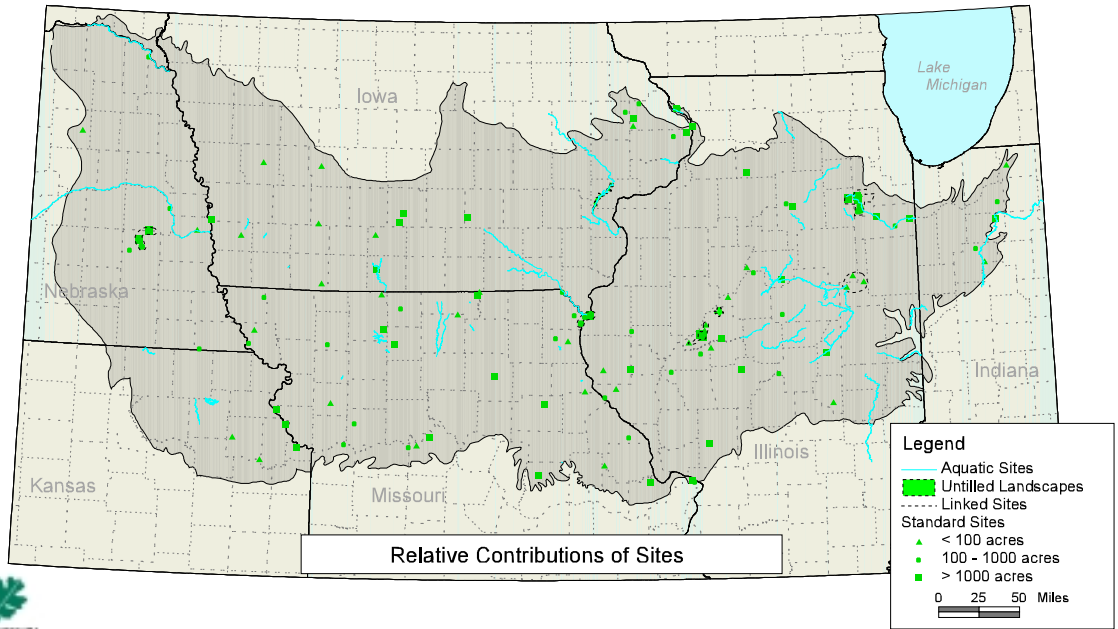
Functional Networks: attempt to conserve regional-scale species within their natural ranges of variability alone or in combination with biodiversity at finer scales.

The CTP Assessment and Design Team utilized and further built upon many of these concepts to produce a conservation plan that explicitly identifies conservation areas of differing spatial scales, incorporating the concepts of target viability and site functionality. This proved to be a challenging undertaking, as the vast majority of natural vegetation has been converted to agricultural or other uses, where severe habitat fragmentation has resulted in the isolation of many small, remnant communities that hold significant portions of the region's biodiversity. The intense fragmentation has resulted in the general elimination of exceptionally large, relatively undisturbed areas where regional-scale species could exist (e.g., the American bison). Consequently, while historically these large areas served to define and characterize the ecoregion, functional networks are no longer present in the Central Tallgrass Prairie (Figure 4).

Figure 4: Relative Contributions of Functional Networks, Landscapes, and Sites







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MAP CREATED BY: The Nature Conservancy, Midwest Conservation Science Center, © December 1999, The Nature Conservancy.

3.3 Applying Concepts of Functionality to Ecoregional Conservation Areas

The following describes site terminology used in the CTP and places the sites within the appropriate functional scale based on the previous criteria. The CTP plan is composed of Conservation Areas that are divided into five major categories. These Conservation Areas can be effectively described within the context of functional sites and functional landscapes.

3.3.1 Functional Sites

Functional terrestrial sites in the CTP include one or two representative matrix, large patch, small patch or linear communities as targets, and represent 83.8% of the sites in the plan and 4.6% percent of the acreage selected. Functional aquatic sites would include component habitats or species from one or two geographic scales. Because aquatic sites were predominantly selected for reaches of rivers, and not complete drainages, they were not considered to be landscapes by themselves. Functional sites are further delineated as follows:

- Standard Sites: Generally smaller-scale sites designed to capture a few (one to several) local- or intermediate-scale conservation targets.

- Linked Sites: Groupings of standard sites generally identified for targets with small area needs (e.g., small patch communities, local-scale species) that are not physically connected but share targets and threats in common. These sites were conceptually "linked" to improve efficiency in developing appropriate, multi-site strategies to abate threats and for undertaking site conservation planning.

- Aquatic Sites: All sites selected by the Aquatics Team for inclusion in the plan. These sites comprise sections of river systems at three geographic scales including: local-scale macrohabitats and portions of intermediate stream networks and coarse-scale medium to large river networks.

- Untilled Landscapes: Two of the 16 untilled landscapes (described below), despite their large size, remained as functional sites because they contained targets at one or two scales below regional.

3.3.2 Functional Landscapes

Functional landscapes in the CTP include matrix, large-patch, and small-patch or linear communities as targets, and where possible also include aquatic targets. In addition, they are at least 25,000 acres in size, and preferably much larger. Fourteen Untilled Landscapes and five Landscape Restoration Sites were included as functional landscapes. These represent 16.2% of the conservation areas and 95.5% of the acreage selected as terrestrial conservation areas in this ecoregion.

- Untilled Landscapes: Large areas (generally larger than 15 square miles) initially identified from Thematic Mapper (TM) satellite imagery as untilled. Untilled landscapes were included in the plan if they were confirmed as suitable natural habitat based on a Rapid Ecological Assessment (REA) process. In this plan untilled landscapes could capture one or more of the initial, TM identified landscapes where the relative scale of the landscapes was substantially larger than distance between them, and they shared multiple targets and threats.

- Landscape Restoration Sites: Large, landscape-scale sites where restoration is a primary activity focused on connecting numerous small remnants of predominantly matrix community types. While land between these community remnants is typically converted to other land uses, a commitment has been made to restore connecting lands with some type of natural vegetation, so that over time, a functional landscape-scale conservation area is created.

3.3.3 Functional Networks

There were no functional terrestrial networks identified in this ecoregion.

- Network Sites: Extremely large sites where regional-scale species exist in viable populations. In the CTP, conservation areas exceeding 2.5 million acres, large enough to maintain regional-scale species such as the American bison, are no longer extant. As such, the historic "functional network" from a terrestrial perspective has been eliminated. The occurrence of migratory aquatic species such as the American eel suggests that a functional large river network may still exist, though highly imperiled, in the Great Rivers complex.

This multi-level approach to characterizing conservation areas enabled an assessment of the different contributions of each spatial scale to the overall plan. In addition, it enabled an explicit identification of the contribution of restoration to the plan.

4. Central Tallgrass Prairie Conservation Design

After the sites were selected and further refined, a picture emerged that included 117 terrestrial and 50 aquatic Conservation Areas (Table 4 and Figure 5). With few exceptions, the plan represents the only viable alternative for conservation of the region's biodiversity. A site description as well as target, threat, and biodiversity information for each conservation area selected is included in Appendix E.

Table 4: The relative size, number, and contribution of sites within CTP Conservation Areas

	Number in Portfolio	Percent of Total Acreage of Conservation Areas	Total Acreage	Average Size (acres)	Size Range (acres)
Conservation Areas	167	100	3,759,167*	32,130*	3-1,357,290*
Functional Sites					
Untilled Landscapes	2	0.9	33,024	16,512	10,673-22,351
Standard Sites	91	2.9	107,197	1,178	3-14,316
Linked Sites	5	0.8	29,319	5,864	140-11,794
Aquatic Sites	50	n/a	n/a	n/a	n/a
Functional Landscapes					
Untilled Landscapes	14	86.4	3,247,008	231,929	24,798-1,357,290
Landscape Restoration Sites	5	9.1	342,619	68,524	24,209-186,216
Functional Networks					
Network Sites	0	0	0	0	0

* figure does not include stream miles for aquatic sites

4.1 Evaluating the Design

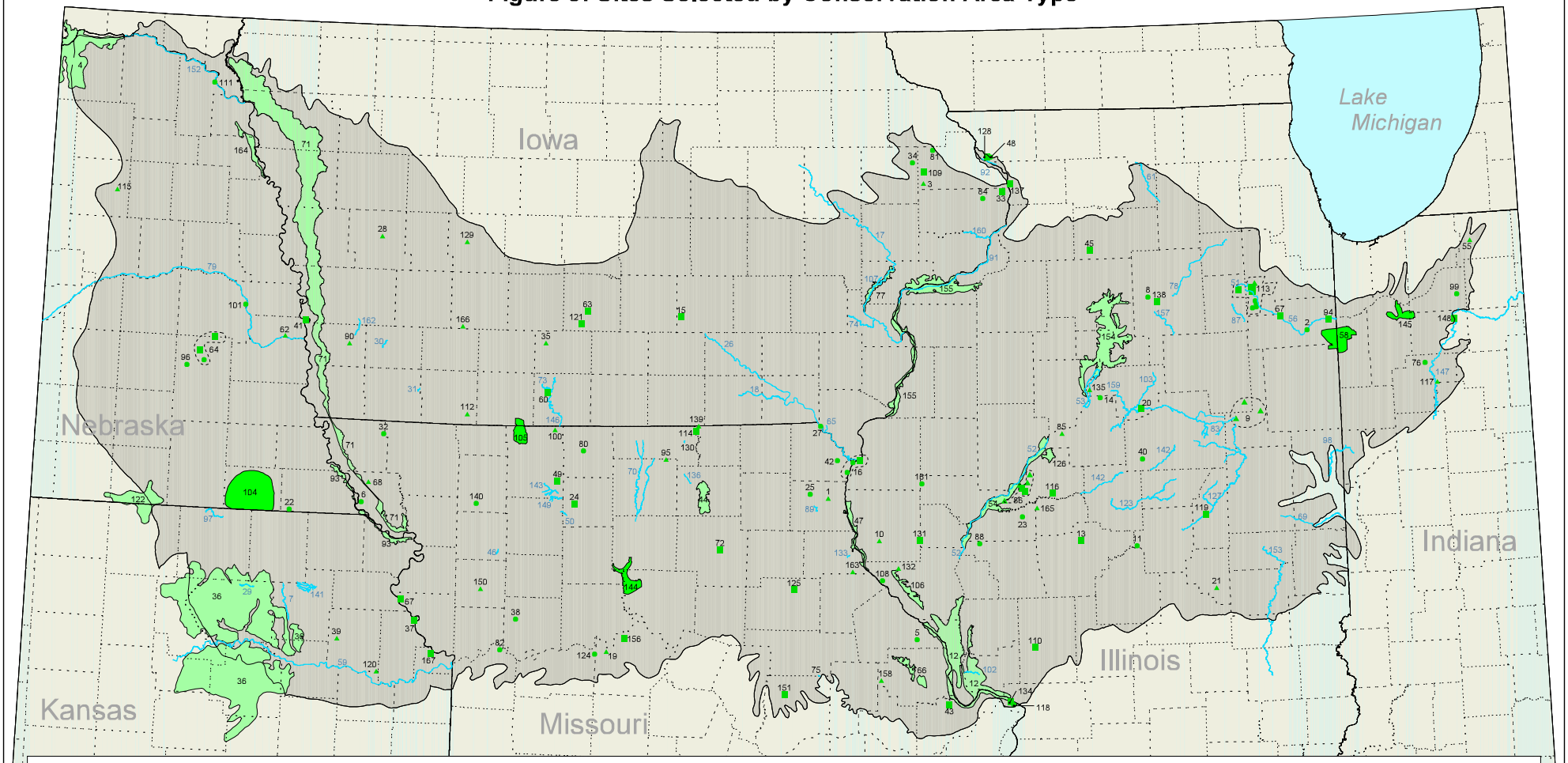
The Team used several assessment methods to look more closely at the sites selected and to think critically about the conservation implications of the design. The analyses performed include: an imperiled communities evaluation, an assessment of functional landscapes, a threats assessment, a biodiversity rating and an evaluation of managed areas. These are summarized below.

4.1.1 Imperiled Communities

When the planning team looked closely at the sites selected, they found that, for most communities and species, the conservation goals were not met. In fact, the sites selected include target occurrences that meet the goals for only 19% of the community targets and 25% of the species targets.

This realization led the Team to develop an imperiled communities assessment as a way to evaluate how large the gap is between the desired condition (fully meeting all conservation goals) and the current situation. This assessment shifted to just the communities, recognizing that they form the coarse-filter within which the ecoregion's species are found. The intent of this exercise was to more accurately portray the condition of the ecoregion and quantify the conservation task ahead. First, a simple set of criteria was established to assess the condition of the coarse-filter communities (Table 5).

Figure 5: Sites Selected by Conservation Area Type



Legend

- Untilled Landscapes
- Landscape Restoration Sites
- Aquatic Sites
- Linked Sites

Standard Sites

- < 100 acres
- 100 - 1000 acres
- > 1000 acres

0 25 50 Miles

This map depicts a set of conservation sites that collectively would help insure that the Central Tallgrass Prairie's biological diversity will persist. The biological diversity for the ecoregion was described as species and natural community types referred to as conservation targets. Criteria were developed to set numeric goals for each conservation target based on their distribution and pattern of occurrence. The conservation sites include lands that will contribute directly towards meeting stated conservation goals.

This set of conservation sites were derived through integration and analysis of a variety of data provided by members of the Network of Natural Heritage Programs. Data from many different sources were used, and additions and changes to these data are constant. Therefore, this map depicts the state of knowledge at the date listed. Neither the members of the Network nor TNC are responsible for inaccuracies in the data and do not necessarily endorse interpretations derived from the data.

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Figure 5 – Legend: Sites Selected by Conservation Area Type

Map ID	Conservation Area Name
1	Accola Woods
2	Aroma Park Forest Preserve
3	Baldwin Marsh
4	Bazile Creek Uplands
5	Ben Watts Knob
6	Big Lake SP
7	Big Soldier Creek
8	Black Ball Mines
9	Bur Oak Groves
10	Burton Cave
11	Calamus Lake
12	Calhoun / Alton Bluff Complex
13	Carpenter Park
14	Caterpillar Woods
15	Cedar Bluffs
16	Cedar Glen
17	Cedar River
18	Chequest Creek
19	Chevalier Bluff Springs
20	Chinquapin Bluffs
21	Coneflower Hill Prairie
22	Cornhusker Scout Reservation
23	Cox Creek Hill Prairie Complex
24	Crowder State Park
25	Deer Ridge CA
26	Des Moines River
27	Des Moines River Ravines NA
28	Dinesen Prairie State Preserve
29	Dutch Creek
30	East Nishnabotna River
31	East Nodaway River
32	East Tarkio Prairie
33	Elk River
34	Farm Creek
35	Flaherty Prairie / Little Prairie Complex
36	Flint Hills Tallgrass Prairie
37	Fort Leavenworth
38	Foxglove Prairie CA
39	French Creek Prairie
40	Funks Grove
41	Gifford Point
42	Goose Pond
43	Grassy Lake / Maple Lake
44	Green Hills
45	Green River CA
46	Grindstone Creek
47	Hannibal Bottoms
48	Hanover Bluff
49	Helton Prairie
50	Hickory Creek
51	Illinois River - Kankakee
52	Illinois River - LaGrange Reach
53	Illinois River - Peoria Lake
54	Illinois River Floodplain Complex
55	Kankakee Fen
56	Kankakee River
57	Kankakee River Floodplain Cmplx
58	Kankakee Sands Macrosite
59	Kansas River
60	Kellerton
61	Kilbuck Creek
62	Krebs Prairie
63	Lake Ahquabi / Hooper
64	Lancaster County Salt Marshes
65	Lick Creek
66	Lincoln Hills
67	Little Bean Marsh
68	Little Tarkio Prairie
69	Little Vermillion River
70	Locust Creek
71	Loess Hills
72	Long Branch SP
73	Long Creek - Decatur
74	Long Creek - Louisa
75	Loutre River
76	Lowe Prairie
77	Lower Cedar River
78	Lower Fox River
79	Lower Platte
80	Lowry Marsh
81	Lytle Creek
82	Mackenzie Fen
83	Mackinaw River
84	Manikowski Prairie
85	Manito Prairie
86	Mason County Sands
87	Mazon River
88	Meredosia Hill Prairie
89	Middle Fabius
90	Mills County No. 3
91	Mississippi River
92	Mississippi River (545-550)
93	Missouri River Blufflands
94	Momence Wetlands
95	Morris Prairie
96	Nine-Mile Prairie
97	North Elm Creek
98	North Fork Vermillion River
99	Ober Sand Savanna
100	Old Catholic Church Cem. Prairie
101	Otoe Creek Prairie
102	Otter Creek
103	Panther Creek
104	Pawnee County Grasslands
105	Pawnee Prairie
106	Pike County Bluffs
107	Pike Run
108	Pin Oak Lakes
109	Pine Creek
110	Polk Township Prairies
111	Ponca State Park
112	Powell Prairie
113	Prairie Parklands Macrosite
114	Rebel's Cove CA
115	Reigle Meadow
116	Revis Hill Prairie
117	River View Hill Prairie
118	Riverlands
119	Robert Allerton Park
120	Rockefeller Prairie
121	Rolling Thunder
122	Rose Creek Prairies
123	Salt Creek
124	Salt Fork Fen
125	Salt River Narrows
126	Sand Ridge Macrosite
127	Sangamon River
128	Savanna Army Depot
129	Sheeder Prairie
130	Shoal Creek
131	Siloam Springs
132	Slick-Crawl Cave
133	South River
134	Spadderdock Bottoms
135	Spring Bay Fen
136	Spring Creek
137	Spring Lake
138	Starved Rock Complex
139	Stateline Fen
140	Stegman Prairie
141	Straight Creek
142	Sugar Creek - Illinois
143	Sugar Creek - Missouri
144	Swan Lake
145	Tefft Savanna Macrosite
146	Thompson River
147	Tippecanoe River
148	Tippecanoe State Park
149	Tombstone Creek
150	Trice-Dedman Woods
151	Tucker Prairie
152	Unchannelized Missouri
153	Upper Embarras River
154	Upper Illinois River Bluffs
155	Upper Miss. River/Rock Island Cmplx
156	Van Meter Marsh
157	Vermilion River
158	Veronica Baier
159	Walnut Creek
160	Wapsipinicon River
161	Weinberg-King Natural Area
162	West Nishnabotna River
163	White Bear Cave
164	Winnebago / Omaha Woodland
165	Witter's Bobtown Hill Prairie
166	Woodside Prairie
167	Wyandotte County Park

Table 5: Criteria for assessing the condition of the target communities in the CTP portfolio. Imperiled communities are defined as all functionally extirpated, endangered, and threatened Communities.

Community Condition	Definition
Functionally Extirpated	No A- or B-ranked occurrences identified
Endangered	A- and/or B-ranked occurrences identified, but less than 50% of conservation goals were met
Threatened	A- and/or B-ranked occurrences identified, but only 50-75% of the conservation goals were met
Fair	75-99% of the conservation goals were met
Good	100% of conservation goals met

Based on the above criteria, analysis of communities by ecological pattern revealed that of the 98 community types, 78% of the community conservation targets were either functionally extirpated, threatened or endangered and 22% were in fair or good condition.

Table 6: Estimates of the current status of terrestrial plant communities. The number of occurrences is indicated in parentheses ().

Community pattern /distribution	Total number of communities	% functionally extirpated	% endangered	% threatened	% fair	% good
Pattern						
Matrix	5	0	40 (2)	20 (1)	0	40 (2)
Large Patch	42	29 (12)	20 (9)	25 (11)	2 (1)	20 (9)
Small Patch	32	38 (12)	29 (9)	17 (5)	0	19 (6)
Linear	17	53 (9)	12 (2)	23 (4)	0	12 (2)
Undetermined	2	0	0	0	0	100 (2)
Distribution						
Endemic	11	27 (3)	55 (6)	18 (2)	0	0
Limited	16	19 (3)	56 (9)	19 (3)	0	6 (1)
Widespread	31	26 (8)	23 (7)	26 (8)	10 (3)	16(5)
Peripheral	38	50 (19)	0	21 (8)	0	29 (11)
Undetermined	2	0	0	0	0	100 (2)
TOTAL	*98*	*35 (34)*	*22 (22)*	*21 (21)*	*3 (3)*	*19 (19)*

However, this information did not factor in that many common community types are not tracked in the Heritage databases, and therefore may be inappropriately categorized in this process. In addition, there are likely to be many community occurrences that are known but not yet entered into the database. To correct for these biases, a survey of Heritage biologists in each state was carried out. The biologists were asked to comment specifically on the number of potential A- and B-ranked occurrences that were likely to occur in their state for each community type in addition to those selected during this planning process. They were asked to rank the potential number of occurrences into five categories (i.e., no additional occurrences, 1-2, 3-4, 5-10, and >10 occurrences). The results for each community type were added to the existing information using the largest number from each category (e.g., 2 occurrences for the 1-2 category) and new designations determined. As expected, the results substantially altered the apparent status of these community types (Table 7).

Table 7: Estimates of the current status of terrestrial plant communities based on the existing information in the Heritage database and modified to include current survey information from Heritage biologists. The number of occurrences is indicated in parentheses ().

Community pattern /distribution	Total number of communities	% functionally extirpated	% endangered	% threatened	% fair	% good
Pattern						
Matrix	5	0	0	0	20 (1)	80 (4)
Large Patch	42	14 (6)	14 (6)	5 (2)	10 (4)	57 (24)
Small Patch	32	25 (8)	13 (4)	13 (4)	9 (3)	41 (13)
Linear	17	18 (3)	6 (1)	24 (4)	0	53 (9)
Undetermined	2	0	0	0	0	100 (2)
Distribution						
Endemic	11	18 (2)	36 (4)	9 (1)	36 (4)	0
Limited	16	6 (1)	31 (5)	25 (4)	6 (1)	31 (5)
Widespread	31	3 (1)	6 (2)	13 (4)	9 (3)	68 (21)
Peripheral	38	34 (13)	0	3 (1)	0	63 (24)
Undetermined	2	0	0	0	0	100 (2)
TOTAL	*98*	*17 (17)*	*11 (11)*	*10 (10)*	*8 (8)*	*53 (52)*

As a result of the survey, the percent of community types that were designated as functionally extirpated, threatened or endangered decreased by half from 78% to 39% of all community types. Similarly, the number of community types that could meet all their conservation goals more than doubled, resulting in over half of all community types rated in good condition.

The magnitude of the change in status as a result of the survey information illustrates the dramatic need for more inventory work to accurately assess the condition of terrestrial vegetation communities. Similarly, it also quantifies that approximately 17% of the community types are functionally extirpated. The types most severely impacted are peripheral and small patch. It also illustrates that restoration is likely the best chance for improving the status of the additional 29% of community types that are imperiled (threatened and endangered) or in fair condition. This would include 9 endemic communities and 10 with limited distributions that comprise 70% of the community types found only or predominantly in this ecoregion.

4.1.2 Threats Assessment

Data were collected regarding threats to all sites in order to identify the key multi-site threats and to help prioritize the sites for action. Threat data were collected in the following areas: type of stress, source of stress, severity, scope, probability, immediacy, and irreversibility. We developed a tool based on the Great Lakes Program's threats assessment protocols. An electronic form was created using MS Access to collect the information and facilitate analysis. A picture showing the database can be found in Appendix F.

Once assembled, the data were analyzed to calculate a composite threat score for each site, and to determine the most frequent sources of stress and stresses across the ecoregion. Aquatic and terrestrial sites were analyzed separately. Analyses that ranked sources of stress and stresses based on their composite threat score, their severity, scope, probability, immediacy, and irreversibility yielded no discernable pattern so were not utilized for further evaluation.

The most frequently occurring sources of stress were used for development of multi-site strategies (Table 8).

Table 8: Highest Frequency Sources of Stress

Terrestrial sites	***Aquatic sites***
Biological sources (59/117 sites), especially	Agriculture (50/50 sites), especially
Exotic species (58/117)	Sedimentation from agriculture (21/50 sites)
Agriculture (65/117 sites), especially	Increased nutrients from agriculture (row crop and livestock) (17/50 sites)
Altered grazing regime (21/117 sites)	Pesticide application (13/50 sites)
Management (40/117), especially	In-stream/floodplain alteration (26/50), especially
Need management support (20/117 sites)	Dams (18/50 sites)
Managed incompatibly (19/117 sites)	Channelization (13/50 sites)
	Development (17/50 sites)

4.1.3 Biodiversity Rating

Using a simple scoring system, all conservation areas were assigned a biodiversity rating. Points were summed for each conservation area and recorded as their total score. Based on logical breaks in the distribution of these scores (aquatic and terrestrial conservation areas plotted separately), the conservation areas were given a biodiversity rating of "Very High," "High," "Medium," or "Low."

Two different scoring systems were used for conservation areas. For terrestrially dominated conservation areas, each A- or B-ranked target occurrence selected at the site was credited as one point. Summed scores for terrestrial sites can be viewed as a measure of high quality species and community richness. A graph depicting the distribution of terrestrial sites based on their biodiversity rating can be found in Figure 6. For aquatic conservation areas, each expert-nominated site (i.e., assemblage or high quality stream) was credited as one point. Additional points could be scored at the conservation area for each A- or B-ranked target occurrence selected if it represented a different taxonomic group (i.e., birds, fish, mussels, invertebrates) than the expert-nominated assemblage(s). Summed scores for aquatic sites should be viewed as a coarser level of analysis than for terrestrial sites, indicating taxonomic richness rather than species or community richness. A graph depicting the distribution of aquatic sites based on their biodiversity rating can be found in Figure 7.

Figure 6: Terrestrial Biodiversity Frequency

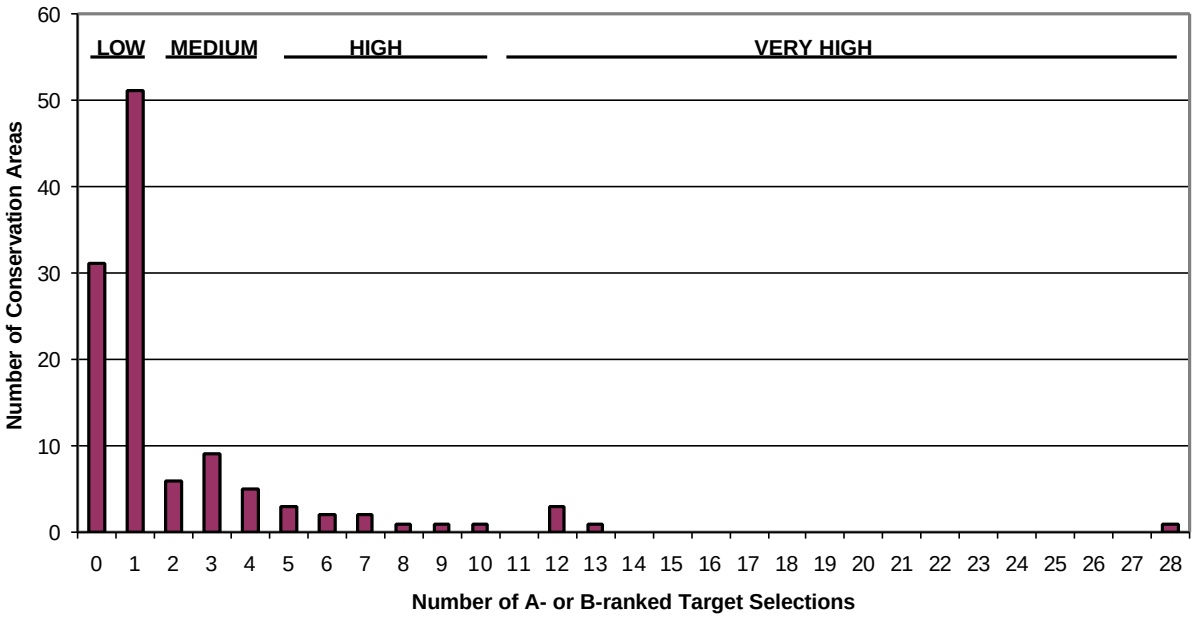
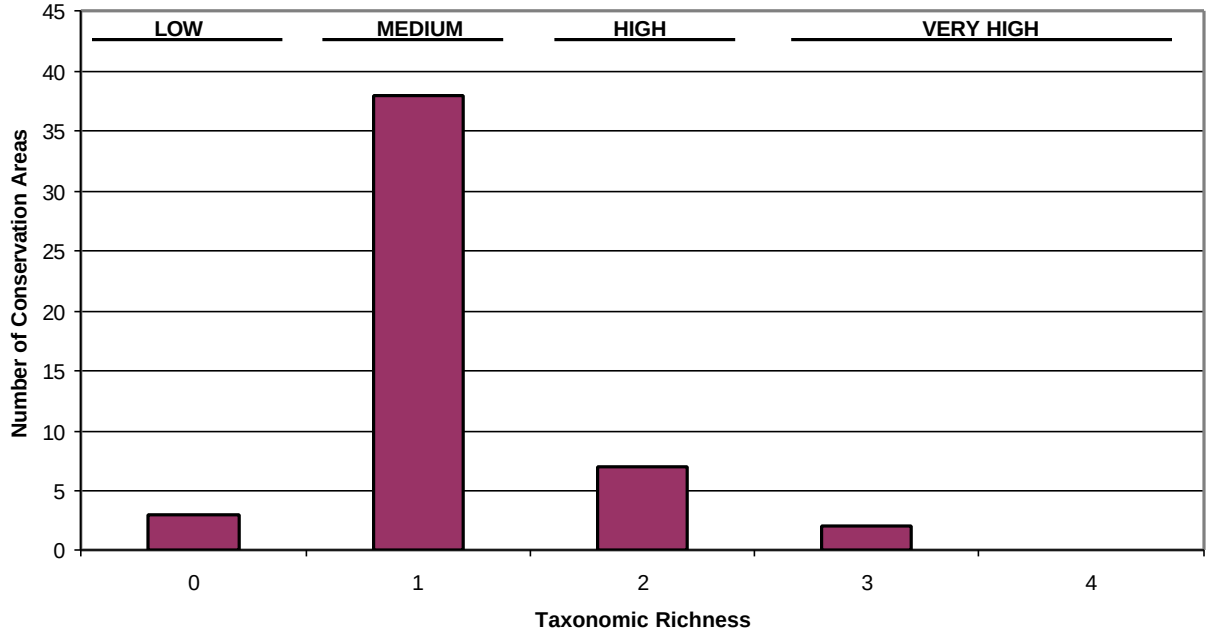


Figure 7: Aquatic Biodiversity Frequency



4.1.4 Managed Areas Status

The Managed Areas Assessment focused on the following specific objectives:

- Identify potential partners and stakeholders across the ecoregion and at specific conservation areas, and determine who might lead coordination of conservation actions for specific conservation areas;
- Provide stakeholder information important to site conservation planning; and
- Determine the level of current conservation action at each conservation area and identify unprotected areas as priorities for action.

The Central Tallgrass Prairie is characterized by a wide contribution of various public and private groups towards conservation. However, only 8% of the acreage included in the selected conservation areas is currently protected (Figure 8, Table 9). State natural resource agencies make the greatest contribution towards protection in the ecoregion.

Additionally, protection status information was collected for all selected areas (see sidebar). As depicted in Figure 9, just one percent of the acreage selected is currently protected at the highest level (Status 1).

Finally, current TNC land holdings were assessed to identify the degree to which past Conservancy protection efforts were directed toward areas included in the ecoregional conservation plan. A list of the TNC preserves not included in the plan is included as Table 10. While it is possible that some of these preserves may be linked to selected sites through site conservation planning, and others will be included in future iterations of the plan, many may not be of sufficient viability to be selected. As such, it will be incumbent upon each state office to assess the strategic implications of maintaining these preserves within their current preserve portfolio.

The results of the managed areas assessment for the ecoregion are found in Appendix G.

Defining Managed Areas' Protection Status

The following classification of protected areas (modified from Caicco et al. 1995) was used to measure the long-term commitment to management of these areas for their biodiversity value.

Status 1: An area having permanent protection from conversion, maintained in its natural state with a mandated management plan. Natural disturbance events are allowed to proceed without interference or are mimicked through management.

Status 2: An area having permanent protection from conversion and a mandated management plan to maintain a primarily natural state, but that may receive uses or management that degrades the quality of natural communities, including suppression of natural disturbance.

Status 3: An area having permanent protection from conversion for the majority of the area, but may be managed for consumptive uses (e.g., logging, mining) or recreational values. Confers protection to federally endangered or threatened species present.

Status 4: All land in public or private ownership with no known easement or management agreement that maintains native species and natural communities. The area could be subject to conversion.

Table 9: Conservation Areas and Total Area Under Management by Management Agency

Management Agency or Organization	Conservation Areas	Total Area
Federal - Army Corps of Engineers	5	5132
Federal - Department of Defense	1	8656
Federal - Fish and Wildlife Service	9	53848
Federal - Forest Service	1	249
Local - City or County	12	8697
Private - College	1	145
Private - Corporation	2	10200
Private - Individual	8	4651
Private – Organization - Conservation	21	18604
Private - Organization - Other	3	905
State/Province - Agriculture	1	75
State/Province - Natural Resources	52	190488
State/Province - Other	18	39614
State/Province - University	2	3068

Figure 8: Conservation Areas by Ownership

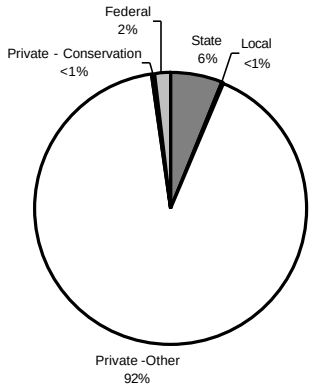


Figure 9: Conservation Area by Management Level

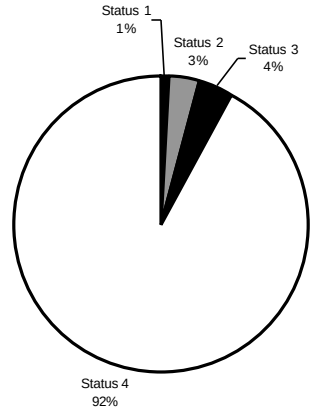


Table 10: Conservancy Preserves not Currently Selected

State	Preserve Name
Illinois	Baber Woods
Illinois	Ellison Creek
Illinois	Loda Cemetery Prairie
Illinois	McMaster Woods
Illinois	Mettler Woods
Indiana	Holley Savanna
Indiana	Spinn Prairie Nature Preserve
Indiana	Terry Brennan Marsh
Iowa	Berry Woods
Iowa	Greiner Family Nature Preserve
Iowa	Lock & Dam #14 Eagle Area
Iowa	Reno Timber
Iowa	Savage Memorial Woods
Iowa	Williams Prairie
Missouri	Dobbins Woodland

4.1.5 Secondary Target Assessment

Since the mission of The Nature Conservancy is to protect all species and natural communities, whether they are common or rare, it is desirable to evaluate the ecoregional conservation design to see how effective it is at capturing non-target species.

To fully evaluate the adequacy of the plan at capturing non-target species, it is recommended that a group of experts, knowledgeable about different taxonomic groups, be brought together to identify secondary target species and to evaluate how well the conservation areas capture viable populations of the secondary targets. Criteria for selection of secondary targets could include: (1) common species that are endemic or limited in the ecoregion, (2) species with large habitat needs, and (3) common species in significant decline. A secondary targets assessment of the current plan is recommended prior to beginning the second iteration.

4.2 Identifying Priorities

Most ecoregional plans rely on threat assessment and biodiversity value for prioritization. Due to the fragmented nature of the Central Tallgrass Prairie ecoregion and the high degree of threat at all sites, the threat assessment provided little differentiation among sites. Consequently, this team took a fundamentally different approach that used functional scales rather than threats to prioritize sites (Table 11). The Team agreed on a set of selection criteria where high priority sites were based on a mix of functional landscape/site designations and sites of high biodiversity value. Sites that captured both aquatic and terrestrial targets were viewed as the highest priority within each of the functional scales.

Table 11: Prioritization of Sites in CTP Plan based on functional scale, component targets, and biodiversity value. Top priority sites are designated by the shaded portion of the table. Sites are characterized by functional scale, target description, and their contribution to the plan including the total number of sites, and the percent of the total land proposed for conservation areas.

Site Characterization			**Biodiversity Value**				***TOTAL***
Functional Scale	Target Description	Contribution to the Plan	Very High	High	Medium	Low	
Functional Landscape	Terrestrial and Aquatic	# sites % area	2 12%	1 5%	1 36%	0 0	4 53%
	Terrestrial or Aquatic	# sites % area	0 0	0 0	1 3%	0 0	1 3%
Potential Functional Landscape	Terrestrial and Aquatic	# sites % area	1 2%	0 0	0 0	0 0	1 2%
	Terrestrial or Aquatic	# sites % area	1 19%	2 2%	5 4%	5 12%	13 37%
Functional Site	Terrestrial and Aquatic	# sites % area	1 <1%	6 1%	18 1%	5 <1%	30 2%
	Terrestrial or Aquatic	# sites % area	2 <1%	8 1%	33 <1%	75 1%	118 3%
TOTAL		*# sites* *% area*	*7* *33%*	*17* *9%*	*58* *44%*	*85* *14%*	*167* *100%*

Because all of the sites selected make a significant contribution to biodiversity in the ecoregion, the highest priority sites are called Priority I sites, and the others are called Priority II sites. Priority I sites are slated to have site conservation plans done in the next five years, while Priority II sites are scheduled for site conservation planning in the next 5-10 years. States are encouraged to pursue conservation opportunities at all ecoregional sites. A list of sites by Priority is provided in Appendix H.

Based on the above prioritization scheme, the 36 Priority I sites represent 22% of the sites in the plan, and 98% of the total area proposed for conservation (Figure 10). These Priority I sites capture 73% of the high quality terrestrial community occurrences (A- and B-ranked), and well over 50% for each pattern and distribution type (Table 12). Functional landscapes alone capture approximately half of the high quality community occurrences in 95% of the total area, but less than half of the small patch, linear, limited, widespread, and peripheral community types.

Table 12: The percent of high quality (A- and B- ranked) community occurrences that are found in Priority I and Priority II sites, and in functional landscapes and sites. The number of occurrences is indicated in parentheses ().

Community pattern /distribution	Total number of A- and B- ranked community occurrences	% community occurrences in Priority I Sites	% community occurrences in Priority II Sites	% community occurrences in Functional Landscapes	% community occurrences in Functional Sites
Pattern					
Matrix	15	93 (14)	7 (1)	80 (12)	20 (3)
Large Patch	85	80 (68)	20 (17)	62 (53)	38 (32)
Small Patch	45	58 (26)	42 (19)	38 (17)	62 (28)
Linear	19	63 (12)	37 (7)	47 (9)	53 (10)
Undetermined	6	67 (4)	33 (2)	67 (4)	33 (2)
TOTAL	*170*	*73 (124)*	*27 (46)*	*52 (88)*	*48 (82)*
Distribution					
Endemic	36	83 (30)	17 (6)	72 (26)	28 (10)
Limited	36	69 (25)	31 (11)	53 (19)	47 (17)
Widespread	60	77 (46)	23 (14)	52 (31)	48 (29)
Peripheral	32	59 (19)	41 (13)	47 (15)	53 (17)
Undetermined	6	67 (4)	33 (2)	67 (4)	33 (2)
TOTAL	*170*	*73 (124)*	*27 (46)*	*52 (88)*	*48 (82)*

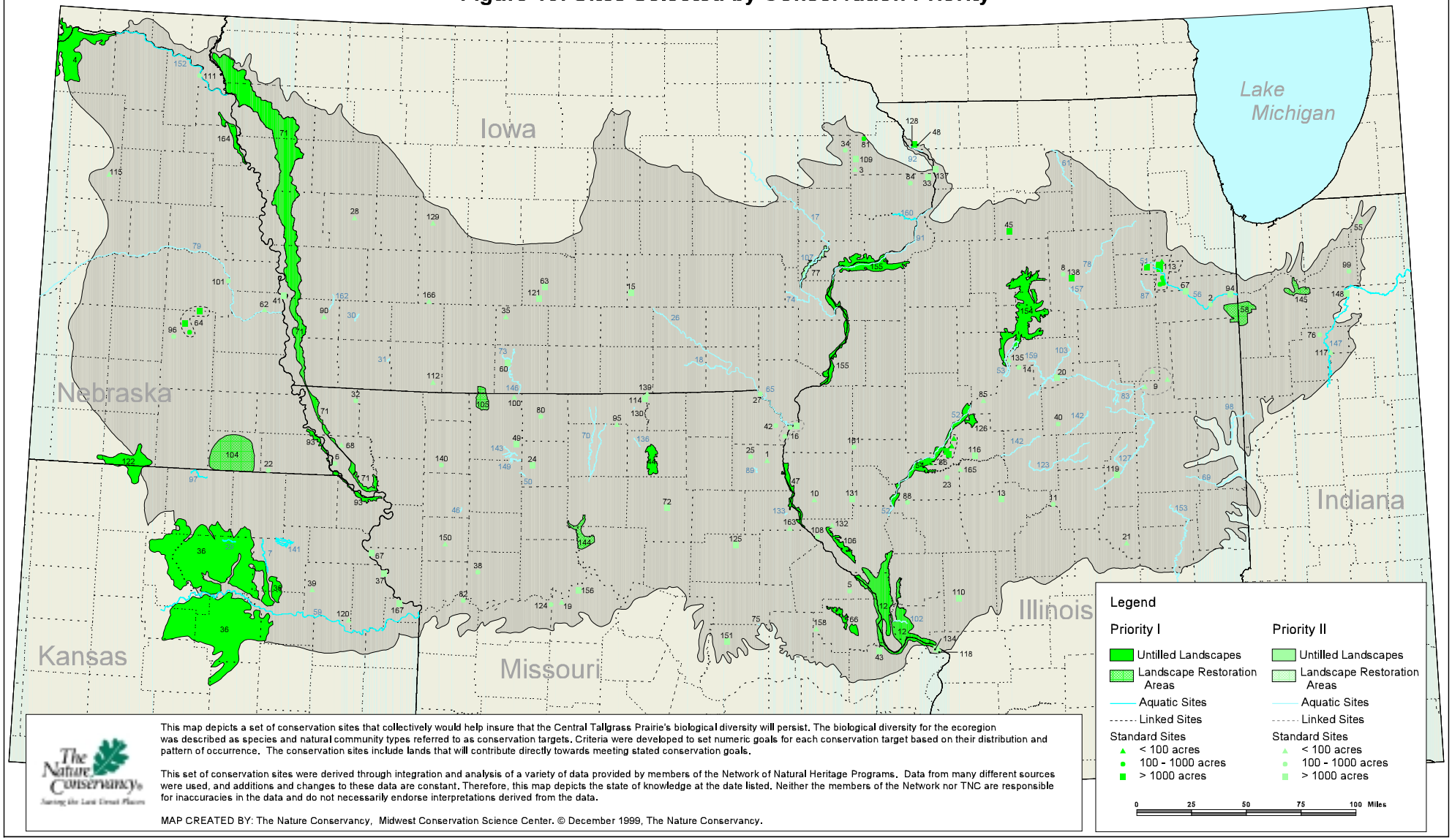
The Priority I sites capture approximately 60% of the species occurrences, and over half of the occurrences for each of the four distribution types (Table 13). This represents 73% of the animal occurrences, including 80% of the mussel occurrences and 86% of the insect occurrences, and almost half of the plant occurrences (48%). Conversely, the functional landscapes alone captured just 24% of the animal occurrences, and 14% of the plant occurrences.

Table 13: The percent of high quality (A- and B- ranked) species occurrences that are found in Priority I and Priority II sites, and in functional landscapes and sites. The number of occurrences is indicated in parentheses ().

Species distribution	Total number of A- and B- ranked species occurrences	% species occurrences in Priority I Sites	% species occurrences in Priority II Sites	% species occurrences in Functional Landscapes	% species occurrences in Functional Sites
Endemic	5	60 (3)	40 (2)	20 (1)	80 (4)
Limited	16	7 (12)	25 (4)	13 (2)	87 (14)
Widespread	53	53 (28)	47 (25)	21 (11)	79 (42)
Peripheral	33	64 (21)	36 (12)	24 (8)	76 (25)
TOTAL	*107*	*60 (64)*	*40 (43)*	*21 (22)*	*78 (83)*

This analysis suggests that the prioritization scheme was relatively efficient in capturing the vast majority of community and species occurrences over a broad range of patterns and distributions. Prudent attention to both functional landscapes and sites of high biodiversity value will provide the best means for allocating scarce resources. It must be highlighted, however, that this analysis is based solely on those high quality target occurrences selected for this plan, and does not take into account that additional inventory could dramatically change the results presented here.

Figure 10: Sites Selected by Conservation Priority



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This map depicts a set of conservation sites that collectively would help insure that the Central Tallgrass Prairie's biological diversity will persist. The biological diversity for the ecoregion was described as species and natural community types referred to as conservation targets. Criteria were developed to set numeric goals for each conservation target based on their distribution and pattern of occurrence. The conservation sites include lands that will contribute directly towards meeting stated conservation goals.

This set of conservation sites were derived through integration and analysis of a variety of data provided by members of the Network of Natural Heritage Programs. Data from many different sources were used, and additions and changes to these data are constant. Therefore, this map depicts the state of knowledge at the date listed. Neither the members of the Network nor TNC are responsible for inaccuracies in the data and do not necessarily endorse interpretations derived from the data.

MAP CREATED BY: The Nature Conservancy, Midwest Conservation Science Center. © December 1999, The Nature Conservancy.

5. From Planning to Practice

This section describes the steps that will be taken to move forward with implementation of this plan. These include: restoration, multi-site threat abatement strategies, a communication plan, a mechanism to maintain the plan over time, as well as the identification of lessons learned and data gaps so we can do better next time.

5.1 Implementation Strategies

5.1.1 Multi-site Threat Abatement Strategies

A small workgroup identified the following strategies for abating multi-site threats across the ecoregion:

Exotic Species

1. Identify causes of exotic species problems in each state in the ecoregion. Based on findings, explore solutions.

Government/Agency Relations

1. Convene a meeting with NRCS regional/state officials to share ecoregional planning results (sites and pervasive threats) and to explore potential collaboration in addressing agricultural threats at priority sites.
2. Convene a Government Relations (GR) working group for the Ecoregion to work towards a strong "Central Tallgrass Prairie Legislative Caucus" that can be used to lobby collectively for federal initiatives that impact the area (e.g. LWCF, CREP, Farm Bill, etc.). The working group members would maintain good communication with each other and would strive to support federal initiatives that are important to ecoregional conservation in one another's states.
3. Based on managed areas analysis, work with appropriate agencies to provide information about ecoregional planning results and to explore ways of ensuring long-term viability of conservation targets at managed sites across a state or region.

Communication

1. Conduct a protection caucus with public and private land acquisition agencies in each state to share the ecoregional planning results and to discuss shared conservation objectives.
2. Identify a lead person to follow through on maintaining the GR Working Group.

Fund-raising

1. Identify and pursue funding sources for holding protection caucus meetings in each state.
2. Encourage Divisional Leadership in fund-raising for protection, restoration, and management work at priority sites.

5.1.2 Overall Implementation Strategies

The following strategies were identified to effectively implement the plan:

Conservation Planning

1. Complete Site Conservation Plans for Priority I sites within the next five years.
2. Implement recommendations for maintaining ecoregional plan prior to second iteration.

Inventory

1. Identify funding for inventory at priority sites where data gaps have been identified and complete inventory work prior to next iteration.
2. Identify funding for inventory to fill gaps identified in the imperiled communities analysis and complete needed inventory work prior to next iteration.

Communication

1. Implement communication plan.
2. Focus communication efforts around priority ecoregional sites.

Restoration

1. Restore functional relationships between lower quality natural community remnants to improve viability. (Section 5.2.)
2. Prioritize large-scale restoration activities on those imperiled community types that are most characteristic and distinctive of the ecoregion (i.e., matrix, endemic, limited) in order to improve the status of the coarse filter.

5.2 Restoration as a Key Strategy for Conservation in the CTP Ecoregion

The widespread loss and degradation of natural communities in the CTP Ecoregion resulted in a preliminary set of sites that fell well short of meeting the Conservancy's conservation goals. In order to enhance and improve biological diversity in the ecoregion, restoration played an integral role in the development and design of the ecoregional plan. Restoration in the context of the CTP was viewed as a last-ditch, but necessary, effort to maintain and enhance the array of biodiversity targets. Embracing restoration as a necessary component of this plan did not negate the important and substantial concerns already raised about its role in ecoregional conservation:

Restoration Example #1: Habitat Rehabilitation and Enhancement Projects, US Army Corps of Engineers

In the Upper Mississippi River System, the US Army Corps of Engineers is carrying out an extensive set of Habitat Rehabilitation and Enhancement Projects (HREPs). Each of the 68 projects identified in 1997 focused on some aspect of habitat restoration ranging widely from main channel dredging to the creation of wetlands, islands and riffle-pool areas. The Corps is currently authorized to restore over 7,000 acres of main channel and associated river valley habitats along the Missouri River in Nebraska, and authorization is pending on an additional 118,000 acres. These numerous restoration projects are making a substantial contribution to improving aquatic habitats and systems in the ecoregion.

Attempts to restore certain processes and patterns or reduce threats to a site can be extremely time-consuming and expensive, and may entail significant ecological uncertainty. For example, restoration ecologists have been able to fully restore composition, structure, and function in few, if any, ecological communities; many ecosystems have been so severely altered for so long that they have lost many of the biological and physical components necessary to restore original ecosystem integrity. Thus, we should always strive to build our ecoregional portfolios of occurrences within sites that retain as much of their original ecosystem integrity as possible. (The Nature Conservancy 1996b).

The CTP plan supports this view, but recognizes that without long-term restoration occurring at multiple scales, the conservation goals for the ecoregion cannot be achieved and many conservation targets will be lost. While conservation efforts must start with the suite of sites identified as critical for conservation, substantial restoration efforts over the past 50 years provide experience that allow us to look ahead, and work towards not only conserving, but enhancing our natural resources. Although the role that restoration should play in large-scale conservation planning is still largely undefined, this plan provides an important starting point for discussion.

5.2.1 Identifying Restoration Sites

A restoration team was formed to examine the role of restoration in ecoregional conservation and make recommendations for the enhancement of this plan. It was apparent to the team that restoration activities at the site level would be important at all conservation areas in the plan to abate pervasive threats (Section 4.2.3). The team decided to focus on those areas where restoration could play a pivotal role in improving the viability of existing remnants and increasing the functional scale of sites when possible.

Restoration Example #2: Neal Smith National Wildlife Refuge, US Fish and Wildlife Service, Iowa

The Fish and Wildlife Service is engaged in recreating 8,000 acres of native tallgrass prairie and oak savanna at the Neal Smith National Wildlife Refuge outside Des Moines, Iowa. The refuge contains several small remnant savannas and prairies that will be connected by planting rare prairie and savanna seed mixes. Mowing, brush-cutting, and prescribed burns are being used to manage both the plantings and the remnant sites.

The most obvious outcome of this work can be seen in the explicit designation of landscape restoration sites as one of the five types of conservation area (Section 3.3). These sites are areas where restoration efforts will be focused on improving the functionality by linking existing concentrations of remnant communities through restoration of disturbed, connecting lands. Through increased connectivity, improved landscape context, and greater management flexibility to restore natural disturbance processes like fire, it is assumed that these areas will be more functional, and consequently, target occurrences within them will be more viable over the long term.

Identification of these sites was an outgrowth of a perceived failure in the assembly process to account for concentrations of lesser quality

community remnants that could serve as high-quality cores for large-scale restoration sites. The selection guidelines focus on the most viable remaining occurrences of a community or species target in choosing sites, not on concentrations of lesser quality examples. Isolated community remnants typically are considered distinct occurrences and assigned a specific EORANK by state Heritage Programs. Because this practice assigns ranks to community remnants irrespective of what is nearby, concentrations of lesser quality occurrences are often missed, even though they may offer substantial promise for restoration. To address this issue, the team reassessed the draft site selections, and searched for areas where multiple occurrences of both high and low quality communities occurred.

Each state was asked to identify Natural Community Concentration Areas (NCCAs) – areas containing relatively high densities of multiple matrix and large patch remnant communities. These remnants typically occur in a fragmented (usually agricultural) setting, and are of high or low quality. The NCCA assessment identified two new sites, one of which (Pawnee County Grasslands in Nebraska) was formed by expanding and melding site boundaries of two previous occurrence selections. A unique aspect of this site was the commitment to improving the landscape context and connectivity among these concentrations of target communities at a large spatial scale. This theme later developed into the identification of *landscape restoration sites and potential restoration sites*, where the concept of NCCAs was focused on a larger spatial scale.

Restoration Example #3: Spunky Bottoms, Illinois TNC

Since the time of Euro-American settlement, roughly 50% of the Illinois River floodplain has been isolated from the river by the construction of levees. Reconnection of large areas of the floodplain is believed to be vital to eventual recovery of this river system. To help demonstrate effective floodplain restoration, TNC is restoring 900 acres of former leveed farmfields along the Illinois River in Brown County to a mix of wetland and upland habitats. Restoration includes the planting of native trees, grasses, and wetland species, as well as water level management to mimic the historic flood pulse of the Illinois River. Eventual reconnection of the property to the river should provide important spawning habitat for species such as the Lake Sturgeon and Paddlefish.

5.2.2 The Contribution of Landscape Restoration Sites to the Central Tallgrass Prairie Plan

Designating Landscape Restoration Sites was an essential first step in identifying the role of restoration in ecoregional planning. The five Landscape Restoration sites comprise less than 5% of all the sites in the plan, and represent 9% of the area identified for conservation. They capture 11% of the A- and B-ranked community types, and 5% of the target species occurrences. The potential for more such restoration work is vast; 81% (91) of the terrestrial sites in this plan are smaller than the smallest landscape restoration site. The need is clear; 23% of the coarse filter community types in the ecoregion could be considered imperiled, with restoration as the only possibility for improving their status.

Assessment of the coarse filter revealed that even with additional inventory across the ecoregion, we would still fall short of achieving the established goals. If we did have additional resources for restoration, where might we start to work?

Restoration Example #4: Kankakee Sands, Indiana TNC

The region known as Kankakee Sands includes an ambitious 7,000 acre restoration designed to buffer, connect and expand globally significant sand prairie and savanna habitats in Newton County, Indiana and Kankakee County, Illinois. The ultimate goal of the project is to create a landscape-scale sand prairie and savanna mosaic around existing natural areas. The restoration is to function as part of the natural system, and will create expanded habitat for remnant reliant and conservative plants and animals. The restoration project, when combined with traditional natural area protection efforts in Indiana and Illinois, could form an important part of a 35,000 acre prairie/savanna complex in a part of the country that has lost the vast majority of prairie habitat to the plow.

5.2.3 Establishing Ecoregional Priorities for Conservation

One of the overriding messages from this ecoregional plan is that even if we are able to conserve all of the proposed sites, we will still fall short, far short, of meeting our conservation goals. If we were able to snap our fingers, and not only identify, but protect the natural resources that Heritage biologists suspect are yet to be documented, we would adequately protect approximately half of the known plant communities in the ecoregion. Considering that the numeric goals in the CTP plan are set very low when compared with recent trends in other ecoregional plans, this is of great concern.

The current contribution of restoration, while significant, would have to be dramatically increased to have a substantial impact on reaching the conservation goals outlined in this plan. How can we begin to prioritize additional efforts, and what will they contribute toward meeting the goals? As ecoregions are delineated by their relatively homogeneous nature, one method is to focus on those features that are most distinctive, that capture the "character" of an ecoregion. Such character could be defined by and expressed as the dominant and unique land cover types and land forms that set the ecoregion apart from adjacent ecoregions. The assessment of the coarse filter (Section 4.1.1) revealed that the matrix, endemic, and limited plant communities that once were dominant and distinctive to this ecoregion are poorly protected today. A primary ecoregional conservation strategy is to initially conserve the coarse filter, thus, restoring these imperiled communities consequently emerged as a top priority.

Restoration Example #5: Midewin National Tallgrass Prairie, USDA Forest Service

In Illinois, less than 1/100th of 1% of the high quality prairie which once dominated the landscape remains today and much of that is found in scattered remnants of less than one acre. Large scale prairie restoration is needed to improve this situation. One such project is the Midewin National Tallgrass Prairie, a 15,000 acre restoration effort at the site of a former U.S. Army TNT production facility near Joliet, Illinois. Midewin is the Potawatomi word for "healing society" and refers to the process of mending, soothing, and making whole again. Given that much of the site was used for agriculture or munitions production and storage, the term seems particularly appropriate. The project includes the restoration of upland prairie and woodland habitat, as well as wetland and riverine habitat to reflect pre-EuroAmerican settlement land cover. Resident and migratory wildlife such as fish, grassland birds, and wetland birds are expected to benefit from the restoration. Stable populations of loggerhead shrike and upland sandpiper are already found at the site.

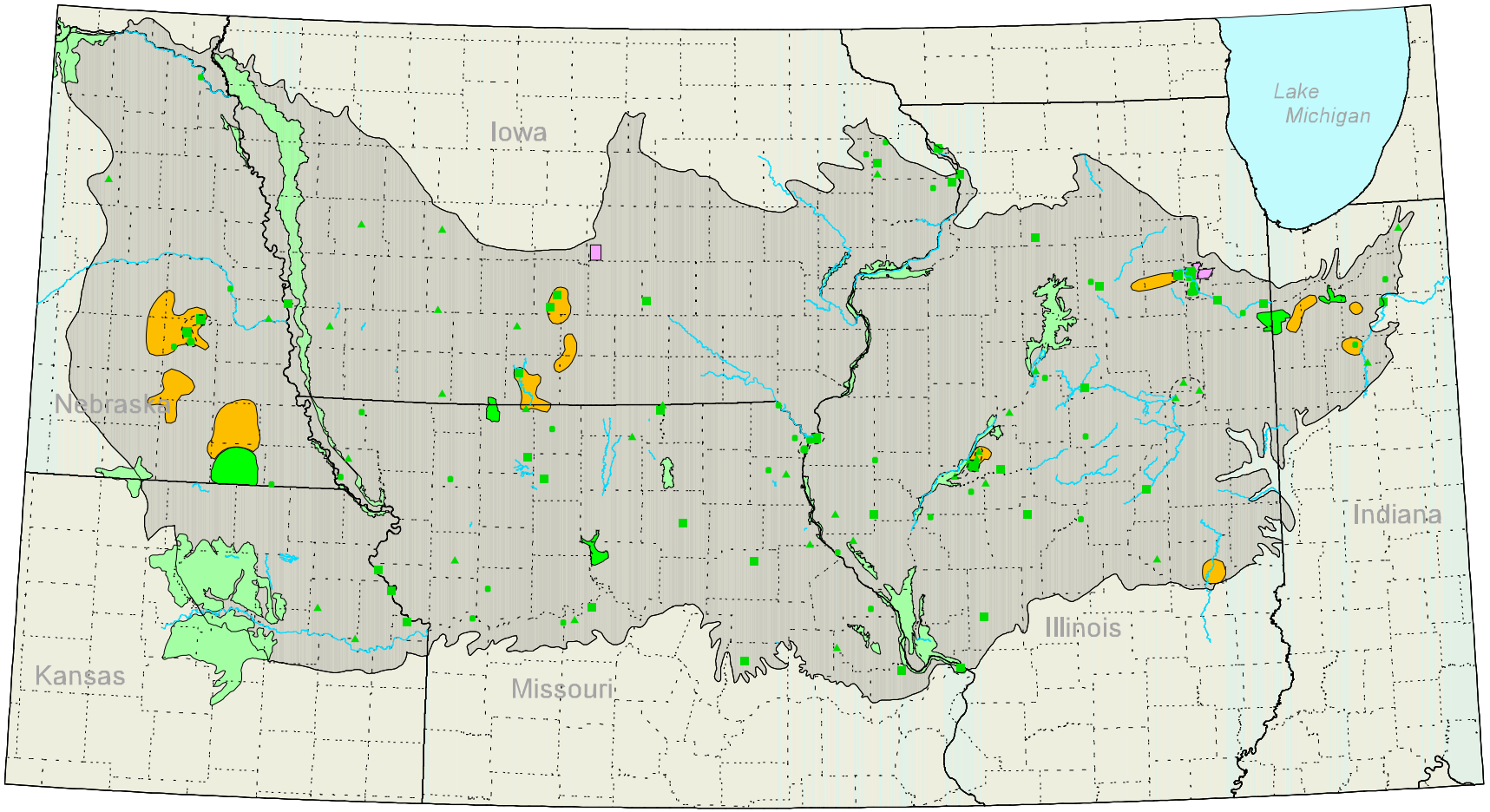
Following this logic, it was proposed that additional restoration efforts beyond those already identified in this plan should be prioritized around these imperiled community conservation targets. A map illustrating all additional EORs for matrix, limited, and endemic plant communities not currently included in the portfolio sites was assembled. Clusters of these communities were identified considering the number of EORs, their quality, and proximity to an established ecoregional site. Rough boundaries were drawn around these clusters that identify potential large-scale restoration areas, analogous to a large-scale version of the Natural Community Concentration Area (NCCA) concept employed earlier in the planning process (see Section 5.2.1 and Appendix D). These sites were then placed on a backdrop of current land use and land cover to assess their potential for restoration. Experts in each state reviewed the proposed sites, and identified 12 where additional restoration would be possible (Figure 11).

These potential restoration sites are all of poorer quality than the sites in the plan. If restored, they would comprise 1.2% of the ecoregion. If all the targets identified within these areas were restored to high quality standards, these potential restoration sites would substantially improve the plan. Specifically, these sites would benefit 16 of the imperiled and distinctive community types in the ecoregion. This would result in an increase the total number of occurrences needed to reach the goals from 60% to 90% for the characteristic matrix communities and from approximately 30% to 40% for endemic and limited communities. When such efforts are combined with additional inventory work, even greater progress towards meeting the numeric conservation goals is expected.

What additional resources could be found to undertake the level of restoration needed to fully achieve the conservation goals? Does the will exist among natural resource professionals to work together to carry out large-scale, long-term, and expensive restoration efforts necessary to improve the condition of the region's impoverished natural heritage? What effect does the loss of regional-scale species, habitat, and processes have on the long-term viability of the remaining native species and communities? Conversely, what if we are not capable of carrying out this level of work? What implications does this have on the future of biological diversity for the ecoregion? Are we willing to lose the imperiled communities and the associated populations of species that rely on them?

By specifically quantifying the current contribution of restoration to this plan, and identifying the scope of the work needed to move towards the goal of biodiversity conservation in the ecoregion, more informed decisions can be made. There is a dire need for the Conservancy and other organizations to effectively tackle the issue of restoration and its role in conservation head on. We have begun to chart a future, and have learned that in highly fragmented landscapes, to fully achieve our goals will require restoration efforts of a magnitude we have only begun to consider.

Figure 11: Restoration Areas in Relation to Conservation Areas



Legend

- Landscape Restoration Sites
- Current Restoration Projects
- Potential Restoration Areas
- Untilled Landscapes
- Aquatic Sites
- Linked Sites

Standard Sites

- < 100 acres
- 100 - 1000 acres
- > 1000 acres

0 25 50 Miles

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MAP CREATED BY: The Nature Conservancy, Midwest Conservation Science Center. © December 1999, The Nature Conservancy.

5.3 Communication Plan

We are interested in communicating with both internal and external groups. The internal group includes trustees, conservation staff, development staff, and peers throughout the organization, while the external group includes agency partners, NGO partners, donors, policy makers, community stakeholders, and volunteers. Since each of these subgroups has different needs, we will need a variety of communication strategies and tools.

5.3.1 General recommendations for all of the communication tools

…Lose the jargon (e.g. don't use the term "portfolio")
…Acknowledge collaborators
…Recognize that we need help to implement
…Acknowledge that this is TNC's plan – not necessarily anyone else's, even though it was developed in collaboration with others

5.3.2 Communicating with the Internal Audience

Who: Trustees, Conservation Staff, Development Staff, TNC peers

Various communication tools were identified for the internal audience. These tools are listed along with the potential audiences for each:

Portfolio maps:	all
Site Descriptions:	Development staff, Conservation staff, Trustees
Executive Summary:	all
Power Point Presentation:	Development staff, Conservation staff, Trustees
Electronic plan & maps:	Conservation staff, TNC peers, Development staff
Intranet maps & plan:	Conservation staff, TNC peers, Development staff

5.3.3 Communicating with the External Audience

Who: Agency partners, NGO partners, Donors, Policy-makers, Community Stakeholders, Volunteers.

Several sensitive issues were identified regarding the sharing of information with the general public. These issues and ways to address them up front are noted in the sidebar.

Communication with external organizations and individuals will occur for the following reasons: to gain agency support and assistance in implementing; to develop funding for implementation; and, to gain community support for implementing. Three formats were identified for sharing information with the external groups: an executive summary that distills the plan into meaningful facts and figures that people can act upon; an electronic version of the plan and its appendices available through an ftp site; and a 2-page summary from Home Office. Means of sharing information and the target audiences are listed below:

Executive summary:	Agency and NGO partners
Electronic (ftp) version:	Agency and NGO partners
2-pager from Home Office:	all

Sensitive Communication Issues Identified for the CTP

Issue: Private property rights issue could arise if maps are too detailed.
Solution: Make sure that any maps that are shared are general enough that it would be difficult to interpret them as including any specific tracts of land.

Issue: Concerns could be raised about sites that were not selected.
Solution: Label the maps to make it clear that they show "TNC's conservation priorities in the Central Tallgrass Prairie Ecoregion." Be careful to explain the process and that TNC will use the information to set our conservation agenda, but it does not mean that these are the only important sites.

Issue: There seem to be some internal (TNC) concerns regarding information access by the general public.
Solution: The states in the ecoregion should approach information sharing in a way that they are comfortable with.

Issue: Does the information become part of the public domain?
Solution: Yes. When it comes time to do the next iteration, we may want to approach those agencies who have utilized our information and ask them to contribute financially to the new plan.

5.4 On-going Maintenance

To help ensure that the Ecoregional Conservation Plan is a living document, the Strategy Team recommended two means of updating the conservation design between the completion of the initial plan, and the start of the next ecoregional planning exercise: (1) Creation of a Site Selection Advisory Team to review recommended changes on an on-going basis; and (2) Periodic meetings of the Assessment and Design Team to review the interim changes and to consider other changes.

5.4.1 Site Selection Advisory Team

From time to time, situations will arise when it will be desirable to make changes to the original suite of sites selected: G-ranks will change, inventory will change the ranking of sites, or other new information will come to light. If changes are made on an on-going basis, and that information is well documented, it will be that much easier to update the plan when the next round of ecoregional planning comes along.

A Site Selection Advisory Team (SSAT) was created and includes a science representative from each state as well as a data manager. A Team Leader was assigned. Those advocating changes to the Conservation Design will contact the Team Leader and are responsible for providing the information needed by the SSAT to review and make a decision about their proposal. The SSAT will utilize the agreed upon rationale for reviewing and approving changes to the sites selected (rationale found in Appendix I). Conference call meetings of the SSAT will be called as needed by the Team Leader. As the SSAT makes decisions, these will be tracked and documented by the data manager. Also, the Divisional Director will be notified of any changes.

5.4.2 Assessment and Design Team meeting timeframe and purpose

Every 18 months, the Assessment and Design Team will meet to review the changes made by the SSAT, and to consider portfolio modifications based on changing G-ranks or T-ranks, inventory results, additions to the target lists, or to rectify deficiencies in the original design (e.g. gaps in secondary target conservation). These changes will be tracked and documented by the data manager, and the Divisional Director will be notified of the changes.

5.5 Second Iteration of the Plan

Within five years of completing this plan, it is recommended that a second iteration be undertaken to integrate all new information in a comprehensive manner. The above mentioned on-going maintenance should simplify this task. It is expected that new information about the species and communities of the ecoregion as well as advances in conservation science and planning will be integrated into the Conservation Design at that time. For example, An aquatic macrohabitat classification and ecological groups analysis is envisioned to be carried out and incorporated into the second iteration, as will a more extensive evaluation of important bird areas in the ecoregion.

5.6 Data Gaps

Three distinct categories of data gaps exist that relate to geographic distribution, conservation targets, and the planning process itself. These are noted in Appendix J.

5.7 Lessons Learned

As each ecoregional plan follows a similar, but unique path to a final product or set of products, many lessons are learned and relearned. As hindsight is near-perfect vision, it is hoped that the following lessons learned in this planning process will be helpful to those whose task still lies ahead.

5.7.1 Process Lessons

- Don't let the process drag out too long. The CTP planning process was too long (2 ½ years), which made it difficult to incorporate changes in conservation planning and practice into the process. Examples of concepts that developed during the course of this plan include the identification of linear communities, ecological groups, and aquatic communities.
- Utilize tools that worked well for other ecoregions. MSO produced several Microsoft Access query forms for data requests. These database requests were extremely effective, and including these in future planning efforts is highly recommended.
- Use a small, trained team to delineate the TM-derived untilled landscapes. The CTP team let each state identify these landscapes, which resulted in a poor product that had to be redone. This assessment should be a top and early priority in the planning process. In the CTP, additional Rapid Ecological Assessment work could have been identified at the outset of the planning process by having TM landscapes delineated early in the assessment stage, thus providing more time to coordinate the necessary field work.
- Secure Heritage and other key partner participation and input by identifying information needs and timeframes up front, so they are prepared for the requests. Financial compensation should be considered to encourage participation. Better coordination of requests to Heritage Biologists is possible with better forecasting of the information needs and steps required to complete ecoregional planning. It is recommended that new planning teams contact other states that have experience leading an ecoregional planning effort for insight. For example, in the CTP, information requests regarding landscapes could have been combined with requests regarding NCCAs and community viability to create a more complete package, rather than repeated requests at differing times. This would have been a more time efficient process for all involved, but was not possible because many of the requests were not forecasted.
- Digitize site boundaries prior to the assembly meeting so they can be displayed during the assembly process. This requires advanced preparation to provide the necessary site boundary to digitize prior to the meeting, but would reduce the level of distraction at the meeting. Too much time was spent delineating site boundaries at the CTP assembly meeting. This time could have been spent tracking the sites' EORANK specs more completely and encouraging more complete discussion of issues surrounding assembly and design during the process.
- Maintain consistent tracking of landscape context, condition and size for all target occurrences during the planning process. This information is valuable for assessment and could be an important information base to assess change in conservation targets over time.

5.7.2 Assessment Lessons

- Collect less, not more, information for the threats assessment. For example, the request form should ask for less information, with clearer, more precise instructions to reduce ambiguity of responses. It is highly recommended that threats assessments be tested prior to distribution to identify and correct as much subjectivity as possible. It is more appropriate to collect detailed information at the site conservation planning level.
- Assess the role of restoration to achieving conservation goals in all ecoregional plans, not simply those in highly fragmented systems. This opens an important door towards improving, rather than simply sustaining or protecting, the region's biodiversity.
- Use a community-level viability assessment such as Poiani et al.'s functional conservation area approach to provide new information and perspectives.
- Further development of tools to assess community-level viability would be helpful. In the CTP, the crude and simple assessment provided an important evaluation of the draft portfolio by presenting a different perspective for looking at selected sites for targets other than those for which they were selected.

5.7.3 Design Lessons

- Make an effective tie between information available on bird conservation and ecoregional planning early in the planning process. In the CTP, efforts to address bird conservation were not well developed. The availability of more information through the Wings of Americas Program in the near future will substantially improve our next efforts.
- Use aquatic community classification/ecological groups as surrogates. Among other benefits, this would enable quantifiable measures of goals previously not possible from the information gathered by the Aquatics Team.
- Incorporate the concept of Natural Community Concentration Areas in the assembly process during round three. This would eliminate the need for a separate information request, and would likely produce better results.
- Address east-west variation of communities. At the time this plan was started, geographic distribution was not systematically approached, and as a result the conservation goals for large-patch, small-patch and linear communities are likely to be set conservatively low. Greater attention to geographic distribution of element occurrences is needed, such as specific goal setting by ecoregional subsection.
- Encourage the use of "surrogates" in all ecoregional plans. Effective use of satellite imagery, remote sensing, and map-based GIS information provide a means for assessment of biological diversity at a scale and scope fundamentally different than the information contained in the Heritage database. This information should not be used blindly, however, and the time and resources need to be made available to ensure some degree of ground-truthing is carried out.

6. Acknowledgements

As noted at the beginning of this document, there were five teams that worked together to complete this ecoregional plan. Participants are TNC staff unless noted otherwise. Additionally, outstanding technical support with regard to data assembly and manipulation, and map design and production were provided by staff at the Midwest Regional Office, who are noted below.

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Conservation in a Highly Fragmented Landscape:

The Central Tallgrass Prairie Ecoregional Conservation Plan

January 2000

The Nature Conservancy®

Prepared by:
The Central Tallgrass Prairie Ecoregion
Planning Team

Appendices

Appendices

All appendices are included in a separate volume.

Appendix A: Terrestrial Community Target Information

Appendix B: Species Target Information

Appendix C: Aquatic Target Site Data

Appendix D: Site Viability Assessment Information

Appendix E: Conservation Area Descriptions

Appendix F: Threats Assessment Database Example

Appendix G: Managed Areas Database

Appendix H: Site Prioritization Information

Appendix I: Site Selection Advisory Team Guidelines

Appendix J: Data Gaps

Appendix K: Literature Cited

Appendix A: Terrestrial Community Target Information

The targets in this appendix are sorted by an ecological group hierarchy and within that group by common name. This hierarchy puts groups of plant associations that tend to be found in similar environments and influenced by similar ecological processes together. The conservation areas specifically selected for each target are organized by state(s), conservation area name, and site name. For more information on ecological groups, please refer to the US National Vegetation Classification.

The following codes are used to describe the geographic scale and spatial pattern of the targets in the ecoregion: MX = matrix-forming, LP = large-patch, SP = small-patch, and LI = linear.

To describe the global range and distribution pattern of the targets in the ecoregion, the following codes are used: E = restricted / endemic, L = limited, W = widespread, and P = peripheral.

Table of Contents:

Ecological Group Level 2 : Level 4

Common Name / *Global Scientific Name*	Pattern	Distribution	Element Code / Global Conservation Rank
Fens : Northern (Laurentian) Graminoid Fens			
Northern Poor Fen	SP	P	CEGL002265
Carex lasiocarpa - Carex oligosperma / Sphagnum spp. - Polytrichum spp. Herbaceous Vegetation			G3G4
IA Lower Cedar River : Cone Lake			B
IA Lower Cedar River : Red Cedar Wildlife Area			B
Ecoregional Conservation Goal: 2 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0 Comments: Field inventory required to determine if the sedge-dominated communities at Red Cedar Wildlife Area and Cone Lake are poor fens.			
Fens : Midwestern Prairie Shrub/Graminoid Fens			
Cinquefoil - Sedge Prairie Fen	SP	W	CEGL005139
Pentaphylloides floribunda / Carex sterilis - Andropogon gerardii - Cacalia plantaginea Shrub Herbaceous Vegetation			G3G4
IN Kankakee Fen			B
Ecoregional Conservation Goal: 4 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3			
Dogwood - Willow - Poison Sumac Shrub Fen	SP	P	CEGL005087
Cornus amomum - Salix spp. - Toxicodendron vernix - Rhamnus lanceolata Fen Shrubland			G2G3
IL Spring Bay Fen			C
Ecoregional Conservation Goal: 2 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2			
Fens : Great Plains Shrub/Graminoid Fens			
Great Plains Fen	SP	L	CEGL002041
Carex lanuginosa - Carex spp. - Scirpus spp. Plains Fen Herbaceous Vegetation			G1Q
MO Chevalier Bluff Springs			C
MO Mackenzie Fen			C
MO Salt Fork Fen			C
MO Stateline Fen			C
NE,KS Rose Creek Prairies : Steele City Canyon [NE]			B
Ecoregional Conservation Goal: 7 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6			
Seeps : Midwestern Herbaceous Seeps			
Skunk Cabbage Seepage Meadow	SP	L	CEGL002385
Symplocarpus foetidus Herbaceous Vegetation			G4?
IA Lower Cedar River : Lindle Woods			C
IL Kankakee River Floodplain Complex			B
IL Upper Illinois River Bluffs : Miller-Anderson Woods			C
Ecoregional Conservation Goal: 7 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6 Comments: Polk County, Iowa site is too small and not appropriate for the ecoregion.			

Seeps : Great Plains Seeps

Great Plains Neutral Seep	SP	P	CEGL002033
Typha spp. - Equisetum hyemale - Carex spp. Seep Herbaceous Vegetation			G3

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Distribution of this type in the ecoregion is uncertain.

Rooted/Floating Aquatic Marshes : Midwestern Aquatic Marshes

Central Water Lily Aquatic Wetland	SP	W	CEGL002386
Nuphar lutea ssp. advena - Nymphaea odorata Herbaceous Vegetation			G4G5

IL	Prairie Parklands Macrosite : Goose Lake Prairie	C
MO	Grassy Lake / Maple Lake	C

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Midwest Pondweed Submerged Aquatic Wetland	SP	W	CEGL002282
Potamogeton spp. - Ceratophyllum spp. Midwest Herbaceous Vegetation			G5Q

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Temporary Herbaceous Pond	SP	W	CEGL002430
Polygonum spp. - Mixed Forbs Herbaceous Vegetation [Provisional]			G?Q

IL	Illinois River Floodplain Complex : Illinois River - Beardstown Backwaters	B
IL	Mason County Sands : Sand Lake Area	C
IL	Mason County Sands : Snicarte Area	C
IL	Mason County Sands : Temporary Sand Ponds	B
IL	Sand Ridge Macrosite	B
IL,IA	Upper Mississippi River / Rock Island Complex : Rock Island Complex [IL]	B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Wet Meadows/Marshes : Midwestern Wet Prairies/Wet Meadows/Marshes

American Lotus Aquatic Wetland	SP	W	CEGL004323
Nelumbo lutea Herbaceous Vegetation			G3G4

IL	Illinois River Floodplain Complex : Illinois River - Havanna Backwaters	B
IL,MO	Calhoun / Alton Bluff Complex : Stump Lake [IL]	B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Field inventory required to determine size and condition of Nelumbo Pond (Iowa) occurrence. Check for Mississippi River occurrences.

Bulrush - Cattail - Burreed Shallow Marsh	LP	W	CEGL002026
Scirpus tabernaemontani - Typha spp. - (Sparganium spp., Juncus spp.) Herbaceous Vegetation			G4G5

IL,IA	Upper Mississippi River / Rock Island Complex : New Boston Marsh [IL]	C
IL,MO	Hannibal Bottoms	B
MO	Lowry Marsh	B
MO	Van Meter Marsh	C

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Central Cordgrass Wet Prairie		LP	L	CEGL002224
Spartina pectinata - Carex spp. - Calamagrostis canadensis - Lythrum alatum - (Oxypolis rigidior) Herbaceous Vegetation				G3?
IA,MO	Loess Hills : Squaw Creek NWR [MO]			B
IL	Prairie Parklands Macrosite : Goose Lake Prairie			C
IL,IA	Upper Mississippi River / Rock Island Complex : New Crystal Lake Club [IL]			C
MO	Swan Lake			C
	Ecoregional Conservation Goal: 7 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6 Comments: Zimmerman Meadow (Nebraska) provides an example of this type but is outside the ecoregion.			
Central Cordgrass Wet Sand Prairie		LP	E	CEGL005178
Spartina pectinata - Carex spp. - Calamagrostis canadensis Sand Herbaceous Vegetation				G3?
IL	Mason County Sands : Matanzas Sand Prairie			C
	Ecoregional Conservation Goal: 10 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 10			
Inland Saline Marsh		SP	L	CEGL005111
Scirpus maritimus - Atriplex patula - Eleocharis parvula Herbaceous Vegetation				G1
IL	Starved Rock Complex			B
	Ecoregional Conservation Goal: 7 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6 Comments: There may be no more sites available for this type. It's naturally very restricted.			
Midwest Cattail Deep Marsh		LP	W	CEGL002233
Typha spp. Midwest Herbaceous Vegetation				G5
IL,IA	Upper Mississippi River / Rock Island Complex : New Crystal Lake Club [IL]			B
MO	Big Lake SP			C
	Ecoregional Conservation Goal: 4 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3			
Midwest Mixed Emergent Deep Marsh		LP	W	CEGL002229
Typha spp. - Scirpus acutus - Mixed Herbs Midwest Herbaceous Vegetation				G5
IL	Spring Lake			B
IN,IL	Kankakee Sands Macrosite			C
MO	Goose Pond			B
MO	Little Bean Marsh			B
	Ecoregional Conservation Goal: 4 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1			
River Bulrush Marsh		LP	W	CEGL002221
Scirpus fluviatilis - Scirpus spp. Herbaceous Vegetation				G?
IA,MO	Loess Hills : Squaw Creek NWR [MO]			B
	Ecoregional Conservation Goal: 4 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3			

Tussock Sedge Wet Meadow		LP	P	CEGL002258
Carex stricta - Carex spp. Herbaceous Vegetation				G4?
IN	Tefft Savanna Macrosite			B
IN,IL	Kankakee Sands Macrosite			A

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Twigrush Wet Prairie		SP	P	CEGL005104
Cladium mariscoides - (Carex lasiocarpa, Hypericum kalmianum, Solidago riddellii, Eleocharis elliptica) Herbaceous Vegetation				G2G3

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Few, if any, sites are expected in the ecoregion.

Wet Meadows/Marshes : Southeastern Depression Marshes

Sinkhole Pond Marsh		SP	P	CEGL002413
Carex comosa - Carex decomposita - Dulichium arundinaceum - Lycopus rubellus Herbaceous Vegetation				G4?
MO	Lincoln Hills : Cuivre River SP			C

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Wet Meadows/Marshes : Great Plains Salt Marshes and Pannes

Central Plains Spikegrass Saline Prairie		LP	E	CEGL002031
Distichlis spicata - Hordeum jubatum - (Poa arida, Iva annua) Herbaceous Vegetation				G2G3
NE	Lancaster County Salt Marshes : Arbor Lake WMA			C
NE	Lancaster County Salt Marshes : Jack Sinn WMA			B
NE	Lancaster County Salt Marshes : Little Salt Marsh Preserve			A

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 8

Eastern Great Plains Saline Marsh		SP	W	CEGL002043
Distichlis spicata - Scirpus maritimus - Salicornia rubra Herbaceous Vegetation				G1G2
NE	Lancaster County Salt Marshes : Arbor Lake WMA			B
NE	Lancaster County Salt Marshes : Jack Sinn WMA			B
NE	Lancaster County Salt Marshes : Little Salt Marsh Preserve			A

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: Check status of Moniteau Lick (Missouri) occurrence.

Swamps : Northern (Laurentian) Hardwood Swamps

Black Ash - Mixed Hardwood Swamp		LP	P	CEGL002105
Fraxinus nigra - Mixed Hardwoods-Conifers / Cornus sericea / Carex spp. Forest				G4

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Swamps : Midwestern Hardwood Swamps

Maple-Ash-Elm Swamp Forest — LP — P — CEGL005038
Acer (rubrum, saccharinum) - Fraxinus spp. - Ulmus americana Forest — G4?

IN	Tippecanoe State Park	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Pin Oak Mixed Hardwood Forest — LP — P — CEGL002432
Quercus palustris - Quercus bicolor - (Liquidambar styraciflua) Mixed Hardwood Forest — G3G5

IL,IA	Upper Mississippi River / Rock Island Complex : New Crystal Lake Club [IL]	C
MO	Rebel's Cove CA	C

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Check Sanganois Conservation Area (Illinois).

Swamps : Midwestern Shrub Swamps

Dogwood - Pussy Willow Swamp — SP — P — CEGL002186
Cornus sericea - Salix spp. - (Rosa palustris) Shrubland — G5

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Northern Buttonbush Swamp — SP — W — CEGL002190
Cephalanthus occidentalis / Carex spp. Northern Shrubland — G4

IL	Momence Wetlands	A
IL	Pin Oak Lakes	B
IL,MO	Calhoun / Alton Bluff Complex : Prairie Slough [MO]	C
MO	Rebel's Cove CA	B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Swamps : Midwestern Flatwoods

Pin Oak - Swamp White Oak Sand Flatwoods — SP — L — CEGL002100
Quercus palustris - Quercus bicolor - Nyssa sylvatica - Acer rubrum Sand Flatwoods Forest — G2?

IN	Tefft Savanna Macrosite	B
IN,IL	Kankakee Sands Macrosite	B

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 5

Woody Floodplains/Riparian Zones : Midwestern Wooded Floodplains

Bur Oak - Swamp White Oak Mixed Bottomland Forest — LI — W — CEGL002098
Quercus macrocarpa - Quercus bicolor - Carya laciniosa / Leersia spp. - Cinna spp. Forest — G2G3

IL	Momence Wetlands	B
IL,IA	Upper Mississippi River / Rock Island Complex : Rock Island Complex [IL]	B
IL,MO	Calhoun / Alton Bluff Complex : Prairie Slough [MO]	C
IL,MO	Hannibal Bottoms	B
MO	Swan Lake	B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Central Green Ash - Elm - Hackberry Forest	LI	W	CEGL002014
Fraxinus pennsylvanica - Ulmus spp. - Celtis occidentalis Forest			G3G5

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Comments: Scarcity of sites identified may reflect classification problems with the type. Missouri doesn't have any records of this type. Undoubtedly these forests occur in Missouri but haven't been crosswalked to this type. Wet bottomland forests in north Missouri crosswalk with CEGL002586, CEGL002018, or CEGL002086. The USNVC is sometimes too narrow for planning purposes and this may be a good example of this. Very little work has been done in Iowa to document occurrences of this forest type. Woodland Mounds (Iowa) has this type occurring in little slivers that are several hundred feet wide. Look for sites with this type in Missouri, Iowa, Illinois, and Nebraska.

Cottonwood - Black Willow Forest	LI	W	CEGL002018
Populus deltoides - Salix nigra Forest			G3G4

NE	Gifford Point	C

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Silver Maple - Elm - (Cottonwood) Forest	LI	W	CEGL002586
Acer saccharinum - Ulmus americana - (Populus deltoides) Forest			G4?

IL	Carpenter Park	A
IL	Illinois River Floodplain Complex : Illinois River - Havanna Backwaters	B
IL	Illinois River Floodplain Complex : Illinois River - Meredosia Backwaters	B
IL	Spring Lake	B
IL,MO	Hannibal Bottoms : Long Island [IL]	A
MO	Swan Lake	B

Ecoregional Conservation Goal: 8

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Very little work has been done in Iowa to document occurrences of this forest type. Probably present in floodplain of Wapsipinicon River (Iowa). Hold two selections for Iowa occurrences.

Silver Maple - Sugarberry - Pecan Terrace Forest	LI	P	CEGL002431
Acer saccharinum - Celtis laevigata - Carya illinoinensis Forest			G2G4

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Woody Floodplains/Riparian Zones : Southeastern Mixed Hardwood Bottomland Forests

Maple - Hickory Floodplain Ridge and Terrace Forest	LI	P	CEGL005035
Acer saccharum - Carya cordiformis / Asimina triloba Floodplain Forest			G2Q

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Check for possible occurrences in Illinois.

Pecan - Sugarberry Forest	LI	P	CEGL002087
Carya illinoinensis - Celtis laevigata Forest			G4?

KS	Fort Leavenworth	B

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Woody Floodplains/Riparian Zones : Great Plains Wooded Riparian Zones

Cottonwood - Green Ash Floodplain Forest — LI — P — CEGL000658
Populus deltoides - Fraxinus pennsylvanica Forest [Provisional] — G2G3Q

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Cottonwood - Sycamore Forest — SP — P — CEGL002095
Populus deltoides - Platanus occidentalis Forest — G1G2Q

KS Fort Leavenworth — B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Sandbar Willow / Mesic Graminoid Shrubland — SP — W — CEGL001203
Salix exigua / Mesic Graminoids Shrubland — G5

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4
Comments: Type may be equal to Sandbar Willow Shrubland (CEGL001197).

Sandbar Willow Shrubland — SP — W — CEGL001197
Salix exigua Temporarily Flooded Shrubland — G5Q

IL Illinois River Floodplain Complex : Illinois River - Havanna Backwaters — B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3
Comments: Type may be equal to Sandbar Willow/Mesic Graminoid Shrubland (CEGL001203).

Sand/Gravel/Mudflat Streambeds And Lakeshores : Midwestern Sandbars/Gravel Washes

Riverine Sand Flats — LI — W — CEGL002049
Riverine Sand Flats - Bars Sparse Vegetation — G4G5

NE Lower Platte — B
NE Unchannelized Missouri — B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Sand/Gravel/Mudflat Streambeds And Lakeshores : Midwestern Mudflats

River Mud Flats — LI — W — CEGL002314
River Mud Flats Sparse Vegetation — G?

IL Illinois River Floodplain Complex : Illinois River - Havanna Backwaters — B
IL Illinois River Floodplain Complex : Illinois River - LaGrange Reach — A

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Rocky Flats (Glades,Rock Barrens,Rock Outcrops,Alvars) : Appalachian & Interior Low Plateau Carbonate Glades & Barrens

Central Limestone Glade — SP — W — CEGL005131

Quercus muehlenbergii - Juniperus virginiana / Schizachyrium scoparium - Bouteloua curtipendula Wooded Herbaceous Vegetation — G1G2

IL,MO	Calhoun / Alton Bluff Complex : Distillery Hollow Glade [IL]	C
IL,MO	Calhoun / Alton Bluff Complex : Kamp's Glade [IL]	B
IL,MO	Calhoun / Alton Bluff Complex : Lead Hollow Glade [IL]	B
IL,MO	Calhoun / Alton Bluff Complex : Mortland Glade [IL]	B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Rocky Flats (Glades,Rock Barrens,Rock Outcrops,Alvars) : Appalachian & Interior Low Plateau Sandstone Glades & Barrens

Central Shale Glade — SP — P — CEGL002428

Quercus marilandica - (Juniperus virginiana) / Schizachyrium scoparium - Danthonia spicata Wooded Herbaceous Vegetation — G2

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Post Oak Central Dry Barrens — LP — L — CEGL002391

Quercus stellata - Quercus marilandica / Schizachyrium scoparium Wooded Herbaceous Vegetation — G2

IL,MO	Cedar Glen : Cedar Glen Kibbe [IL]	C

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7
Comments: This community is virtually extirpated in the ecoregion and will require restoration management.

Rocky Flats (Glades,Rock Barrens,Rock Outcrops,Alvars) : Interior Highlands Carbonate Glades & Barrens

Ozark Limestone Glade — LP — P — CEGL002251

Schizachyrium scoparium - Bouteloua curtipendula - Rudbeckia missouriensis - Mentzelia oligosperma Wooded Herbaceous Vegetation — G2

MO	Lincoln Hills : Cuivre River SP	C

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Viability rank for Cuivre River SP seems low.

Rocky Flats (Glades,Rock Barrens,Rock Outcrops,Alvars) : Interior Highlands Sandstone/Chert Glades & Barrens

Ozark Sandstone Glade — LP — P — CEGL002242

Schizachyrium scoparium - Aristida dichotoma - Croton willdenowii / Lichens Wooded Herbaceous Vegetation — G3

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Cliffs, Buttes & Bluffs : Midwestern Cliffs & Bluffs

Small Eroding Bluffs — LI — W — CEGL002315

Small Eroding Bluffs Sparse Vegetation — G?

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Cliffs, Buttes & Bluffs : Interior Highlands & Interior Low Plateau (and Midwestern) Cliffs

Midwest Dry Limestone / Dolostone Cliff		LI	W	CEGL002291
Limestone/Dolostone Midwest Dry Cliff Sparse Vegetation				G5
IL,MO	Hannibal Bottoms : Wyaconda River Bluffs [MO]			C

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Midwest Moist Limestone / Dolostone Cliff		LI	W	CEGL002292
Limestone/Dolostone Midwest Moist Cliff Sparse Vegetation				G5
IL	Hanover Bluff			B
IL	Kankakee River Floodplain Complex			B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Midwest Sandstone Dry Cliff		LI	W	CEGL002045
Sandstone Dry Cliff Sparse Vegetation				G?Q
IL	Starved Rock Complex			A
IL	Weinberg-King Natural Area			C
NE,KS	Rose Creek Prairies : Steele City Canyon [NE]			C

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Sandstone Moist Cliff		LI	W	CEGL002287
Sandstone Moist Cliff Sparse Vegetation				G4G5
IA	Cedar Bluffs			C
IL	Starved Rock Complex			B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Talus : Northern (Laurentian) Talus

Northern Sandstone Talus		LI	P	CEGL005202
Sandstone Talus Northern Sparse Vegetation				G4G5

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Talus : Midwestern Talus

Algific Talus Slope		SP	P	CEGL002387
Impatiens pallida - Cystopteris bulbifera - Adoxa moschatellina - (Chrysoplenium iowense, Aconitum noveboracense) Herbaceous Vegetation				G2
IA	Lytle Creek			A
IA	Pine Creek			A

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Talus : Interior Highlands and Interior Low Plateau (and Midwestern) Talus

Limestone - Dolomite Talus		LI	W	CEGL002308
Limestone - Dolomite Talus Sparse Vegetation				G5
IL,MO	Calhoun / Alton Bluff Complex : Calhoun Bluffs [IL]			C
MO	Veronica Baier			C

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Forests & Woodlands : Midwestern Mesic Hardwood Forests

Beech - Maple Glaciated Forest		LP	P	CEGL005013
Fagus grandifolia - Acer saccharum Glaciated Midwest Forest				G3G4

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Central Maple - Basswood Forest		LP	L	CEGL002061
Acer saccharum - Acer nigrum - Tilia americana - Quercus rubra / Ostrya virginiana Forest				G3G4
MO	Des Moines River Ravines NA			C

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7
Comments: Lack of sites seems surprising. Is this due to lack of survey or extensive deering? Very little work has been done in Iowa to document occurrences of this forest type.

North-Central Maple - Basswood Forest		LP	P	CEGL002062
Acer saccharum - Tilia americana / Ostrya virginiana - Carpinus caroliniana Forest				G4?
IL	Funks Grove			B
IL	Robert Allerton Park			C

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Forests & Woodlands : Midwestern Dry Oak Forests

Black Oak - White Oak - Hickory Forest		LP	P	CEGL002076
Quercus velutina - Quercus alba - Carya (glabra, ovata) Forest				G4?
IL	Momence Wetlands			B
IL	Pike County Bluffs			B
IL	Starved Rock Complex			A
IL	Upper Illinois River Bluffs : Peoria Wilds Macrosite			B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Black Oak - White Oak / Blueberry Forest		LP	P	CEGL005030
Quercus velutina - Quercus alba / Vaccinium (angustifolium, pallidum) / Carex pensylvanica Forest				G4?
IN	Tefft Savanna Macrosite			B
IN,IL	Kankakee Sands Macrosite			B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Black Oak Forest		LP	P	CEGL002078
Quercus velutina / Carex pensylvanica Forest				G4?
IL	Illinois River Floodplain Complex : Illinois River - Beardstown Backwaters			B
IL	Illinois River Floodplain Complex : Sanganois Conservation Area			A
IL	Sand Ridge Macrosite			B

Ecoregional Conservation Goal: 3
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Is type a fire-suppressed black oak/lupine barrens? Maybe, but may also have natural origins.

Midwestern White Oak - Red Oak Forest		MX	W	CEGL002068
Quercus alba - Quercus rubra - Carya ovata Glaciated Forest				G4?
IL	Starved Rock Complex			B
IL	Upper Illinois River Bluffs : Peoria Wilds Macrosite			B
IL,IA	Upper Mississippi River / Rock Island Complex : Rock Island Complex [IL]			B
IL,MO	Calhoun / Alton Bluff Complex : Pierre Marquette / Alton Bluffs [IL]			A-B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Check for occurrences in Iowa.

White Oak - Hickory Forest		LP	L	CEGL002011
Quercus alba - (Quercus velutina) - Carya ovata / Ostrya virginiana Forest				G3
KS	Fort Leavenworth			B
KS	Wyandotte County Park			B
MO	Lincoln Hills : Cuivre River SP			B
NE,KS	Missouri River Blufflands : Indian Caves SP [NE]			B
NE,KS	Missouri River Blufflands : Rulo Bluff / Mosquito Bluff [NE]			B

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: A- or B-ranked records likely in Missouri. Very little work has been done in Iowa to document occurrences of this forest type.

Forests & Woodlands : Midwestern Mesic Oak & Oak-Maple Forests

Red Oak-Sugar Maple-Elm Forest		LP	P	CEGL005017
Quercus rubra - Acer saccharum - Quercus alba - Ulmus americana / Prunus virginiana Forest				G?Q
IL	Pike County Bluffs			B
IL	Upper Illinois River Bluffs : Peoria Wilds Macrosite			B
IL,MO	Calhoun / Alton Bluff Complex : Pierre Marquette / Alton Bluffs [IL]			B

Ecoregional Conservation Goal: 3
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

White Oak - Red Oak - Sugar Maple Mesic Forest		LP	P	CEGL002058
Quercus alba - Quercus rubra - Acer saccharum - Carya cordiformis / Lindera benzoin Forest				G3?
IL,IA	Upper Mississippi River / Rock Island Complex : Rock Island Complex [IL]			B
MO	Ben Watts Knob			C
MO	Van Meter Marsh			B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Forests & Woodlands : Appalachian & Interior Highlands Xeric Oak-(Pine, Juniper) Forests & Woodlands

Chinquapin Oak - Red Cedar Dry Alkaline Forest — LP — P — CEGL002108

Quercus muehlenbergii - Juniperus virginiana - Acer saccharum / Frangula caroliniana Forest — G?

MO	Ben Watts Knob	C
MO	Salt River Narrows	C

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Forests & Woodlands : Interior Highlands & Interior Low Plateau Dry-Mesic Oak Forests and Woodlands

Oak - Hickory Dry-mesic Acid Forest — LP — P — CEGL002067

Quercus alba - Quercus rubra - Carya (alba, ovata) / Cornus florida Acid Forest — G3

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

White Oak - Mixed Oak / Redbud Dry-mesic Alkaline Forest — LP — P — CEGL002070

Quercus alba - Quercus rubra - Quercus muehlenbergii / Cercis canadensis Forest — G4G5

MO	Ben Watts Knob	C

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

White Oak / Dogwood Dry-mesic Forest — LP — P — CEGL002066

Quercus alba / Cornus florida Unglaciated Forest — G?Q

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Forests & Woodlands : Great Plains Hardwood Forests & Woodlands

Basswood - Bur Oak Forest — LP — L — CEGL002012

Tilia americana - (Quercus macrocarpa) / Ostrya virginiana Forest — G3

NE	Ponca State Park	B
NE	Winnebago / Omaha Woodland : Basswood Ridge WMA	C
NE	Winnebago / Omaha Woodland	B
NE,SD	Bazile Creek Uplands	B

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4
Comments: Very little work has been done in Iowa to document occurrences of this forest type. Stone State Park and Elk Point Grasslands (southwestern Loess Hills) are examples of this type. Inventory work necessary to determine size and condition of occurrences.

Savannas (Barrens) & Woodlands (In Part) : Midwestern Oak Savannas & Woodlands

Black Oak / Lupine Barrens — LP — L — CEGL002492

Quercus velutina - (Quercus alba) - Quercus ellipsoidalis / Schizachyrium scoparium - Lupinus perennis Wooded Herbaceous Vegetation — G3

IL	Illinois River Floodplain Complex : Illinois River - Beardstown Backwaters	B
IL	Mason County Sands : Sand Prairie Scrub Oak	A
IL	Sand Ridge Macrosite	A
IL	Savanna Army Depot	B
IL,IA	Upper Mississippi River / Rock Island Complex : Big River State Forest [IL]	B
IN	Ober Sand Savanna	B
IN	Tefft Savanna Macrosite	A
IN,IL	Kankakee Sands Macrosite	A

Ecoregional Conservation Goal: 8
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Bur Oak - Chinquapin Oak Woodland — SP — E — CEGL002141

Quercus macrocarpa - Quercus muehlenbergii / Andropogon spp. Woodland — G1Q

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 10

Central Bur Oak Openings — SP — E — CEGL002159

Quercus macrocarpa - (Quercus alba, Quercus stellata) / Andropogon gerardii Wooded Herbaceous Vegetation — G1G2

IL	Bur Oak Groves : B-Set Grove	C-
IL	Bur Oak Groves : Barton-Summers Woods	C-
IL	Bur Oak Groves : Sibley Bur Oak Grove	C
MO	Long Branch SP	C

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 10
Comments: Restoration management will be needed to provide more sites.

Chinquapin Oak - Bur Oak Ravine Woodland — LP — P — CEGL002145

Quercus muehlenbergii - Quercus macrocarpa / Andropogon gerardii Ravine Woodland — G2

IL	Chinquapin Bluffs	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: This type is on soils with cherty limestone substrates, slopes. No occurrences in the Kansas portion of the ecoregion. Check for Mackinaw River and Peoria Wilds Macrosite (Illinois) occurrences. Check for occurrences in Nebraska.

Northern Dry-mesic Oak Woodland — LP — L — CEGL002142

Quercus alba - Quercus macrocarpa - Quercus rubra / Corylus americana Woodland — G3G4

IL	Upper Illinois River Bluffs : Peoria Wilds Macrosite	B
IL,MO	Calhoun / Alton Bluff Complex : Calhoun Bluffs [IL]	B
IL,MO	Calhoun / Alton Bluff Complex : Pierre Marquette / Alton Bluffs [IL]	B
IL,MO	Cedar Glen : Cedar Glen Kibbe [IL]	B

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Swamp White Oak Woodland		SP	L	CEGL005181
Quercus bicolor - (Quercus macrocarpa) Woodland				G1
IA	Lower Cedar River : Swamp White Oak Woodland			B
MO	Accola Woods			C

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6
Comments: This community may never have been very extensive. Its classification also needs further review.

White Oak Central Glaciated Woodland		LP	E	CEGL002134
Quercus alba - (Carya ovata) / Carex pensylvanica Glaciated Woodland				G1Q
IL	Siloam Springs			B
MO	Crowder State Park			B
MO	Green Hills : Thousand Hills SP			B
MO	Lincoln Hills : Cuivre River SP			B
MO	Trice-Dedman Woods			C

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6
Comments: Restoration management will be needed to provide more sites.

Savannas (Barrens) & Woodlands (In Part) : Great Plains Oak Savannas & Woodlands

Eastern Great Plains Bur Oak Woodland		LP	E	CEGL002053
Quercus macrocarpa / Andropogon gerardii - Stipa spartea Woodland				G2G3
IA,MO	Loess Hills : Broken Kettle Grasslands [IA]			A
IA,MO	Loess Hills : Elk Point Grasslands [IA]			B
IA,MO	Loess Hills : Little Sioux Complex [IA]			B
IA,MO	Loess Hills : Loess Hills WMA [IA]			B
IA,MO	Loess Hills : Thurman [IA]			B
IA,MO	Loess Hills : Waubonsie State Park [IA]			B
NE,KS	Missouri River Blufflands : Rulo Bluff / Mosquito Bluff [NE]			B
NE,KS	Rose Creek Prairies : Steele City Canyon [NE]			C
NE,SD	Bazile Creek Uplands			C

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Shrublands/Dwarf-Shrublands : Midwestern Shrub Prairie/Barrens

Hardhack Sand Shrub Prairie		SP	E	CEGL005069
Spiraea tomentosa / Andropogon gerardii Shrubland				G1Q
IL	Prairie Parklands Macrosite : Wilmington Shrub Prairie			B
IN	Tefft Savanna Macrosite			B
IN,IL	Kankakee Sands Macrosite			B

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7

Prairies/Grasslands : Midwestern Sand/Gravel Prairies

Central Wet-mesic Sand Tallgrass Prairie	LP	E	CEGL005177
Andropogon gerardii - Calamagrostis canadensis Sand Herbaceous Vegetation			G2G3

IL	Green River CA	B
IL	Prairie Parklands Macrosite : Braidwood Dunes and Savanna	C
IN	Tefft Savanna Macrosite	C
IN,IL	Kankakee Sands Macrosite	A

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 8

Mesic Sand Tallgrass Prairie	LP	W	CEGL005096
Andropogon gerardii - Sorghastrum nutans - Schizachyrium scoparium - Aletris farinosa Herbaceous Vegetation			G2

IL	Green River CA	B
IL	Prairie Parklands Macrosite : Braidwood Dunes and Savanna	C
IN	Tefft Savanna Macrosite	B
IN,IL	Kankakee Sands Macrosite	B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Midwest Dry Gravel Prairie	LP	L	CEGL002215
Schizachyrium scoparium - Bouteloua curtipendula Gravel Herbaceous Vegetation			G3

IL	Manito Prairie	C
IL	Polk Township Prairies	C

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7

Midwest Dry Sand Prairie	LP	W	CEGL002318
Schizachyrium scoparium - Danthonia spicata - Carex pensylvanica - (Viola pedata) Herbaceous Vegetation			G2G3

IL	Green River CA	B
IL	Illinois River Floodplain Complex : Illinois River - Beardstown Backwaters	B
IL	Sand Ridge Macrosite	B
IL	Savanna Army Depot	B
IL,IA	Upper Mississippi River / Rock Island Complex : Big Sand Mound [IA]	B
IN,IL	Kankakee Sands Macrosite	B

Ecoregional Conservation Goal: 6
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Kish-Ke-Kosh State Preserve (Iowa) contains a small, highly degraded sand prairie. Big Sand Mound (Iowa) requires field inventory to determine sand prairie types present at site.

Midwest Dry-mesic Sand Prairie	LP	W	CEGL002210
Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Lespedeza capitata Sand Herbaceous Vegetation			G3

IL	Green River CA	B
IL	Sand Ridge Macrosite	B
IL,IA	Upper Mississippi River / Rock Island Complex : Big River State Forest [IL]	C
IN	Tefft Savanna Macrosite	B
IN,IL	Kankakee Sands Macrosite	A

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Occurs in small patches (5-10 acres) along the Mississippi and Cedar Rivers in Iowa.

Prairies/Grasslands : Midwestern Bedrock Prairies

Dakota Sandstone Tallgrass Prairie — MX — P — CEGL005231

Andropogon gerardii - Panicum virgatum - Schizachyrium scoparium - (Tradescantia tharpii) Herbaceous Vegetation — G3?

NE,KS	Rose Creek Prairies : Steele City Canyon [NE]	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Flint Hills Tallgrass Prairie — MX — P — CEGL002201

Andropogon gerardii - Sorghastrum nutans - Schizachyrium scoparium Flint Hills Herbaceous Vegetation — G4?

KS	Flint Hills Tallgrass Prairie : Mill Creek Tallgrass Prairie	B
KS	Flint Hills Tallgrass Prairie : Northern Flint Hills Tallgrass Prairie	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Little Bluestem Bedrock Bluff Prairie — SP — P — CEGL002245

Schizachyrium scoparium - Bouteloua curtipendula Bedrock Bluff Herbaceous Vegetation — G3

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Midwest Dry Limestone - Dolomite Prairie — SP — P — CEGL002403

Schizachyrium scoparium - Bouteloua curtipendula - Muhlenbergia cuspidata - Aster sericeus alkaline Herbaceous Vegetation — G2

IA	Manikowski Prairie	B
IL	Kankakee River Floodplain Complex	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Midwest Dry-mesic Limestone - Dolomite Prairie — SP — P — CEGL005179

Schizachyrium scoparium - Sorghastrum nutans - Calamintha arkansana Alkaline Herbaceous Vegetation — G2

IA	Manikowski Prairie	B
IL	Prairie Parklands Macrosite : Des Plaines Conservation Area	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Prairies/Grasslands : Midwestern Loam Prairies

Central Mesic Tallgrass Prairie — MX — L — CEGL002203

Andropogon gerardii - Sorghastrum nutans - (Sporobolus heterolepis) - Liatris spp. - Ratibida pinnata Herbaceous Vegetation — G2

IA	Rolling Thunder	C
IL	Prairie Parklands Macrosite : Des Plaines Conservation Area	C
IL	Prairie Parklands Macrosite : Goose Lake Prairie	B
IN	Lowe Prairie	C
KS	Flint Hills Tallgrass Prairie : Pottawatomie Tallgrass Prairie	B
MO	Helton Prairie	C

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 5
Comments: This once widespread matrix community type will need restoration to increase the number of sites.

Central Wet-mesic Tallgrass Prairie		LP	L	CEGL002024
Andropogon gerardii - Calamagrostis canadensis - Helianthus grosseserratus Herbaceous Vegetation				G2G3
IL	Prairie Parklands Macrosite : Goose Lake Prairie			B
IL	Prairie Parklands Macrosite : Hitts Siding Prairie			C
IL	Prairie Parklands Macrosite : Munch Prairie			C
NE	Otoe Creek Prairie			B

Ecoregional Conservation Goal: 7

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 5

Comments: No occurrences in the Kansas portion of the ecoregion. Field work required at Wearin Prairie (Iowa) to determine the prairie type(s) present at the site.

Eastern Great Plains Big Bluestem Loess Prairie		MX	E	CEGL002025
Andropogon gerardii - Sorghastrum nutans - Stipa spartea Loess Hills Herbaceous Vegetation				G2
IA,MO	Loess Hills : Broken Kettle Grasslands [IA]			A-B
IA,MO	Loess Hills : Elk Point Grasslands [IA]			A-B
IA,MO	Loess Hills : Folsom Lake [IA]			BC
IA,MO	Loess Hills : Grant Center [IA]			B
IA,MO	Loess Hills : Loess Hills WMA [IA]			A-B
MO	Little Tarkio Prairie			C
NE	Cornhusker Scout Reservation			B
NE	Pawnee County Grasslands			C
NE,SD	Bazile Creek Uplands			C

Ecoregional Conservation Goal: 10

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Little Bluestem Hardpan Prairie		LP	P	CEGL002249
Schizachyrium scoparium - Bouteloua curtipendula - Agrostis hyemalis - Eleocharis spp. Hardpan Herbaceous Vegetation				G2?
MO	Tucker Prairie			C

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: No occurrences in the Kansas portion of the ecoregion.

Loess Hills Little Bluestem Dry Prairie		LP	E	CEGL002035
Schizachyrium scoparium - Bouteloua curtipendula - Bouteloua hirsuta - (Yucca glauca) Herbaceous Vegetation				G2
IA,MO	Loess Hills : Broken Kettle Grasslands [IA]			A-B
IA,MO	Loess Hills : Elk Point Grasslands [IA]			A
IA,MO	Loess Hills : Folsom Lake [IA]			B
IA,MO	Loess Hills : Grant Center [IA]			AB
IA,MO	Loess Hills : Little Sioux Complex [IA]			A-B
IA,MO	Loess Hills : Loess Hills WMA [IA]			A-B
IA,MO	Loess Hills : Squaw Creek NWR [MO]			C
IA,MO	Loess Hills : Star School Hill Prairie Complex [MO]			C
IA,MO	Loess Hills : Thurman [IA]			C
IA,MO	Loess Hills : Waubonsie State Park [IA]			A-B

Ecoregional Conservation Goal: 10

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Midwest Dry-mesic Prairie		LP	W	CEGL002214
Schizachyrium scoparium - Sorghastrum nutans - Bouteloua curtipendula Herbaceous Vegetation				G2G3
IA	Kellerton			C
MO	East Tarkio Prairie			C
MO	Morris Prairie			C
MO	Stegman Prairie			C
MO,IA	Pawnee Prairie			B

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Comments: Woodside Prairie (Iowa) has a small 80 acre occurrence of this type. Ringold Wildlife Area (Iowa) has a small, high-quality occurrence of this type embedded in a matrix of low quality grassland. Check for occurrences in Illinois.

Midwest Glacial Drift Hill Prairie		SP	E	CEGL005183
Schizachyrium scoparium - Sorghastrum nutans - Bouteloua curtipendula Glacial Drift Herbaceous Vegetation				G2Q
IL	Chinquapin Bluffs			B
IL	Coneflower Hill Prairie			B
IL	Upper Illinois River Bluffs : Marshall County CA Hill Prairies			B
IL	Upper Illinois River Bluffs : Peoria Wilds Macrosite			B
IL	Upper Illinois River Bluffs : Wier Hill Prairie			C
IN	River View Hill Prairie			B

Ecoregional Conservation Goal: 10

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 5

Comments: Check status of Mud Pine Creek (Indiana) occurrence.

Mississippi River Loess Hill Prairie		SP	L	CEGL005097
Schizachyrium scoparium - Sorghastrum nutans - Bouteloua curtipendula Loess Herbaceous Vegetation				G2
IL	Cox Creek Hill Prairie Complex			B
IL	Meredosia Hill Prairie			B
IL	Pike County Bluffs : North Newcanton / Grub Hollow Hill Prairies			B
IL	Revis Hill Prairie			A
IL	Witter's Bobtown Hill Prairie			C
IL,MO	Calhoun / Alton Bluff Complex : Cap Au Gris Hill Prairie [IL]			B
IL,MO	Calhoun / Alton Bluff Complex : Jennings Hill Prairie [IL]			C

Ecoregional Conservation Goal: 7

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Caves : Midwestern Carbonate Caves

Dry Terrestrial Cave		U	U	CEMCS00001
Dry Terrestrial Cave				
IL	Burton Cave			B
IL,MO	Calhoun / Alton Bluff Complex : Brainerd Cave [IL]			B
MO	Lincoln Hills : Cuivre River SP			B

Ecoregional Conservation Goal: 3

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Wet Aquatic Cave *Wet Aquatic Cave*		U	U	CEMCS00002
IL	Slick-Crawl Cave			B
IL,MO	Calhoun / Alton Bluff Complex : Twin Culvert Cave [IL]			B
MO	Lincoln Hills : Cuivre River SP			B

Ecoregional Conservation Goal: 3
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Appendix B: Species Target Information

The targets in this appendix are sorted by a taxonomic group hierarchy and within that group by common name. The conservation areas specifically selected for each target are organized by state(s), conservation area name, and site name.

To describe the global range and distribution pattern of the targets in the ecoregion, the following codes are used: E = restricted / endemic, L = limited, W = widespread, and P = peripheral.

Taxonomic Group

Common Name	Distribution	USESA	Element Code
Global Scientific Name			Global Conservation Rank

Amphibians

Illinois Chorus Frog	Limited		AAABC05061
Pseudacris streckeri illinoensis			G5T3

IL	Mason County Sands : Matanzas Sand Prairie	A
IL	Mason County Sands : Temporary Sand Ponds	C
IL	Sand Ridge Macrosite	C

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6
Comments: Check with Kentucky and Tennessee on southern populations.

Birds

Bald Eagle	Widespread	(PS)	ABNKC10010
Haliaeetus leucocephalus			G4

IA,MO	Loess Hills : Squaw Creek NWR [MO]	A
IL,MO	Calhoun / Alton Bluff Complex : Pierre Marquette / Alton Bluffs [IL]	A-B
IL,MO	Cedar Glen : Alexandria [MO]	B
IL,MO	Cedar Glen : Cedar Glen Kibbe [IL]	A-B
IL,MO	Cedar Glen : Fox River [MO]	B
MO	Swan Lake	B

Ecoregional Conservation Goal: 6
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Objective should be based on recovery plan guidelines.

Interior Least Tern	Peripheral	(PS)	ABNNM08102
Sterna antillarum athalassos			G4T2Q

NE	Lower Platte	B
NE	Unchannelized Missouri	B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Ecoregion distribution primarily in Nebraska. Core of distribution in other ecoregions. Objective should be based on recovery plan guidelines. The plan calls for the maintenance of at least 7000 birds, including 2500 birds in the Missouri River System. This is above what currently exists in the region.

Peregrine Falcon	Widespread	E(S/A)-PDL	ABNKD06070
Falco peregrinus			G4

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Objective should be based on recovery plan guidelines.

Piping Plover	Peripheral	(LE-LT)	ABNNB03070
Charadrius melodus			G3

NE	Lower Platte	B
NE	Unchannelized Missouri	B

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Ecoregion has southeastern edge of current distribution. Objective should be based on recovery plan guidelines. Northern Great Plains birds are on the verge of being considered endangered. The draft revised recovery plan (1994) calls for 4300 pairs in the Northern Plains, 2300 in the US and 2000 in Canada. Currently, 897 pairs are known from the US Plains, far below what is needed to sustain the species.

Crustaceans

Subtle Cave Amphipod	Limited	ICMAL05610
Stygobromus subtilis		G2

Ecoregional Conservation Goal: 7

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7

Comments: Documented from six locations; three counties in Illinois and one adjacent county in Missouri (St. Genevieve). Groundwater organism showing up in caves accidentally. Rangewide and ecoregional goals may need to be raised higher. Verify presence in ecoregion.

Fishes

Eastern Sand Darter	Peripheral	AFCQC01060
Ammocrypta pellucida		G3

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Check status of Tippecanoe River (Indiana) occurrence.

Greater Redhorse	Peripheral	AFCJC10170
Moxostoma valenciennesi		G3

IL	Lower Fox River	B

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: Best Illinois population is in the Lower Fox River to its confluence with the Illinois River.

Lake Sturgeon	Widespread	AFCAA01020
Acipenser fulvescens		G3

NE	Unchannelized Missouri	C

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Comments: Species occurs sporadically in the Missouri River. Protection will require a comprehensive strategy in conserving the Missouri River ecosystem. Species doing well around Cedar Glen Kibbe (primarily because of stocking across the river).

Pallid Sturgeon		Widespread	LE	AFCAA02010
Scaphirhynchus albus				G1G2
NE	Lower Platte		C	
NE	Unchannelized Missouri		C	

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Comments: Species occurs sporadically in the Missouri River. Protection will require a comprehensive strategy in conserving the Missouri River ecosystem. Objective should be based on recovery plan guidelines. The plan (1993) lists three recovery-priority areas in the ecoregion: 1) on the Missouri River above and below the confluence of the Platte, 2) on the Missouri River above and below the confluence of the Kansas River, and 3) on the Missouri at the confluence of the ?? in Missouri.

Sicklefin Chub		Limited	C	AFCJB53030
Macrhybopsis meeki				G3
NE	Unchannelized Missouri		C	

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Comments: Goal reduced to four occurrences because the species' range extends a considerable distance up the Missouri River. However, the species occurs sporadically in the Missouri River. Protection will require a comprehensive strategy in conserving the Missouri River ecosystem.

Sturgeon Chub		Widespread	C	AFCJB53020
Macrhybopsis gelida				G2
NE	Unchannelized Missouri		B	

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Comments: Species occurs sporadically in the Missouri River. Protection will require a comprehensive strategy in conserving the Missouri River ecosystem.

Tippecanoe Darter	Peripheral		AFCQC02800
Etheostoma tippecanoe			G3

Ecoregional Conservation Goal: 1

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Topeka Shiner		Peripheral	LE	AFCJB28960
Notropis topeka				G2
MO	Hickory Creek		C	
MO	Sugar Creek - Missouri		C	
MO	Tombstone Creek		C	

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Protection objective understates the number of occurrences that should be protected in the ecoregion because of population isolation that is occurring throughout the species' range. The peripheral distribution in this ecoregion is in part due to isolation of populations from habitat degradation. No recent records for Iowa's portion of the ecoregion. Survey efforts in Iowa are continuing (1998) and additional information may be available after the field season. Check status of populations in Nebraska. Contact Bruce Menzel for information on species in Iowa.

Western Sand Darter | Widespread | AFCQC01040
Ammocrypta clara | G3

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4
Comments: Species occurs sporadically in the Missouri River. Protection will require a comprehensive strategy in conserving the Missouri River ecosystem. Best Illinois populations are in the Mississippi River in Calhoun County and in the Kankakee River.

Insects

A Tiger Beetle | Endemic | IICOL02173
Cicindela nevadica lincolniana | G5T3

NE	Lancaster County Salt Marshes : Arbor Lake WMA	B
NE	Lancaster County Salt Marshes : Jack Sinn WMA	C
NE	Lancaster County Salt Marshes : Little Salt Marsh Preserve	A

Ecoregional Conservation Goal: 10
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 8

Ottoe Skipper | Widespread | IILEP65050
Hesperia ottoe | G3G4

IA,MO	Loess Hills : Broken Kettle Grasslands [IA]	A
IA,MO	Loess Hills : Loess Hills WMA [IA]	AB
IL	Revis Hill Prairie	A

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: Widespread but uncertain about stability of current populations. More common than other target butterfly species. Rangewide and ecoregional goals may need to be raised higher. No occurrences in the Kansas portion of the ecoregion. Check for occurrences in Nebraska.

Persius Dusky Wing | Peripheral | IILEP37171
Erynnis persius persius | G4T2T3

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2
Comments: Occasional. Occurrences in Iowa and Indiana. Rangewide and ecoregional goals may need to be raised higher. Check status of single Iowa population.

Prairie Mole Cricket | Peripheral | IIORT17010
Gryllotalpa major | G3

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: Primarily found in more southern ecoregions (possibly one site in ecoregion). Defer to other ecoregion for establishment of conservation goals.

Rattlesnake-master Borer Moth | Limited | IILEYC0310
Papaipema eryngii | G1G2

IL	Prairie Parklands Macrosite : Des Plaines Conservation Area	A
IL	Prairie Parklands Macrosite : Goose Lake Prairie	A

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 5
Comments: Current data showing populations in Illinois. Ron Panzer is the Illinois expert. Likely a limited species. Only three occurrences rangewide; two in the ecoregion. Rangewide and ecoregional goals may need to be raised higher. Check for occurrences in Kansas, Missouri, Iowa, and Nebraska where the host plant is often common in high quality tallgrass prairies.

Red Veined Prairie Leafhopper	Widespread		IIHOM08010
Aflexia rubranura			G1G2

IL	Prairie Parklands Macrosite : Des Plaines Conservation Area	C
IL	Prairie Parklands Macrosite : Goose Lake Prairie	A

Ecoregional Conservation Goal: 3

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Regal Fritillary	Widespread	IILEPJ6040
Speyeria idalia		G3

IA	Rolling Thunder	B
IA,MO	Loess Hills : Broken Kettle Grasslands [IA]	A
IL	Mason County Sands : Sand Prairie Scrub Oak	B
IL,IA	Upper Mississippi River / Rock Island Complex : Big Sand Mound [IA]	B
KS	Flint Hills Tallgrass Prairie : Northern Flint Hills Tallgrass Prairie	A
NE	Pawnee County Grasslands	A

Ecoregional Conservation Goal: 6

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Widespread but may experience local declines in eastern half of ecoregion. Rangewide and ecoregional goals may need to be raised higher. Assess viability of Missouri's occurrences.

Mammals

Gray Myotis	Peripheral	LE	AMACC01040
Myotis grisescens			G3

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Core of habitat/distribution is in more southern ecoregions. We need to coordinate with these ecoregions to ensure adequate rangewide protection for the species. Not known to occur in Iowa. Check with Rich Clausen for information on possible occurrences in Illinois. Objective should be based on recovery plan guidelines

Indiana Or Social Myotis	Widespread	LE	AMACC01100
Myotis sodalis			G2

IL	Black Ball Mines	B
IL,MO	Calhoun / Alton Bluff Complex : Brainerd Cave [IL]	B
MO	White Bear Cave	C

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Ecoregion contains northwestern portion of the species' range -- primarily summer habitat of floodplain and upland forests although Illinois may contain critical winter habitat (caves) within Illinois River Valley. We need to be concerned with summer habitat needs as riparian and associated upland forests/savannas are used throughout the ecoregion. Caves or winter roosts typically occur in the unglaciated karst areas south of the ecoregion. How should summer nurseries be addressed? Recovery plan? Identify critical habitat areas in relation to recovery plan. Objective should be based on recovery plan guidelines.

Mollusks

Clubshell	Widespread	LE	IMBIV35060
Pleurobema clava			G2

IN	Tippecanoe River	A-B?

Ecoregional Conservation Goal: 3

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Ellipse	Limited		IMBIVA4010
Venustaconcha ellipsiformis			G3G4

IL	Kankakee River	B
IL	Kilbuck Creek	B
IL	Mackinaw River	B?
IL	Sangamon River	C

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: Conservation goal changed to four occurrences given its wide range throughout the Driftless Area, Upper Peninsula Michigan, etc. (where it has its best populations). Check status of Mackinaw River (Illinois) occurrence.

Fanshell	Widespread	LE	IMBIV10020
Cyprogenia stegaria			G1

IN	Tippecanoe River	A-B?

Ecoregional Conservation Goal: 3
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Fat Pocketbook	Limited	LE	IMBIV37030
Potamilus capax			G1

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7

Higgins Eye	Limited	LE	IMBIV21100
Lampsilis higginsii			G1

IA	Wapsipinicon River	B?
IL,IA	Upper Mississippi River / Rock Island Complex : Otter Island - Pool #19 [IL]	A-B
IL,IA	Upper Mississippi River / Rock Island Complex : Rock Island Complex [IL]	A

Ecoregional Conservation Goal: 6
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Hubricht's Vertigo	Peripheral		IMGAS20381
Vertigo hubrichti hubrichti			G2T2

IA	Lytle Creek	B

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Longsolid	Peripheral		IMBIV17120
Fusconaia subrotunda			G3

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: Check status of Tippecanoe River (Indiana) occurrence.

Northern Riffleshell	Limited	LE	IMBIV16184
Epioblasma torulosa rangiana			G2T2

IN	Tippecanoe River	A-B?

Ecoregional Conservation Goal: 7
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6

Ohio Pigtoe		Peripheral		IMBIV35090
Pleurobema cordatum				G3
IN	Tippecanoe River		A-B?	
	Ecoregional Conservation Goal: 2 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1			
Pleistocene Disc		Peripheral	LE	IMGAS54060
Discus macclintocki				G1
IA	Elk River		B	
IA	Lytle Creek		A	
IA	Pine Creek		A	
	Ecoregional Conservation Goal: 3 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0			
Purple Lilliput		Peripheral		IMBIV43030
Toxolasma lividus				G2
IN	Tippecanoe River		A-B?	
	Ecoregional Conservation Goal: 2 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1			
Pyramid Pigtoe		Peripheral		IMBIV35250
Pleurobema rubrum				G2
IN	Tippecanoe River		A-B?	
	Ecoregional Conservation Goal: 2 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1			
Rabbitsfoot		Widespread		IMBIV39041
Quadrula cylindrica cylindrica				G3T3
IN	Tippecanoe River		A-B?	
	Ecoregional Conservation Goal: 4 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3 Comments: No viable occurrences in Missouri. Check status of Tippecanoe River (Indiana) occurrence.			
Rayed Bean		Limited		IMBIV47050
Villosa fabalis				G1G2
IN	Tippecanoe River		A-B?	
	Ecoregional Conservation Goal: 7 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6			
Salamander Mussel		Peripheral		IMBIV41010
Simpsonaias ambigua				G3
	Ecoregional Conservation Goal: 2 Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2 Comments: Presumed extripated in Iowa. Check for occurrences in Illinois and Indiana.			

Sheepnose | Widespread | IMBIV34030
Plethobasus cyphyus | G3

IN Tippecanoe River | A-B?

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3
Comments: Population on Kankakee River in Illinois approximatley fifteen years ago. Current status of populations is not known.

Slough Sandshell | Peripheral | IMBIV21241
Lampsilis teres teres | G5T1Q

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Snuffbox | Widespread | IMBIV16190
Epioblasma triquetra | G3

IN Tippecanoe River | A-B?

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3
Comments: Brian Obermeyer mentioned the snuffbox occurred historically found in northeastern Kansas in the Wakarusa River. This river has since been degraded by channelization and siltation from agriculture. He strongly suspects the snuffbox is extirpated from the state. Check the Embarrass River in Illinois.

Spectaclecase | Widespread | IMBIV08010
Cumberlandia monodonta | G2G3

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4
Comments: Small population of questionable viability at Cedar Glen Kibbe.

Reptiles

Kirtland's Snake | Limited | ARADB06010
Clonophis kirtlandii | G2

Ecoregional Conservation Goal: 5
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 5
Comments: Widespread to occassional wetland species. Occurs in Illinois and Indiana (?) as western limit of range (current data). Check Illinois records.

Vascular Plants

A Sedge | Peripheral | PMCYP031P2
Carex bicknellii var opaca | G5T4

IA,MO Loess Hills : Squaw Creek NWR [MO] | A

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: A number of state floras recognize this taxon, and it is recognized by Tony Reznicek and Stanley Jones, both of whom have published on Carex section Ovales (to which this species belongs). This taxon is fairly easy to recognize but may be overlooked (or misidentified) in many herbaria. This variety (if maintained) may eventually be shown to be fairly widespread.

American Barberry | Peripheral | PDBER02010
Berberis canadensis | G3

Ecoregional Conservation Goal: 1

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: This species is widespread in the Appalachians from Pennsylvania south to Alabama. Populations also are reported from Illinois, Ohio, Indiana, and Missouri. Based on available information, it seems this species is a scattered and ocassional understory species in hardwood forests. Higher quality sites in the mountains should routinely contain populations of this species. It is susceptible to Puccinia spp. and probably was eradicated from parts of its range in an effort to control the rust in relation to wheat production.

American Dwarf Burhead | Peripheral | PMALI02050
Echinodorus parvulus | G3

IL	Mason County Sands : Sand Prairie Scrub Oak	B

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: According to the draft manuscript prepared by Haynes and Hellquist for Flora of North America, the species is widely but sporadically distributed over the eastern United States. It may be most abundant in Texas and Florida. The only population(s) in the ecoregion are in Illinois. Most populations occur in sandy soil along the margins of small streams, ponds, and lakes. Check status of occurrence at Kankakee Sands Macrosite.

Clustered Poppy-mallow | Widespread | PDMAL0A080
Callirhoe triangulata | G3?

IL	Aroma Park Forest Preserve	A
IL	Mason County Sands : Sand Prairie Scrub Oak	B
IL	Sand Ridge Macrosite	B
IL	Savanna Army Depot	B

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: No known occurrences in Iowa of A- or B-quality. Larry Dorr's monograph of the genus (1990. Mem. New York Bot. Gard. 56: 1-76) indicates the species is most abundant in the upper Mississippi River basin, especially in Illinois and Wisconsin, but also in Iowa, Indiana, and Missouri. In addition, Dorr reports widely scattered populations in the Gulf Coast in the states of North Carolina, South Carolina, Georgia, Alabama, and Mississippi.

Creeping St. John's-wort | Peripheral | PDCLU03010
Hypericum adpressum | G2G3

IN	Tefft Savanna Macrosite	A

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: Widespread but may be locally restricted in ecoregion (Illinois and Indiana). Found in dry sandy areas.

Decurrent False Aster | Endemic | LT | PDAST1E040
Boltonia decurrens | G2

IL	Illinois River Floodplain Complex : Illinois River - LaGrange Reach	A
MO	Riverlands	A
MO	Spadderdock Bottoms	B

Ecoregional Conservation Goal: 10

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 7

Comments: Primarily within Illinois River system and confluence with Mississippi River. Key is protection of mudflat habitat due to "fugitive" nature of germination. Check with Marion Smith for addittional information.

Earleaf Foxglove	Widespread		PDSCR01130
Agalinis auriculata			G3

IA	Lake Ahquabi / Hooper	A
IL	Mason County Sands : Matanzas Sand Prairie	B
KS	Rockefeller Prairie	A
MO	Foxglove Prairie CA	A

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Widespread species often on degraded sites.

Eastern Prairie White-fringed Orchid	Widespread	LT	PMORC1Y0F0
Platanthera leucophaea			G2

IA	Baldwin Marsh	B

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 3

Comments: Core of distribution in other ecoregions. Field inventory required to determine population size and condition of Williams Prairie and Garden Grove (Iowa) occurrences. Objective should be based on recovery plan guidelines. The plan calls for "three or more high viability populations present in each of the primary plant communities occupied in each physiographic region within the range of the species."

Forked Aster	Widespread	PDAST0T170
Aster furcatus		G3

IL	Caterpillar Woods	B
IL	Spring Lake	C
IL	Starved Rock Complex	B

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Seep species often found on forested bluffs of river valleys in Illinois. Wildcat Den State Park (Iowa) population is not viable. Field inventory required to determine size and condition of Lindle Woods (Iowa) population. Check on species distribution.

Glade Mallow	Peripheral	PDMAL0X010
Napaea dioica		G3

IL	Calamus Lake	C

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Hall's Bulrush	Limited	PMCYP0Q0R0
Scirpus hallii		G2

IL	Mason County Sands : Sand Lake Area	A
IL	Mason County Sands : Snicarte Area	A
IL	Mason County Sands : Temporary Sand Ponds	A

Ecoregional Conservation Goal: 7

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 4

Comments: Limited to widespread (check with other ecoregions). Found in ephemeral sand ponds (Illinois River), disturbance species. Protection of existing viable populations in the ecoregion should be a minimum goal. Check status of Kankakee Sands Macrosite (Indiana/Illinois) occurrence. Paul McKenzie (USFWS) is preparing a status survey for the species.

Hill's Thistle		Widespread		PDAST2E1C0
Cirsium hillii				G3
IL	Cox Creek Hill Prairie Complex			A
IL	Meredosia Hill Prairie			A-B
IL	Revis Hill Prairie			B

Ecoregional Conservation Goal: 4
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1
Comments: Primary population in Illinois (current data). Few plants widely scattered in small cemetery prairies of Iowa.

Iowa Golden-saxifrage		Peripheral		PDSAX07030
Chrysosplenium iowense				G3G4
IA	Lytle Creek			BC

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Kankakee Globe-mallow		Peripheral		PDMAL0K060
Iliamna remota				G1Q
IL	Kankakee River Floodplain Complex			B

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: One population in Illinois. Check on related southeastern species and possible recovery efforts.

Kitten Tails		Peripheral		PDSCR09030
Besseya bullii				G3
IL	Savanna Army Depot			B
IL,IA	Upper Mississippi River / Rock Island Complex : Big River State Forest [IL]			B

Ecoregional Conservation Goal: 2
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0
Comments: Widespread to occasional. Likely G4. A few, widely scattered, small populations occur in small cemetery prairies of Iowa.

Lakeside Daisy		Limited	LT	PDASTDY060
Tetraneuris herbacea				G2

Ecoregional Conservation Goal: 6
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 6

Leafy Prairie-clover		Peripheral	LE	PDFAB1A0K0
Dalea foliosa				G2G3
IL	Prairie Parklands Macrosite : Drummond Dolomite Prairie			B

Ecoregional Conservation Goal: 1
Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Mead's Milkweed		Limited	LT	PDASC02150
Asclepias meadii				G2
IA	Woodside Prairie			C
KS	French Creek Prairie			B
KS	Rockefeller Prairie			B
MO	Old Catholic Church Cemetery Prairie			C

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Comments: Widespread to occassional with core of distribution in another ecoregion. Objective should be based on recovery plan guidelines. Check with Marlin Bowles on the status of the recovery plan for the species.

Mohlenbrock's Umbrella-sedge		Widespread		PMCYP061G0
Cyperus grayioides				G3
IL	Mason County Sands : Long Branch Sand Prairie			B
IL	Mason County Sands : Sand Prairie Scrub Oak			B
IL	Sand Ridge Macrosite			B
IL	Savanna Army Depot			B

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: May be disjunct population. Illinois and Indiana. More information needed. Check status.

Northern Wild Monkshood		Peripheral	LT	PDRAN01070
Aconitum noveboracense				G3
IA	Farm Creek			B?
IA	Lytle Creek			A
IA	Pine Creek			A

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: Core of distribution in the Prairie-Forest Border ecoregion. Defer for establishement of conservation goals.

Pale False Foxglove		Peripheral		PDSCR010T0
Agalinis skinneriana				G3
IL	Cox Creek Hill Prairie Complex			A
IL	Revis Hill Prairie			A

Ecoregional Conservation Goal: 2

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Current data suggests few occurrences in the ecoregion, but records indicated the species is widespread. The species easily is confused with other members of the genus, especially A. gattingeri. More field data are needed.

Prairie Bush-clover		Peripheral	LT	PDFAB27090
Lespedeza leptostachya				G2
IA	Flaherty Prairie / Little Prairie Complex			B

Ecoregional Conservation Goal: 1

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Widespread to occasional. Two core areas in other ecoregions. Check with Bill Watson for possible sites in Iowa. Is ecoregional conservation goal adequate?

Prairie Dunewort	Peripheral	PPOPH010W0
Botrychium campestre		G3

IA,MO	Loess Hills : Broken Kettle Grasslands [IA]	A-B
IA,MO	Loess Hills : Elk Point Grasslands [IA]	B
IA,MO	Loess Hills : Loess Hills WMA [IA]	AB

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: Occassional in the Loess Hills with the core distribution in the Northern Tallgrass Prairie ecoregion.

Prairie Fame-flower	Peripheral	PDPOR080G0
Talinum rugospermum		G3?

IL	Green River CA	B
IN	Tefft Savanna Macrosite	B
IN,IL	Kankakee Sands Macrosite	B

Ecoregional Conservation Goal: 3

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: See Cochrane (1993) for a review of the rangewide status of this species.

Rose Turtlehead	Widespread	PDSCR0F043
Chelone obliqua var speciosa		G4T3

IL,IA	Upper Mississippi River / Rock Island Complex : Nahant Marsh [IA]	B
IL,MO	Calhoun / Alton Bluff Complex : Prairie Slough [MO]	C
MO	Deer Ridge CA	A

Ecoregional Conservation Goal: 4

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 2

Tennessee Milk-vetch	Peripheral	PDFAB0F8S0
Astragalus tennesseensis		G3

IL	Manito Prairie	B

Ecoregional Conservation Goal: 1

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 0

Comments: Most populations are in Tennessee and northern Alabama - outside the ecoregion. There are also a few disjunct records from Illinois, but they may not be extant. This species is closely related to A. crassicarpus, and Carol Baskauf is studying the two species (using allozymes and morphology) to try to determine the taxonomic status of the Tennessee milk-vetch. Found on many glades that have been surveyed by the Tennessee Heritage Program.

Western Prairie Fringed Orchid		Widespread	LT	PMORC1Y0S0
Platanthera praeclara				G2
IA	Dinesen Prairie State Preserve			B
IA	Mills County No. 3			B
IA	Powell Prairie			B
IA	Sheeder Prairie			B
IA	Woodside Prairie			B
KS	Rockefeller Prairie			C
MO	Helton Prairie			B
MO	Little Tarkio Prairie			C
NE	Krebs Prairie			B
NE	Nine-Mile Prairie			B
NE	Reigle Meadow			B

Ecoregional Conservation Goal: 10

Remaining Sites to be Selected to Meet Ecoregional Conservation Goal: 1

Comments: Populations in western states within ecoregion (Iowa, Missouri, Nebraska, and Kansas). Two occurrences in the Kansas portion of the ecoregion both D-ranked. One is at Rockefeller Prairie, which was included in the portfolio for its Mead's Milkweed population. Objective should be based on recovery plan guidelines. The plan calls for protection of "self-sustaining populations in 90 percent of habitat known to support extant populations in applicable physiographic regions of each state within the species' historical range."

Appendix C: Expert-Nominated Aquatic Sites

The conservation areas in this appendix are organized by state and within state by name.

ILLINOIS

Illinois River - Kankakee

Basin:	Illinois
Stream Size:	large
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	gravel,sand
Soil Texture:	
Base Flow Stability:	
Sinuosity:	
Stream Valley:	
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Large river site selected for presence of rare species.

Ecoregional Importance:

Pallid Shiner, River Redhorse, and Greater Redhorse present.

Intact Ecological Processes:

Illinois River - LaGrange Reach

Basin:	Mississippi
Stream Size:	large
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	sand,silt
Soil Texture:	sand, gravel, and clayey till
Base Flow Stability:	moderately stable
Sinuosity:	low
Stream Valley:	confined
Basin Size:	29,010 square miles
Topographical Relief:	low
Density of Lakes:	many backwater lakes
Density of Wetlands:	moderate to high
Density of Streams:	low
Major Land Use:	agriculture

Site Description:

one of the last remaining large river floodplain system, large sections of connected backwaters, lots of habitat diversity.

Ecoregional Importance:

characteristic large river fish assemblage, migratory fish found in tribs and backwaters of this section (e.g. american eel, lake sturgeon, paddlefish), some high quality mussel beds, good populations of Boltonia decurrens (endemic, federally endangered plant)

Intact Ecological Processes:

floodplain processes,hydrologic regime,riparian corridor

Illinois River - Peoria Lake

Basin:	Mississippi
Stream Size:	large
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	sand,silt
Soil Texture:	silt, sand, clay
Base Flow Stability:	moderately stable
Sinuosity:	low
Stream Valley:	confined
Basin Size:	29,000 square miles
Topographical Relief:	low
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	low
Major Land Use:	agriculture, urban (Peoria)

Site Description:

deepwater, riverine lake; rare habitat type in country.

Ecoregional Importance:

rare habitat type nationally, small population of Pyganodon grandis, large river fish assemblage

Intact Ecological Processes:

floodplain processes,hydrologic regime

Little Vermillion River

Basin:	Wabash
Stream Size:	small/medium
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	boulder,cobble,gravel
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Good pool/riffle diversity with cobble-gravel substrate and well developed ripaian corridor.

Ecoregional Importance:

High fish assemblage integrity (high IBI). Bigeye Shiner, River Chub, Little Spectaclecase, and Slippershell present. IBI = 53.2 (mean).

Intact Ecological Processes:

floodplain processes,riparian corridor

Mackinaw River

Basin:	Illinois
Stream Size:	medium/large
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Stable, u-shaped channel, well-developed floodplain, intact riparian corridor (but narrow).

Ecoregional Importance:

High fish assemblage integrity (high IBI) and high mussel diversity. IBI = 52 (mean).

Intact Ecological Processes:

floodplain processes,riparian corridor

Mazon River

Basin:	Illinois
Stream Size:	large
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Shallow, stony-bottomed stream with few deep pools.

Ecoregional Importance:

High fish assemblage integrity (high IBI). IBI = 51.

Intact Ecological Processes:

floodplain processes,riparian corridor

Mississippi River (545-550)

Basin:	Mississippi
Stream Size:	
Water Source:	
Gradient:	
Dominant Substrate(s):	
Soil Texture:	
Base Flow Stability:	
Sinuosity:	
Stream Valley:	
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Clean sand substrate with gravel riffle along bank; wide riparian zone.

Ecoregional Importance:

High fish and mussel diversity. Western Sand Darter present. Page et al. (1991) considered this to be excellant candidate for protection of an Illinois large river habitat.

Intact Ecological Processes:

riparian corridor

Otter Creek

Basin:	Illinois
Stream Size:	medium
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	cobble,gravel
Soil Texture:	fine loess and clay till
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	confined
Basin Size:	89.9 square miles
Topographical Relief:	low to high
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	agriculture, woodland

Site Description:

River flows through rolling terrain, wind-blown loess deposits have led to downcutting.

Ecoregional Importance:

representatives of a coolwater fish assemblage, stream type is similar to more Ozarkian streams therefore unique or rare in ecoregion

Intact Ecological Processes:

hydrologic regime,riparian corridor

Panther Creek

Basin:	Mackinaw
Stream Size:	small/medium
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

U-shaped channel, often bordered by bluff, connected to floodplain, intact riparian corridor.

Ecoregional Importance:

High fish assemblage integrity (high IBI) and high mussel diversity. IBI = 50 (mean).

Intact Ecological Processes:

floodplain processes,riparian corridor

Vermilion River

Basin:	Illinois
Stream Size:	medium/large
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	confined
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Rock/rubble riffles with exposed stone bluffs bordering channel.

Ecoregional Importance:

High fish assemblage integrity (high IBI); River Redhorse present in drainage. IBI = 50.5 (mean).

Intact Ecological Processes:

Walnut Creek

Basin:	Mackinaw
Stream Size:	small/medium
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	
Topographical Relief:	
Density of Lakes:	
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

Low gradient tributary of Mackinaw River with u-shaped channel, intact floodplain, and narrow riparian zone.

Ecoregional Importance:

High fish assemblage integrity (high IBI) and high mussel diversity (creek heelsplitter present). IBI = 54 (mean).

Intact Ecological Processes:

floodplain processes,riparian corridor

INDIANA

Tippecanoe River

Basin:	Wabash
Stream Size:	medium/large
Water Source:	
Gradient:	low
Dominant Substrate(s):	cobble,gravel,sand,silt
Soil Texture:	sandy
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	> 100 square miles
Topographical Relief:	200 feet
Density of Lakes:	more in upper
Density of Wetlands:	more in upper
Density of Streams:	lots
Major Land Use:	agriculture

Site Description:

Large stream through agriculture landscape.

Ecoregional Importance:

Lots of target mussels.

Intact Ecological Processes:

floodplain processes,riparian corridor,woody debris generation

IOWA

Cedar River

Basin:	Iowa - Mississippi
Stream Size:	large
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	sand
Soil Texture:	
Base Flow Stability:	stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	7800 square miles
Topographical Relief:	
Density of Lakes:	moderate
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	agriculture -- row-crop

Site Description:

Large interior river with no dams and relatively undisturbed riparian corridor.

Ecoregional Importance:

Above average density of fishes including Paddlefish, Shovelnose Sturgeon, Blue Sucker, and a variety of non-game fish.

Intact Ecological Processes:

floodplain processes,hydrologic regime,riparian corridor

Chequest Creek

Basin:	Des Moines
Stream Size:	small/medium
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	boulder,cobble,gravel,sand
Soil Texture:	silt loam and clay loam
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	125 square miles at mouth
Topographical Relief:	approx 300 feet
Density of Lakes:	none (occasional farm ponds)
Density of Wetlands:	low
Density of Streams:	moderate to high
Major Land Use:	cropland, pasture, forest, no urban

Site Description:

A medium size stream having a well meandered channel and wooded riparian zone. Pool and riffle sequences are common where the stream intercepts bedrock.

Ecoregional Importance:

The stream segment supports a reasonably diverse, endemic assemblage of warmwater fishes, including the relatively rare Orangethroat Darter (Etheostoma spectabile).

Intact Ecological Processes:

riparian corridor,woody debris generation

Des Moines River

Basin:	Mississippi
Stream Size:	large
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	bedrock,sand
Soil Texture:	
Base Flow Stability:	stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	13300 square miles
Topographical Relief:	
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	agriculture -- row-crop

Site Description:

Large interior river with variety of substrate/habitats.

Ecoregional Importance:

In June, 1996 a Lake Sturgeon (Acipenser fulvescens) was captured immediately downstream from the low head dam at Ottamwa.

Intact Ecological Processes:

hydrologic regime,riparian corridor

East Nishnabotna River

Basin:	Missouri
Stream Size:	medium/large
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	sand,silt
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	high
Stream Valley:	
Basin Size:	900 square miles
Topographical Relief:	
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	medium
Major Land Use:	agriculture -- row-crop

Site Description:

Meandered reach of river between Stennett and Red Oak.

Ecoregional Importance:

This reach is one of the few (only?) unchannelized reaches of the East Nishnabotna River and is one of the few unchannelized reaches in all of southwest Iowa.

Intact Ecological Processes:

riparian corridor,woody debris generation

East Nodaway River

Basin:	Missouri
Stream Size:	small/medium
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	sand,silt
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	310 square miles
Topographical Relief:	
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	agriculture -- row-crop

Site Description:

Pool and riffle area due to outcrop of limestone bedrock.

Ecoregional Importance:

Site contains disjunct population of Central Stoneroller (Campostoma anomalum).

Intact Ecological Processes:

habitat feature: riffle

Lick Creek

Basin:	Des Moines
Stream Size:	small
Water Source:	surface
Gradient:	medium
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	silt loam and clay loam
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	
Basin Size:	20 square miles
Topographical Relief:	gentle to steeply sloping, 0-30%, basin relief ~ 200 feet
Density of Lakes:	0 (occasional farm ponds)
Density of Wetlands:	
Density of Streams:	
Major Land Use:	

Site Description:

A small stream flowing through a mostly undisturbed forest watershed.

Ecoregional Importance:

The stream supports a moderately diverse fish assemblage, including the relatively rare Orangethroat Darter (Etheostoma spectabile). The majority of the watershed area is within the Lick Creek Unit of Shimek State Forest. A reasonably good example of an endemic, warmwater, stream fish community in the southeast Iowa portion of the ecoregion.

Intact Ecological Processes:

riparian corridor,woody debris generation,little urban or agricultural influence

Long Creek - Decatur

Basin:	Grand
Stream Size:	medium
Water Source:	surface
Gradient:	medium
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	silty clay loam - clay loam
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	
Basin Size:	124 square miles at mouth
Topographical Relief:	approx 250 feet
Density of Lakes:	none
Density of Wetlands:	low
Density of Streams:	medium to high
Major Land Use:	pasture, cropland, forest, no urban

Site Description:

This stream segment is fairly well meandered, has occasional pool and riffle sequences and fairly abundant woody debris accumulations. The riparian vegetation is mostly timber.

Ecoregional Importance:

This stream segment supports a fairly diverse endemic assemblage of warm water fish species that is representative of less impacted streams in the southcentral Iowa portion of the ecoregion. The stream supports trout-perch (Percopsis omiscomaycus), a relatively rare inhabitant of southern Iowa streams.

Intact Ecological Processes:

riparian corridor,woody debris generation

Long Creek - Louisa

Basin:	Iowa
Stream Size:	small/medium
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	silty clay loam and silt loam
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	154 square miles at mouth
Topographical Relief:	approx 230 feet
Density of Lakes:	none
Density of Wetlands:	low
Density of Streams:	medium to high
Major Land Use:	cropland, pasture, forest, no urban

Site Description:

A medium-size stream having a well meandered channel and timbered riparian zone. Pool and riffle sequences are common in this segment. Large woody debris accumulations provide additional structure and habitat for aquatic organisms.

Ecoregional Importance:

This stream segment supports a diverse, endemic assemblage of warm water fish species that is representative of relatively unimpacted streams in the southeast Iowa portion of the ecoregion.

Intact Ecological Processes:

riparian corridor,woody debris generation

Pike Run

Basin:	Cedar - Mississippi
Stream Size:	small
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	detritus,sand,silt
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	less than 5 square miles
Topographical Relief:	
Density of Lakes:	low
Density of Wetlands:	moderate
Density of Streams:	moderate
Major Land Use:	agriculture -- row-crop

Site Description:

Well meandered floodplain stream with growth of rooted aquatic vegetation.

Ecoregional Importance:

Site is one of the few well vegetated, low-gradient streams in the state. Fish population includes the relatively rare grass pickerel (Esox americanus) and the very rare pirate perch (Aphredoderus sayanus).

Intact Ecological Processes:

floodplain processes,hydrologic regime,riparian corridor

Thompson River

Basin:	Grand - Missouri
Stream Size:	medium
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	sand
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	high
Stream Valley:	
Basin Size:	730 square miles
Topographical Relief:	
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	agriculture

Site Description:

River in county is well meandered with a riparian corridor in relatively good condition.

Ecoregional Importance:

In terms of aquatic habitat and riparian corridor, probably the highest quality large stream in southern Iowa.

Intact Ecological Processes:

floodplain processes,riparian corridor,woody debris generation

Wapsipinicon River

Basin:	Wapsipinicon - Mississippi
Stream Size:	large
Water Source:	ground and surface
Gradient:	low
Dominant Substrate(s):	gravel,sand,silt
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	high
Stream Valley:	
Basin Size:	2540 square miles at mouth
Topographical Relief:	low
Density of Lakes:	none
Density of Wetlands:	high
Density of Streams:	medium
Major Land Use:	cropland, pasture, floodplain timber

Site Description:

This segment of the Wapsipinicon River has a high amount of connectivity with the floodplain and there are many associated wetlands.

Ecoregional Importance:

There is not a lot of information available about the biological assemblages of the lower Wapsipinicon River; however, the habitat is unique in the Iowa portion of the ecoregion from the standpoint of its riparian corridor, meandering channel with islands and numerous wetlands.

Intact Ecological Processes:

floodplain processes,hydrologic regime,riparian corridor

West Nishnabotna River

Basin:	Missouri
Stream Size:	medium/large
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	sand,silt
Soil Texture:	
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	820 square miles
Topographical Relief:	
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	agriculture -- row-crop

Site Description:

Meandered reach of river from Macedonia down river to Willow Slough State Area.

Ecoregional Importance:

Site is one of the few remaining meandered reaches of a larger stream/river in southwest Iowa.

Intact Ecological Processes:

riparian corridor,woody debris generation

KANSAS

Big Soldier Creek

Basin:	Kansas
Stream Size:	medium/large
Water Source:	surface
Gradient:	medium
Dominant Substrate(s):	sand,silt
Soil Texture:	loess
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	120 square miles
Topographical Relief:	moderate
Density of Lakes:	moderate
Density of Wetlands:	low
Density of Streams:	low
Major Land Use:	grassland and pasture, upper watershed in small grains and row crops

Site Description:

Long narrow watershed is located in the Dissected Till Plains of the Central Lowlands physiographic province. The stream varies in character with occasional pool / riffle sequences separated with long runs and pool areas. Substrates are varied and riparian fringe is fragmented.

Ecoregional Importance:

Moderate to high fish and mussel diversity with several species being very rare for this ecoregion. Both fish and mussel populations are very high in some sections.

Intact Ecological Processes:

floodplain processes

Dutch Creek

Basin:	Kansas
Stream Size:	small, headwater
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	bedrock,cobble,gravel,silt
Soil Texture:	silt / clay
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	5 square miles
Topographical Relief:	moderate
Density of Lakes:	moderate (man-made)
Density of Wetlands:	low
Density of Streams:	low
Major Land Use:	pasture and rangeland with floodplain row cropping

Site Description:

Pool / riffle stream whose headwater tributaries drain rangeland while the lower portion lies within a heavily wooded valley.

Ecoregional Importance:

This small headwater stream supports a diverse fauna characteristic of both intermittant and perennial streams.

Intact Ecological Processes:

floodplain processes,hydrologic regime,riparian corridor,woody debris generation

Kansas River

Basin:	Kansas
Stream Size:	large
Water Source:	surface
Gradient:	medium
Dominant Substrate(s):	sand,silt
Soil Texture:	medium to coarse-grained sand
Base Flow Stability:	moderately stable
Sinuosity:	medium
Stream Valley:	
Basin Size:	159000 square kilometers
Topographical Relief:	low - moderate
Density of Lakes:	no natural lakes, now many reservoirs and small impoundments
Density of Wetlands:	low
Density of Streams:	low
Major Land Use:	cropland (53-56%) and pasture (37-41%)

Site Description:

Large prairie river with sandy substrate, wide shallow channel, and large floodplain.

Ecoregional Importance:

Unique large river system. Supports rare target species.

Intact Ecological Processes:

North Elm Creek

Basin:	Blue River
Stream Size:	small
Water Source:	ground and surface
Gradient:	medium
Dominant Substrate(s):	cobble,gravel,silt
Soil Texture:	loess
Base Flow Stability:	stable
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	19.4 square miles
Topographical Relief:	low
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	moderate
Major Land Use:	cropland with some pasture

Site Description:

Moderate gradient stream with high instream habitat diversity. Good pool / riffle sequencing. Spring-fed along lower third of length. Limited woody riparian areas.

Ecoregional Importance:

Rare species, diverse assemblage with spring-dwelling fauna.

Intact Ecological Processes:

floodplain processes,hydrologic regime,woody debris generation

Straight Creek

Basin:	Delaware
Stream Size:	small
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	sand
Soil Texture:	loess
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	unconfined
Basin Size:	23 square miles
Topographical Relief:	low
Density of Lakes:	moderate (man-made)
Density of Wetlands:	low
Density of Streams:	low
Major Land Use:	grasslands, scatter row-crop

Site Description:

Low gradient, sand-bottom stream with good intact riparian fringe. Lower portion of stream in broad floodplain that was the result of glacier meltwater flow.

Ecoregional Importance:

Representative assemblage for sand-bottom prairie streams, moderate-high diversity for stream type.

Intact Ecological Processes:

floodplain processes,riparian corridor,woody debris generation

MISSOURI

Grindstone Creek

Basin:	Grand
Stream Size:	small/medium
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	sand,silt
Soil Texture:	fine
Base Flow Stability:	moderately flashy
Sinuosity:	
Stream Valley:	
Basin Size:	79 square miles
Topographical Relief:	low
Density of Lakes:	none
Density of Wetlands:	none
Density of Streams:	low
Major Land Use:	row crop, pasture, forest

Site Description:

Medium-sized prairie stream with good habitat quality.

Ecoregional Importance:

High macroinvertebrate richness and diversity - good habitat conditions.

Intact Ecological Processes:

floodplain processes,riparian corridor

Locust Creek

Basin:	Locust Creek
Stream Size:	medium
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	gravel,sand,silt
Soil Texture:	fine
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	
Basin Size:	900 square miles
Topographical Relief:	low
Density of Lakes:	low
Density of Wetlands:	low
Density of Streams:	low
Major Land Use:	agriculture

Site Description:

Entire Locust Creek watershed.

Ecoregional Importance:

Good riparian conditions throughout watershed. Probably best overall habitat conditions of any watershed in north central Missouri. Unique assemblage of fish and many intolerant species. High concentration of trout perch (Percopis omiscomaycus).

Intact Ecological Processes:

riparian corridor,woody debris generation

Loutre River

Basin:	Missouri
Stream Size:	small, headwater
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	
Soil Texture:	medium
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	
Basin Size:	8 square miles
Topographical Relief:	medium
Density of Lakes:	none
Density of Wetlands:	none
Density of Streams:	low
Major Land Use:	agriculture

Site Description:

Small headwater stream.

Ecoregional Importance:

High richness of fish species. High richness and diversity of benthic invertebrates.

Intact Ecological Processes:

hydrologic regime,riparian corridor,woody debris generation

Middle Fabius

Basin:	Mississippi
Stream Size:	small/medium
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	gravel,silt,hardpan
Soil Texture:	medium
Base Flow Stability:	moderately flashy
Sinuosity:	low
Stream Valley:	
Basin Size:	371 square miles
Topographical Relief:	medium
Density of Lakes:	none
Density of Wetlands:	none
Density of Streams:	low
Major Land Use:	agriculture

Site Description:

Ecoregional Importance:

High richness and diversity of benthic invertebrates with good habitat.

Intact Ecological Processes:

floodplain processes,riparian corridor,woody debris generation

Shoal Creek

Basin:	Chariton
Stream Size:	small/medium
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	cobble,gravel,sand
Soil Texture:	fine
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	
Basin Size:	39 square miles
Topographical Relief:	low
Density of Lakes:	none
Density of Wetlands:	none
Density of Streams:	medium
Major Land Use:	agriculture

Site Description:

Clear, medium-size prairie stream, well defined pools and riffles.

Ecoregional Importance:

High taxa richness and diversity of fishes (at least 24 species).

Intact Ecological Processes:

floodplain processes,hydrologic regime,riparian corridor,woody debris generation

South River

Basin:	Mississippi
Stream Size:	small/medium
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	gravel,sand
Soil Texture:	fine - high clay content
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	confined
Basin Size:	36 square miles
Topographical Relief:	low
Density of Lakes:	none
Density of Wetlands:	none
Density of Streams:	low
Major Land Use:	agriculture

Site Description:

Small - medium size meandering tributary to Mississippi River with deep pools and bluffs.

Ecoregional Importance:

High fish species richness (726) typical of a "good" prairie stream.

Intact Ecological Processes:

riparian corridor

Spring Creek

Basin:	Chariton
Stream Size:	small
Water Source:	surface
Gradient:	low
Dominant Substrate(s):	sand
Soil Texture:	fine
Base Flow Stability:	moderately flashy
Sinuosity:	medium
Stream Valley:	
Basin Size:	80 square miles
Topographical Relief:	low
Density of Lakes:	none
Density of Wetlands:	none
Density of Streams:	low
Major Land Use:	row crop, pasture

Site Description:

Small stream with intact habitat.

Ecoregional Importance:

A high quality prairie stream with many intact ecological processes. High diversity of invertebrates with many intolerant taxa.

Intact Ecological Processes:

floodplain processes,riparian corridor

Appendix D: Site Viability Assessment
Revision and Refinement of Initial Site Selection

The highly fragmented nature of the ecoregion played a significant role in the first steps of the planning process. The initial assessment of plant communities resulted in a ranking system that enabled differentiation among the small, often poor quality remnant patches that characterize much of the ecoregion's biodiversity. This ranking scheme, while essential for differentiation and identification of conservation priorities, was unsuitable for addressing issues of viability as it was based exclusively on current conditions. Consequently, a second set of criteria were established that identified the historical context in which these communities were believed to occur. Using the historical context as a surrogate for viability assumes that a) the estimate of historical conditions is accurate, and b) that such historical conditions constituted viable representatives of each species or community. The Assessment and Design Team considered that such assumptions were appropriate and essential to evaluate the initial draft site selection.

Site-level Viability

After the initial suite of sites was selected, the team noticed that many of the sites were very small or seemed to be of a poor quality. This raised questions about whether the sites themselves were actually viable for the targets they had been selected to conserve. The Assessment and Design Team developed a screening process to specifically incorporate the concepts of viability in reassessing the initial suite of draft sites. This assessment focused at the level of "functional sites," by looking specifically at one or two levels below the regional scale.

Viability is usually assessed for individual species, or even specific populations for which there is adequate data. In this case, the issues of viability at the site-level were primarily focused around plant communities, for which little, if any, work has been done. To assess site-level viability in this plan, a terrestrial community-level viability assessment was carried out. Ideally, this assessment would have incorporated some measures of size, landscape context, and condition as critical components, as these define the overall EORANK. Unfortunately, only the overall ranking for targets at a site was maintained in the CTP database, making such an assessment impossible without recreating the entire process (see lessons learned). Instead, this assessment was based exclusively on the relationship between site size and the component target terrestrial plant communities. While an admittedly crude method, it was viewed as a conservative estimate of viability at the site-level, as it focused only on terrestrial plant communities, and did not include species-specific viability requirements. It was least appropriate in assessing small patch communities, where condition is considered more important for assessing viability than size or landscape context.

The assessment was carried out using the *minimum* historic size estimate for each A- and B-ranked community type. Minimum viability estimates for the *site* were calculated by summing together the historic size estimates for each community type (looking at A- and B-ranked occurrences separately). This resulted in a cumulative size estimate for all A-ranked communities, and similarly for all B-ranked communities, providing a range of between "highly viable" and "acceptable." C-ranked estimates were excluded from this analysis as they were not considered viable, and did not count towards meeting conservation goals.

The site-level viability assessment highlighted a number of important issues. First, sites that were significantly smaller than required to support viable examples of the target communities were identified, and were either: a) combined with similar, adjacent sites, b) included in a restoration project, or c) deleted. Second, sites that were substantially larger than required to support the target communities were identified, and additional information sought which resulted in altering a number of site boundaries. Third, some sites were added that had been missed in the initial site selection process. The net result of this assessment was a reduction of 21 initially proposed sites.

Considering the relationship between current and historical size estimates in assessing viability, the importance of connectivity and landscape context, and the role of restoration in linking areas together helped to shape thinking about the spatial relationships among conservation areas. The concept of viability, and the importance of considering multiple spatial and temporal scales at which various ecological processes operate, contributed to developing a set of diverse conservation areas appropriate for the complexities of this ecoregion.

Appendix E: Conservation Area Descriptions

The conservation areas in this appendix are organized by state and within state by name. The following codes are used throughout the report:

Managed Area Owner:

CON	Private - Organization - Conservation
FAE	Federal - Army Corps of Engineers
FDD	Federal - Department of Defense
FFS	Federal - Forest Service
FFW	Federal - Fish and Wildlife Service
PCE	Private - College
PCN	Private - Corporation
PIN	Private - Individual
POO	Private - Organization - Other
SCC	Local - City or County
SNR	State/Province - Natural Resources
SOU	State/Province - Other
SUN	State/Province - University

Natural Community Spatial Pattern:

MX	Matrix
LP	Large-Patch
SP	Small-Patch
LI	Linear

Natural Community or Species Distribution:

E	Restricted / Endemic
L	Limited
W	Widespread
P	Peripheral

Viability Ranks:

A	Excellent estimated viability
B	Good estimated viability
C	Fair estimated viability

The codes occur in the Target Selections and Managed Areas sections in the following relative order:

Target Selections:
Common Name [Distribution/Pattern] Viability Rank Component Site Name [State]

Managed Areas:
Owner Managed Area Name [State] Management Level Size in Acres

Table of Contents:

ILLINOIS

AROMA PARK FOREST PRESERVE, 137 acres

Target Selections: Species

Clustered Poppy-mallow [W] A

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for target, but needs support
Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

Aroma Park is a dry savanna remnant found on a sand terrace at the confluence of the Iroquois and the Kankakee River. Old black oaks provide the open canopy for this savanna community that supports a healthy population of the clustered poppy-mallow.

Current Activities:

Managed Areas:

SCC Aroma Park Forest Preserve [IL] Status 3 137 acres

Site Size Range for Community Viability: n/a

BLACK BALL MINES, 192 acres

Target Selections: Species

Indiana Or Social Myotis [W] B

Threat Rating - Sources of Stress:

High Recreation: general purpose recreational use (includes hiking, biking, skiing, camping, etc.)
Management: vandalism

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Black Ball Mines are located in rolling topography with a partially forested context and associated glades in the vacinity. Pecamsaugan Creek is a narrow canyon with dolomite cliffs, dolomitic prairie, dry-mesic savanna, upland and bottomland forest communities along the Illinois River. This area is best know for a series of abandon limestone mines and its colonies of bats. The Blackball mine is one of the largest known bat hibernaculas in Illinois. Five species of bats are found in the mines, including the federally endangered Indiana bat, little brown bat, big brown bat, and eastern pipistrel. It is an old limestone mine with several entrances, that are fairly easy access involving a short hike has resulted in vandalism problems in the past. Gates made for some of the cave entrances were destroyed several years ago. A relict population of timber rattlesnakes are found on the site. The savanna community has scattered white and black oaks with Penn sedge, poverty oats and little bluestem in the understory. The cool, shaded canyon provides habitat for northern relict species such as white pine and white cedar. This area is dedicated as a state nature preserve and owned and managed by the Illinois Department of Natural Resources.

Current Activities:

Managed Areas:

SNR Pecumsaugan Creek/Blackball Mine [IL] Status 1 133 acres

Site Size Range for Community Viability: n/a

ILLINOIS

BUR OAK GROVES, 140 acres

Target Selections: Natural Communities

Central Bur Oak Openings [E/SP]	C-	B-Set Grove [IL]
Central Bur Oak Openings [E/SP]	C	Sibley Bur Oak Grove [IL]
Central Bur Oak Openings [E/SP]	C-	Barton-Summers Woods [IL]

Threat Rating - Sources of Stress:

Very High Agriculture: loss of vegetative cover
Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

These old growth communities are located on morainal ridges, high in the headwaters region for the Mackinaw, Sangamon, Vermillion, Iroquois and Salt Creek. The bur oak trees have wide, spreading canopies characteristic of trees grown in open conditions, and are sometimes associated with shagbark hickory. These bur oak groves are associated with existing or historic wetlands, some having been filled in by the agricultural land uses surrounding all the groves. Some remnant understory plants include columbine, delphinium, wild hyacinth, purple coneflower, virgin's bower, and other prairie woodland species. Understory has been heavily grazed and degraded, and in some cases may exist only in the seedbank. With the exception of Sibley Grove, the other examples are seriously degraded.

Current Activities:

Only at the Sibley Grove the historic wetland has been restored through removal of silt, destruction of the tiling system, and replanting of some wetland species. Substantial restoration efforts have occurred in the Sibley bur oak community through extensive brush removal, prescribed burning, and herbiciding. The other sites have received no restoration efforts, and are of degraded quality.

Managed Areas:

CON	Burr Oak Groves [IL]	Status 1	50 acres

Site Size Range for Community Viability: 30 - 120 acres

ILLINOIS

BURTON CAVE, 82 acres

Target Selections: Natural Communities

Dry Terrestrial Cave B

Threat Rating - Sources of Stress:

High Management: managed for target, but needs support
Management: vandalism

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This cave is set in an area of rolling topography and occasional bluffs. The cave is close to Burton Creek, with a forested area near by the cave entrance that includes a pine plantation. The forested areas are interspersed with agricultural land. Since a gate was constructed in 1997 to reduce chronic vandalism problems, the bat populations have increased tremendously. Further work by volunteers has focused on removing the graffiti from the walls. A short walk is necessary to reach the site.

Current Activities:

Managed Areas:

SNR Burton Cave [IL] Status 1 82 acres

Site Size Range for Community Viability: n/a

CALAMUS LAKE, 129 acres

Target Selections: Species

Glade Mallow [P] C

Threat Rating - Sources of Stress:

Medium Agriculture: increased nutrient input due to agricultural practices
Agriculture: sedimentation due to agricultural practices

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Calamus Lake occurs in an area of relatively flat, open terrain with little topographic variation. The area was forested historically, and includes a large oxbow wetland. The wetland looks like a shallow pond, but has a well-developed wetland community of willows and buttonbush, cattails and reeds, and a submergent waterlillies. The surrounding land is largely agricultural. In last few years, the Illinois Department of Natural Resources purchased acreage surrounding the pond and started reforestation of this buffer area. Parking is available for this Nature Preserve.

Current Activities:

Managed Areas:

PCN Calamus Lake [IL] Status 1 129 acres

Site Size Range for Community Viability: n/a

ILLINOIS

CARPENTER PARK, 1203 acres

Target Selections: Natural Communities

Silver Maple - Elm - (Cottonwood) Forest [W/LI] A

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for target, but needs support

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The area is composed of upland and floodplain components that are predominantly forested. Both are relatively flat, with some gently to steep sloping areas connecting the two. The floodplain area with some old meander scars from the Sangamon river. The upland forest is composed of predominantly oaks, sugar maple, sassafras and shagbark hickory. The floodplain is composed of silver maple, elms, Kentucky coffee tree,, elms and burr oak. The area was owned by the city of Springfield for many years as a Park, and was eventually dedicated as a Nature Preserve. Consequently, it has not been logged or disturbed by grazing for over 75 years. The Illinois Department of Natural Resources is currently doing some reforestation and prairie restorations based on the historic landscape described in the Land Survey records.

Current Activities:

Managed Areas:

SCC Carpenter Park [IL] Status 1 341 acres

Site Size Range for Community Viability: 640 - 3200 acres

CATERPILLAR WOODS, 528 acres

Target Selections: Species

Forked Aster [W] B

Threat Rating - Sources of Stress:

Very High Biological Sources: exotic species
High Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This area comprises one of largest tracks of oak-hickory woods remaining in the Peoria region, and is one of the most extensive oak-hickory woodlands in single ownership in the Illinois River Valley. The woods are primarily second growth dry-mesic and mesic upland forest, typically dominated by oaks and hickories approximately 70-90 years old. Extensive woods occur mainly on slopes and ravines, although some of the ridgetops not cleared for agriculture are still forested. The overwhelming majority of plants are native woodland species. The area also contains the Caterpillar Hill Prairie, a grade A-B glacial drift hill prairie, and a marsh in the vacinity of Tenmile Creek that runs through the property. Several populations of Shreber's Aster occur on a north-facing slope overlooking Tenmile Creek.

Current Activities:

Managed Areas:

PCN Caterpillar Woods [IL] Status 4 522 acres

Site Size Range for Community Viability: n/a

ILLINOIS

CHINQUAPIN BLUFFS, 1847 acres

Target Selections: Natural Communities

Chinquapin Oak - Bur Oak Ravine Woodland [P/LP]	B
Midwest Glacial Drift Hill Prairie [E/SP]	B

Threat Rating - Sources of Stress:

High	Agriculture: row crop farming
	Management: managed for target, but needs support
Medium	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This site on the banks of the Mackinaw River is found in a landscape of generally rolling topography and dissected bluffs . Topography varies from 15-20 meters from ridge tops to bottoms of local ravines. Forested areas with scattered trees are typical, with grade C woods having been grazed and harvested in the past. Broad spreading old growth Chinquapin Oak trees characteristic of open grown settings have managed to perpetuate through the years. In some cases, the extremely steep south facing bluffs can rise as much as 50 meters. The dominant oak communities of these south facing slopes and bluffs are composed primarily of gnarled, twisted chinquapin oak with occasional burr oaks and white oaks. The understory contains prickly ash, woodland wildflowers, and blue-eyed grass. There is also a prairie component that includes little blue stem, big blue stem, lead plant, and a few Hill's thistles.

Current Activities:

The Conservancy is restoring a floodplain wetland at the site from what was corn and soybean row crop agriculture. Wetland depressions have been excavated in what was traditionally hydric soils, and replanted with native wetland and upland prairie species. Restoration work includes prescribed burning, removal of invasive species through cutting and herbiciding. Research to characterize the Chinquapin Oak - Bur Oak Ravine Woodland is also being carried out at this site.

Managed Areas:

CON	Chinquapin Bluffs [IL]	Status 1	719 acres

Site Size Range for Community Viability: 210 - 1040 acres

ILLINOIS

CONEFLOWER HILL PRAIRIE, 4 acres

Target Selections: Natural Communities

Midwest Glacial Drift Hill Prairie [E/SP] B

Threat Rating - Sources of Stress:

High Management: managed for target, but needs support

Medium Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This prairie occurs on a west facing bluff of the Kaskaskia River overlooking Lake Shelbyville. It is a highly diverse glacial drift hill prairie. A sloping terrain, surrounded on both sides by oak-hickory forest in a larger agricultural setting that is predominantly flat. Little blue stem, Indian grass, prairie drop seed, pale and purple coneflowers…

Current Activities:

Managed Areas:

SNR Shelbyville Lake [IL] Status 2 4 acres

Site Size Range for Community Viability: 10 - 40 acres

COX CREEK HILL PRAIRIE COMPLEX, 174 acres

Target Selections: Natural Communities

Mississippi River Loess Hill Prairie [L/SP] B

Target Selections: Species

Hill's Thistle [W] A

Pale False Foxglove [P] A

Threat Rating - Sources of Stress:

High Biological Sources: exotic species

Management: managed for incompatible species/community

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site encompasses a large complex of loess hill prairies along Cox Creek. Characterized by rolling topography with slope to south and southwest, some rare plants occur at the site including Hill's thistle and pale false glove. Others species of importance include compass plants, scurf pea and little blue stem, big blue stem, side oats gramma, and Indian grass. The Illinois Department of Natural Resources is carrying out prescribed burning , exotic species control and brush removal.

Current Activities:

Managed Areas:

SNR Site M [IL] Status 2 174 acres

Site Size Range for Community Viability: 10 - 40 acres

ILLINOIS

FUNKS GROVE, 894 acres

Target Selections: Natural Communities

North-Central Maple - Basswood Forest [P/LP] B

Threat Rating - Sources of Stress:

High	Biological Sources: exotic species
	Management: managed for target, but needs support
Medium	Resource Extraction: forestry

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A largely forested site with areas of agricultural land interspersed within it. Contains areas of old growth forest including oak, sugar maple and basswood. The Prairie Grove area is surrounded by flat, row crop agricultural fields. Succession of sugar maple in the absence of fire has been a problem at the site. Efforts to restore prairie and woodland components are on going, and there is a highly active local stewardship group. There are some small wetland seeps that contain skunk cabbage and marsh marigold. There is a sugar maple syrup business on the eastern side of the grove.

Current Activities:

The Conservancy has been involved in purchasing land at the site, and with establishing some volunteer stewardship work. Currently TNC is not actively involved in management at the site.

Managed Areas:

SNR	Funks Grove [IL]	Status 1	11 acres
PIN	Stubblefield Woodlots [IL]	Status 1	15 acres
PIN	Thaddeus Stubblefield Grove [IL]	Status 1	30 acres

Site Size Range for Community Viability: 200 - 1000 acres

ILLINOIS

GREEN RIVER CA, 2322 acres

Target Selections: Natural Communities

Central Wet-mesic Sand Tallgrass Prairie [E/LP]	B
Mesic Sand Tallgrass Prairie [W/LP]	B
Midwest Dry Sand Prairie [W/LP]	B
Midwest Dry-mesic Sand Prairie [W/LP]	B

Target Selections: Species

Prairie Fame-flower [P]	B

Threat Rating - Sources of Stress:

High Agriculture
Biological Sources: exotic species
Management: managed for target, but needs support

Biodiversity Rating: High **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

The Green River Conservation Area has generally sandy soils with characteristic rolling dunes and swales. In the absence of fire, trees have invaded the area, but historically it was very open with a mix of prairies, ponds, and marshes. There is a great deal of variation in the prairie types as they span from wet-mesic to dry sand prairies. The Illinois Department of Natural Resources has been involved in brush and tree removal, burning, and exotic species control.

Current Activities:

Managed Areas:

SNR	Lee County (Green River) [IL]	Status 3	2201 acres

Site Size Range for Community Viability: 800 - 4000 acres

ILLINOIS

HANOVER BLUFF, 389 acres

Target Selections: Natural Communities

Midwest Moist Limestone / Dolostone Cliff [W/LI] B

Threat Rating - Sources of Stress:

High Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Hanover Bluff is a forested bluff area with hill prairie openings along the upper Mississippi River. The area is part of a larger system of steep, heavily dissected bluffs, primarily forested with oak-hickory forests. Eleven state endangered plants occur on the site, including shadbush, wooly milkweed, sun sedge, and the hairy umbrella-wort, as well as one G3 species (kitten tails). Timber rattlesnake and bobcat are also recorded from the site.

Current Activities:

The Nature Conservancy owns property at this site.

Managed Areas:

CON Hanover Bluff [IL] Status 1 389 acres

Site Size Range for Community Viability: 5 - 20 acres

ILLINOIS

ILLINOIS RIVER - KANKAKEE, 7.11 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	In-Stream/Floodplain Alteration: levees
	Development
	Development: inadequate stormwater management
	Agriculture
	Agriculture: sedimentation due to agricultural practices
	Industry
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This is a 2.5 mile stretch at the confluence of the Des Plaines and Kankakee Rivers that combine to form the beginning of the Illinois River. This portion of the river, both upstream and downstream of the Dresden Lock and Dam, is known to support three important, rare fish species: the Greater Redhorse, the River Redhorse, and the Pallid Shiner. This portion of the river is characterized as having a low gradient, with a sand and gravel substrate, fed by both ground water and surface water runoff. Due to the presence of natural areas adjacent to the river, some intact riparian zones exist.

Current Activities:

The Illinois Chapter has recently finished a comprehensive Site Conservation Plan for the Illinois River. This plan identifies four priority conservation areas to focus conservation efforts: Upper Fox River, Mackinaw River, Peoria Reach, and LaGrange Reach /Meredosia Area. The Conservancy has opened a new field office in Havana, IL specifically for work on the LaGrange Reach, continues to support community conservation efforts in the Mackinaw and maintains a field office in Eureka, and has hired two project managers for the the Fox River and Peoria Reach efforts. In addition, an effort to work on water level management of the Illinois River locks and dams has been initiated, which will include collaboration of TNC, research institutions, local partners, and the U.S. Army Corps of Engineers.

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

ILLINOIS RIVER - LAGRANGE REACH, 73.63 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	In-Stream/Floodplain Alteration: levees
	Development
	Development: inadequate stormwater management
	Agriculture
	Agriculture: sedimentation due to agricultural practices
	Industry
	Biological Sources: exotic species
	Management: managed for incompatible species/community

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This section of the Illinois River is characterized by its wide floodplain and associated backwater habitats. The area is important from many perspectives, obvious by the numerous and diverse protected areas of private, local, state, and federal ownership. The mixture of duck clubs, wildlife areas, and refuges attest to the rich and diverse aquatic and terrestrial resources. As substantial sections of the historic floodplain are still connected with the mainstem, it is an important area for fish and plant populations that require both main channel and side channel/backwater habitat.

Current Activities:

The Illinois Chapter is currently restoring the 1,200 ac st their Spunky Bottoms Preserve just west of the Meredoisa National Wildlife Refuge. This floodplain/backwater restoration will include reconnection with the Illinois River to enhance habitat for various aquatic organisms, including ancient fish such as the paddlefish and Lake sturgeon. In addition, this site will provide habitat for the Federally threatened decurrent false aster. Additionally, TNC is working on a community-based conservation initiative that will include compatible economic development as a component of its work.

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

ILLINOIS RIVER - PEORIA LAKE, 22.65 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	Development
	Agriculture
	Agriculture: sedimentation due to agricultural practices
	Industry
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This section of the Illinois River captures a large, open water area that historically held some of the only deep water habitat on the Illinois River. A series of naturally formed lakes that comprise the widest stretches of the Illinois river, the lakes are used extensively for recreational boating and fishing representing an important economic contribution to the region. Bordered by predominantly forested river bluffs, this scenic, wide valley contains a number of protected areas. Studies have revealed that the lakes are filling in rapidly as a result of sediment being transported from the agricultural uplands and eroding river bluffs, and tremendous amounts of sediment in the lakes and side channels that is resuspended by continuous wave action prevents much aquatic vegetation from growing.

Current Activities:

The Conservancy has been working with the Volunteer Stewardship Network in the Peoria Wilds area for many years to restore the bluff woodlands to a more savanna-like condition through brush and sugar maple removal, invasive species control, and prescribed burning. In 1999, a Peoria Reach Projects Manager was hired to galvanize conservation efforts in this important stretch of the Illinois River.

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

ILLINOIS RIVER FLOODPLAIN COMPLEX, 80867 acres

Target Selections: Natural Communities

American Lotus Aquatic Wetland [W/SP]	B	Illinois River - Havanna Backwaters [IL]
Black Oak / Lupine Barrens [L/LP]	B	Illinois River - Beardstown Backwaters [IL]
Black Oak Forest [P/LP]	B	Illinois River - Beardstown Backwaters [IL]
Black Oak Forest [P/LP]	A	Sanganois Conservation Area [IL]
Midwest Dry Sand Prairie [W/LP]	B	Illinois River - Beardstown Backwaters [IL]
River Mud Flats [W/LI]	B	Illinois River - Havanna Backwaters [IL]
River Mud Flats [W/LI]	A	Illinois River - LaGrange Reach [IL]
Sandbar Willow Shrubland [W/SP]	B	Illinois River - Havanna Backwaters [IL]
Silver Maple - Elm - (Cottonwood) Forest [W/LI]	B	Illinois River - Meredosia Backwaters [IL]
Silver Maple - Elm - (Cottonwood) Forest [W/LI]	B	Illinois River - Havanna Backwaters [IL]
Temporary Herbaceous Pond [W/SP]	B	Illinois River - Beardstown Backwaters [IL]

Target Selections: Species

Decurrent False Aster [E]	A	Illinois River - LaGrange Reach [IL]

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	In-Stream/Floodplain Alteration: levees
	Development
	Development: inadequate stormwater management
	Agriculture
	Agriculture: sedimentation due to agricultural practices
	Industry
	Biological Sources: exotic species
	Management: managed for incompatible species/community

Biodiversity Rating: Very High **Threat:** High

Site Characterization: Potential Functional Landscapes including aquatic and terrestrial site **Staging:** Priority I

Physical Description:

The La Grange Reach is the most ecologically diverse segment of the Illinois River. In addition to the Federally threatened decurrent false aster, populations of ancient fishes such as the paddlefish and sturgeon are found here as are a diversity of floodplain and wetland communities. Although there are two navigation dams that prevent low water levels in the summer along this stretch of the river, these dams do not influence the magnitude or duration of annual spring floods. Because much of the historic floodplain is still open to the river along this stretch, fish are able to access backwater areas during floods. The many natural areas in this reach of the river provide important habitat for migratory birds including waterfowl and shorebirds.

Current Activities:

TNC is restoring the 1,200 ac Spunky Bottoms Preserve just west of the Meredoisa NWR. This floodplain/backwater restoration will include reconnection with the Illinois River to enhance habitat for various aquatic organisms include ancient fish such as the paddlefish and sturgeon as well as providing habitat for the Federally threatened decurrent false aster. Additionally, TNC is working with partner agencies on land protection efforts and also on prioritizing acquisitions for the Conservation Reserve Enhancement Program.

Managed Areas:

SNR	Anderson Lake [IL]	Status 2	2084 acres
SNR	Banner Marsh [IL]	Status 3	32 acres
FFW	Chautauqua National Wildlife Refuge [IL]	Status 2	4702 acres
FFW	Emiquon NWR - approved boundary [IL]	Status 4	1755 acres
FFW	Emiquon NWR - current holdings [IL]	Status 2	110 acres
SNR	Louis H. Barkhausen [IL]	Status 2	1016 acres
FFW	Meredosia National Wildlife Refuge [IL]	Status 2	6260 acres

SNR	Rice Lake [IL]	Status 3	4866 acres
SNR	Sand Ridge [IL]	Status 3	14 acres
SNR	Sanganois [IL]	Status 3	8809 acres
CON	Spunky Bottoms [IL]	Status 1	1156 acres

Site Size Range for Community Viability: 2110 - 10520 acres

KANKAKEE RIVER, 57.20 miles

Target Selections: Other Features

High Quality River System	E

Target Selections: Species

Ellipse [L]	B

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dredging
	Development
	Agriculture

Biodiversity Rating: High **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

The Kankakee River is an exceptionally high quality river in northeastern Illinois. Although the river is dammed in several locations, long stretches are relatively undisturbed. The stretch from the Indiana/Illinois border and the town of Momence has many meanders and oxbows with surrounding wetlands. Down stream from the town of Kankakee the river is quite shallow over bedrock in many locations forming raids and runs. The substrate is largely a mixture of sand, gravel and mud, making it one of the richer locations for mussels and other invertebrates in Illinois. Rare mussels such as the ellipse and sheepnose are known from the river, along with a number of rare fish including the brook lamprey. Much of the surrounding riparian zone is well forested or contains rustic cottages or homes that have maintained the natural aspects of the area. The lower Kankakee River near the confluence with the Des Plaines River historically had 20 species of mussels present including the federally endangered higgins eye and 5 other state listed species. Although many of these species have not been found in recent years, the habitat is still present including diverse riverine habitat including a braided channel and vegetated islands, as well as a well established wooded riparian zone.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

KANKAKEE RIVER FLOODPLAIN COMPLEX, 4438 acres

Target Selections: Natural Communities

Midwest Dry Limestone - Dolomite Prairie [P/SP]	B
Midwest Moist Limestone / Dolostone Cliff [W/LI]	B
Skunk Cabbage Seepage Meadow [L/SP]	B

Target Selections: Species

Kankakee Globe-mallow [P]	B

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for incompatible species/community

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

An area along the shores of the Kankakee River and including an island in the river - part of Kankakee River State Park. The park is a corridor of native vegetation surrounded by agricultural and increasingly developed lands. Langhan Island, a dolomite island that doesn't flood, protected the only known native population of the Kankakee Globe-mallow. Rock Creek cuts down through dolomite to the Kankakee River forming Rock Creek Canyon. The canyon has a rock cliff community and several shallow caves. Forested communities on the bluffs along the Kankakee River have scattered seepage areas.

Current Activities:

The Nature Conservancy has done a site conservation plan for the area, and will soon update it to determine future directions/initiatives in the area.

Managed Areas:

SNR	Kankakee River [IL]	Status 3	4216 acres

Site Size Range for Community Viability: 16 - 64 acres

ILLINOIS

KILBUCK CREEK, 29.86 miles

Target Selections: Species

Ellipse [L] B

Threat Rating - Sources of Stress:

High Development
Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This is a small but high quality stream similar in character to the Kankakee River. The river's substrate is largely a mixture of sand, gravel, and rocks, providing habitat ideal for mussels, including the ellipse, and other invertebrate species. Much of the riparian zone is well forested, with clear running waters the majority of the year. There were fifteen species of mussels historically present including state threatened black sandshell and spike also state watch listed ellipse. The site also has high Fish Diversity (35 species) and very nice (intact) riparian habitat.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

LITTLE VERMILLION RIVER, 38.30 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High In-Stream/Floodplain Alteration: dredging
In-Stream/Floodplain Alteration: dams
Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This stream is regarded as the absolute finest mussel stream in Illinois. Twenty-four mussel species can be found alive in the drainage including five state listed species and one federally listed species - the clubshell. The clubshell was historically widespread in the Wabash River drainage, and thought to be extirpated from Illinois until this year when it was found from the Middle Branch North Fork Vermilion River near Alvin. This is the only place in Illinois where
this mussel is known to exist.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

LOWER FOX RIVER, 41.92 miles

Target Selections: Species

Greater Redhorse [P]	B

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	Development
	Agriculture
	Biological Sources: exotic species
Medium	Industry
	Resource Extraction

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Lower Fox River has been heavily impacted in recent years due to a large increase in the human population in this area. Many mussel species have been eliminated from this stretch of the river, but it still has habitat for an endangered sucker, the greater redhorse. The river has its broadest floodplain in this lower portion, and the substrate primarily gravel and cobble with much potential for restoration. The southern stretch of this river is much less populated and more scenic than the central section of the river, with fewer, but occasional dams, and more turbid water than the upper portions. The site extends from Morgan Creek to the confluence with the Illinois River. Habitat is satisfactory and recent records document the greater redhorse and river redhorse. There are no mussels of concern in this stretch of the river.

Current Activities:

The Illinois Chapter is working on the upper stretches of the river in the Prairie Forest Border Ecoregion.

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

MACKINAW RIVER, 130.48 miles

Target Selections: Other Features

High Quality River System	E

Target Selections: Species

Ellipse [L]	B?

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	Development
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: loss of vegetative cover
	Agriculture: pesticide application
Medium	Development: sewage disposal
	Agriculture: grazing

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This area of the Mackinaw is set in a flat to gently rolling topography that is crossed by a few low but poorly developed moraines. Despite the fact that over 90% of the land cover is agriculture, the area contains a diverse fish and mussel fauna, including a few listed mussel species. Habitat quality is relatively good and populations of most species appear healthy. The mainstem can be characterized by a series of fast flowing riffles and pools. The substrate is variable, including gravel, rubble and silt, deposited as sand and gravel bars in places. The riparian zone is often well forested except where this has been cleared for agriculture. The banks are often undercut and steep, showing signs of much erosion. The stream varies in size from a few feet across at the headwaters, to 70 feet in places with pools up to six feet deep. It maintains some of the most variable annual flows of all rivers in Illinois, partially the result of dredging, straightening of channels, and levees. It has maintained diverse mussel and fish communities

Current Activities:

The Conservancy has been working in the Mackinaw River Watershed since 1995 helping to facilitate a community-based conservation effort. This includes working closely with a local non-profit to implement a watershed management plan developed in 1998, to develop demonstration sites for restoration efforts, and embarking on a 4 year study of the impacts of agricultural best management practices on water quality, hydrology, and the aquatic biota in headwater streams.

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

MANITO PRAIRIE, 25 acres

Target Selections: Natural Communities

Midwest Dry Gravel Prairie [L/LP]	C

Target Selections: Species

Tennessee Milk-vetch [P]	B

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for target, but needs support

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Manito Prairie is set in primarily flat uplands with a sloping west facing bluff including much gravel exposure. The bluff line and slopes are lightly wooded, and the site contains the only location of the Tennessee Milk Vetch in Illinois, as well as the dry gravel prairie community. Brush clearing and prescribed burning are carried out by Illinois Department of Natural Resources. The prairie is set in a predominantly agricultural landscape.

Current Activities:

Managed Areas:

SNR	Manito Prairie [IL]	Status 1	25 acres

Site Size Range for Community Viability: 200 - 1000 acres

ILLINOIS

MASON COUNTY SANDS, 2640 acres

Target Selections: Natural Communities

Black Oak / Lupine Barrens [L/LP]	A	Sand Prairie Scrub Oak [IL]
Central Cordgrass Wet Sand Prairie [E/LP]	C	Matanzas Sand Prairie [IL]
Temporary Herbaceous Pond [W/SP]	C	Sand Lake Area [IL]
Temporary Herbaceous Pond [W/SP]	C	Snicarte Area [IL]
Temporary Herbaceous Pond [W/SP]	B	Temporary Sand Ponds [IL]

Target Selections: Species

American Dwarf Burhead [P]	B	Sand Prairie Scrub Oak [IL]
Clustered Poppy-mallow [W]	B	Sand Prairie Scrub Oak [IL]
Earleaf Foxglove [W]	B	Matanzas Sand Prairie [IL]
Hall's Bulrush [L]	A	Temporary Sand Ponds [IL]
Hall's Bulrush [L]	A	Sand Lake Area [IL]
Hall's Bulrush [L]	A	Snicarte Area [IL]
Illinois Chorus Frog [L]	A	Matanzas Sand Prairie [IL]
Illinois Chorus Frog [L]	C	Temporary Sand Ponds [IL]
Mohlenbrock's Umbrella-sedge [W]	B	Sand Prairie Scrub Oak [IL]
Mohlenbrock's Umbrella-sedge [W]	B	Long Branch Sand Prairie [IL]
Regal Fritillary [W]	B	Sand Prairie Scrub Oak [IL]

Threat Rating - Sources of Stress:

High	Agriculture
	Biological Sources: exotic species
	Management: managed for target, but needs support

Biodiversity Rating: Very High **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This area is generally flat and sandy with some dunes periodically scattered throughout the site. Some open expanses of prairies exist, with low swales that include temporary ponds during times of high precipitation when the aquifer levels rise. This flooding is unusual as fluctuations in the aquifer determine flooding in this area. Historically there has been an approximately twenty year rotation of major flooding events, which has been more frequent in recent years. There is substantial agricultural activity in the area with center pivot irrigation with small areas of prairie between.

Current Activities:

Managed Areas:

SNR	Long Branch Sand Prairie [IL]	Status 1	92 acres
SNR	Matanzas Prairie [IL]	Status 1	38 acres
SNR	Sand Prairie-Scrub Oak [IL]	Status 1	1376 acres

Site Size Range for Community Viability: 415 - 2060 acres

ILLINOIS

MAZON RIVER, 12.24 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	Development
	Agriculture
	Resource Extraction: mining

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Mazon River is a high quality tributary to the Illinois River, flowing northwest and entering the Illinois River on its southern bank. Averaging approximately 10 feet in width with a gravel and rock substrate, it is predominantly shallow with a few deep pools. This river is home to diverse fish populations and some freshwater mussels.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

MEREDOSIA HILL PRAIRIE, 834 acres

Target Selections: Natural Communities

Mississippi River Loess Hill Prairie [L/SP]	B

Target Selections: Species

Hill's Thistle [W]	A-B

Threat Rating - Sources of Stress:

High	Biological Sources: exotic species
	Management: managed for target, but needs support

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This loess hill prairie overlook is the Illinois River Bottoms. The site is fairly dissected, steep in places, with characteristic prairie species such as little blue stem and pale purple coneflower. The hill prairie has a narrow (1/2 to 1 mile) forested buffer of oak-hickory, surrounded by row crop agricultural land. IDNR is prescribed burning, with exotic species control and brush removal.

Current Activities:

Managed Areas:

PIN	Meredosia Hill Prairie [IL]	Status 4	20 acres

Site Size Range for Community Viability: 10 - 40 acres

ILLINOIS

MISSISSIPPI RIVER, 76.40 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	In-Stream/Floodplain Alteration: dams
	Agriculture
	Industry
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This portion of the Mississippi River stretching from south of Rock Island to north of the confluence with the Wapsipinicon River is very productive for freshwater mussels. The substrate is a mixture of mud, gravel and sand, and remains relatively clear. The Arsenal Island area is a protected mussel sanctuary and diverse mussel fauna can be found there, including the Federally Threatened Higgins Eye Mussel.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

MISSISSIPPI RIVER (545-550), 7.31 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	In-Stream/Floodplain Alteration: dams
	Agriculture
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This stretch of the Mississippi River adjacent to Savanna Army Depot is considered high quality habitat because of relatively clear water with a mixture of rock and sand substrate characteristic of other high-quality areas. Most information on the aquatic resources of this area are based on cursory observations, as it has been off limits to collecting due to the presence of the US Military base. There is a great need for survey work done on the aquatics in this area.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

MOMENCE WETLANDS, 2342 acres

Target Selections: Natural Communities

Black Oak - White Oak - Hickory Forest [P/LP]	B
Bur Oak - Swamp White Oak Mixed Bottomland Forest [W/LI]	B
Northern Buttonbush Swamp [W/SP]	A

Threat Rating - Sources of Stress:

High	Development
	Agriculture
	Biological Sources: exotic species
	Management: managed for target, but needs support
	Management: managed for incompatible species/community

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

Momence wetlands form a corridor along the Kankakee River of lowland forest and wetlands. Primarily flat with expansive wetland area, there are some disjunct plant populations including the swamp cottonwood, pumpkin ash, and storax. Forest component includes pin oak, swamp white oak, silver maple, green ash, and elm. This portion of the Kankakee River hasn't been channelized and meanders widely. Many of the wetlands occupy former meanders and oxbows of the Kankakee River. Adjacent the river system is predominantly agricultural land.

Current Activities:

Managed Areas:

SNR	Momence Wetlands [IL]	Status 1	50 acres

Site Size Range for Community Viability: 850 - 4240 acres

ILLINOIS

NORTH FORK VERMILLION RIVER, 36.31 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Development
Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This river cuts ravines and valleys of up to 100 feet in depth through a level, glacial plain. Bottomland forests, occasional hill prairies, and forested ravines are characteristic. The substrate is gravel and sand with some silt deposits, good for mussel populations. A recent survey in the Little Vermilion (1997) found that the best mussel populations were in the headwaters. A diverse fauna is present and at least two state listed mussels are extant there. This high quality stream is threatened by a proposal to raise a low head dam on the Little Vermilion near Georgetown, Illinois thus inundating more of the upstream reach. State endangered mussels have been found in the area slated for inundation and it is unknown if the project will proceed.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

OTTER CREEK, 10.63 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Development
Medium Agriculture

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

Otter Creek is a high quality stream that flows into the Illinois River near the confluence with the Mississippi. It a creek with moderate gradient and a rocky substrate with a mixture of gravel and cobblestone and occasional deep pools, supporting rich mussel and fish populations. Flowing out of relatively rugged terrain, the riparian zone is predominantly forested with willows, cottonwood, and some pecan trees in the lower portions of the river. Occasional steep cliffs can be found along the river, along with some farming in flatter, floodplain areas. The adjacent forest is highly fragmented, with some pasture and row-crop agriculture on relatively steep slopes, contributing to erosion and sedimentation problems for the creek.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

PANTHER CREEK, 24.44 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	Development
	Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The area of the Mackinaw River near Panther creek is an one of the few high quality examples of a high quality prairie stream. Some areas are well vegetated and create buffer areas that prevent runoff from destroying the stream. The substrate is a nice mixture of gravel, mud and sand that is ideal for mussels.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

PIKE COUNTY BLUFFS, 26382 acres

Target Selections: Natural Communities

Black Oak - White Oak - Hickory Forest [P/LP]	B	Pike County Bluffs [IL]
Mississippi River Loess Hill Prairie [L/SP]	B	North Newcanton / Grub Hollow Hill Prairies [IL]
Red Oak-Sugar Maple-Elm Forest [P/LP]	B	Pike County Bluffs [IL]

Threat Rating - Sources of Stress:

High	Biological Sources: exotic species
	Management: managed for incompatible species/community

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

A set of very steep, forested bluffs with associated small hill prairies ranging in size from 2-20 acres in size. The bluffs are highly dissected with considerable variation in local relief. The forest component is closed canopy. Most of the area remains privately owned, although some stewardship activities including some prescribed burning and brush removal has been done in conjunction with IDNR.

Current Activities:

Managed Areas:

SNR	Grubb Hollow Prairie [IL]	Status 1	45 acres

Site Size Range for Community Viability: 410 - 2040 acres

ILLINOIS

PIN OAK LAKES, 294 acres

Target Selections: Natural Communities

Northern Buttonbush Swamp [W/SP] B

Threat Rating - Sources of Stress:

High In-Stream/Floodplain Alteration

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The terrain is very flat, occurring in the floodplain along the Mississippi River . The main lake has very well developed wetland communities, including buttonbush swamps. The pin oak overstory community was devastated by the 1993 flood, which is now standing as expansive dead trees serving as testimonial to the floods impact.

Current Activities:

Managed Areas:

POO Pin Oak Lakes [IL] Status 4 acres

Site Size Range for Community Viability: 10 - 40 acres

POLK TOWNSHIP PRAIRIES, 1038 acres

Target Selections: Natural Communities

Midwest Dry Gravel Prairie [L/LP] C

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A series of south west and west facing prairies on bluffs overlooking Macoupin Creek, ranging in size from 1 - 10 acres. They contain a diverse set of species including prairie clovers, rattlesnake master, and practically all of the known ground plum (Astragalus crassicarpes) occurrences in Illinois. These prairies are surrounded by oak-hickory forest and pastural land, with some row crop agriculture on the flat uplands. Research to describe these plant communities is ongoing.

Current Activities:

Managed Areas:

SNR Beaver Dam [IL] Status 3 75 acres

Site Size Range for Community Viability: 200 - 1000 acres

ILLINOIS

PRAIRIE PARKLANDS MACROSITE, 11794 acres

Target Selections: Natural Communities

Central Cordgrass Wet Prairie [L/LP]	C	Goose Lake Prairie [IL]
Central Mesic Tallgrass Prairie [L/MX]	B	Goose Lake Prairie [IL]
Central Mesic Tallgrass Prairie [L/MX]	C	Des Plaines Conservation Area [IL]
Central Water Lily Aquatic Wetland [W/SP]	C	Goose Lake Prairie [IL]
Central Wet-mesic Sand Tallgrass Prairie [E/LP]	C	Braidwood Dunes and Savanna [IL]
Central Wet-mesic Tallgrass Prairie [L/LP]	C	Hitts Siding Prairie [IL]
Central Wet-mesic Tallgrass Prairie [L/LP]	C	Munch Prairie [IL]
Central Wet-mesic Tallgrass Prairie [L/LP]	B	Goose Lake Prairie [IL]
Hardhack Sand Shrub Prairie [E/SP]	B	Wilmington Shrub Prairie [IL]
Mesic Sand Tallgrass Prairie [W/LP]	C	Braidwood Dunes and Savanna [IL]
Midwest Dry-mesic Limestone - Dolomite Prairie [P/SP]	B	Des Plaines Conservation Area [IL]

Target Selections: Species

Leafy Prairie-clover [P]	B	Drummond Dolomite Prairie [IL]
Rattlesnake-master Borer Moth [L]	A	Goose Lake Prairie [IL]
Rattlesnake-master Borer Moth [L]	A	Des Plaines Conservation Area [IL]
Red Veined Prairie Leafhopper [W]	A	Goose Lake Prairie [IL]
Red Veined Prairie Leafhopper [W]	C	Des Plaines Conservation Area [IL]

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	Groundwater Withdrawl
	Development
	Biological Sources: exotic species
	Management: managed for target, but needs support

Biodiversity Rating: High **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

An area of multiple protected areas that link terrestrial and aquatic natural resources of importance, located between the Des Plaines and Kankakee Rivers just east of the confluence. The area has thin soils overlying dolomite bedrock, a result of meltwaters from glacial Lake Chicago carrying away the glacial material laid down at earlier times. Where the soils are typically less than 24 inches in depth, high quality dolomite prairie is common. The most extensive dolomite prairies in the Des Plaines River valley are located within the Des Plaines Composite Site, ranging from wet to dry. Where the soils are deeper, some high quality remnants of mesic tallgrass prairie are found. The rattlesnake master borer moth is found in mesic prairie areas, while the red veined prairie leafhopper is found in dolomite prairie areas with prairie dropseed. The eastern prairie white-fringed orchid is also found within the area. The area is connected and partially buffered by other protected lands in public and corporate ownership.

Current Activities:

Managed Areas:

SCC	Braidwood Dunes and Savanna [IL]	Status 1	245 acres
PIN	Des Plaines [IL]	Status 4	4485 acres
SNR	Goose Lake Prairie [IL]	Status 2	2504 acres
SNR	Illinois & Michigan Canal [IL]	Status 3	50 acres
FFS	Joliet Arsenal [IL]	Status 2	249 acres
SCC	Sand Ridge Savannah [IL]	Status 1	115 acres
SNR	Wilmington Shrub Prairie [IL]	Status 1	157 acres

Site Size Range for Community Viability: 5220 - 26080 acres

REVIS HILL PRAIRIE, 1644 acres

Target Selections: Natural Communities

Mississippi River Loess Hill Prairie [L/SP]	A

Target Selections: Species

Hill's Thistle [W]	B
Ottoe Skipper [W]	A
Pale False Foxglove [P]	A

Threat Rating - Sources of Stress:

High	Biological Sources: exotic species
	Management: managed for target, but needs support

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

An area of rolling topography with loess hills along the northern side of Salt Creek. A series of small, open prairies on narrow ridge tops surrounded by some forested land as a small buffer in a largely agricultural setting. The south west facing hill prairies suffer from encroachment of woody plants from the surrounding forested land. Brush clearing and prescribed burning have been carried out over the last several years at the site. Some vegetation and butterfly monitoring has been carried out in conjunction with IDNR.

Current Activities:

Managed Areas:

PIN	Revis Hill Prairie [IL]	Status 4	acres
SNR	Revis Hill Prairie Nature Preserve [IL]	Status 1	64 acres

Site Size Range for Community Viability: 10 - 40 acres

ILLINOIS

ROBERT ALLERTON PARK, 3089 acres

Target Selections: Natural Communities

North-Central Maple - Basswood Forest [P/LP] C

Threat Rating - Sources of Stress:

High	Biological Sources: exotic species
	Management: managed for incompatible species/community
Medium	Biological Sources: deer browsing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

A largely forested area along both sides of the Sangamon River. It is densely forested along the bottomland and upland. The bottomland forest is composed of silver maple, shell bark hickory, sycamore and ash, and the upland forest is predominantly white and red oak, shagbark hickory and sugar maple. The park is surrounded by row crop agriculture over a very flat terrain. The park is owned by the University of Illinois. There has been some prescribed burning at the site, and control of garlic mustard.

Current Activities:

Managed Areas:

SUN Robert Allerton Park [IL] Status 3 3052 acres

Site Size Range for Community Viability: 200 - 1000 acres

SALT CREEK, 65.29 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High	Development
	Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Salt Creek is a small to medium stream varying in width from 10-50 feet, and depth up to three feet. Like the Mackinaw River, the stream contains diverse mussel fauna supported by the relatively clear water flowing over various types of substrates including a mixture of sand, gravel, and cobble, as well as mud and gravel along the banks, and the presence of occasional sand and gravel bars. Habitat quality is relatively good throughout the river, and populations of most species appear healthy. The riparian zone is largely forested with some patchy and thin areas, consisting of willow, cottonwood, and maple trees along with some dense brushy areas. The river itself contains some weedy aquatic vegetation. This site is known for its very high freshwater mussel diversity with 27 species of live mussels collected since 1980, including the state threatened spike and state watch listed ellipse. This creek also has a good, intact wooded riparian zone.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

SAND RIDGE MACROSITE, 10673 acres

Target Selections: Natural Communities

Black Oak / Lupine Barrens [L/LP]	A	Sand Ridge Macrosite [IL]
Black Oak Forest [P/LP]	B	Sand Ridge Macrosite [IL]
Midwest Dry Sand Prairie [W/LP]	B	Sand Ridge Macrosite [IL]
Midwest Dry-mesic Sand Prairie [W/LP]	B	Sand Ridge Macrosite [IL]
Temporary Herbaceous Pond [W/SP]	B	Sand Ridge Macrosite [IL]

Target Selections: Species

Clustered Poppy-mallow [W]	B	Sand Ridge Macrosite [IL]
Illinois Chorus Frog [L]	C	Sand Ridge Macrosite [IL]
Mohlenbrock's Umbrella-sedge [W]	B	Sand Ridge Macrosite [IL]

Threat Rating - Sources of Stress:

High Agriculture
Biological Sources: exotic species
Management: managed for target, but needs support

Biodiversity Rating: High **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

A sandy area with typical dune-swale topography supporting a dry open sand forest area with predominantly black oak and mockernut hickory. The forest has a relatively open canopy, with sparse understory including many prairie plants. There are a number of small sand prairies embedded within the forest. There is one small temporary herbaceous pond and a second that has been dug out and contains water year round. There is some prescribed burning by IDNR at the site.

Current Activities:

Managed Areas:

SNR	Sand Ridge [IL]	Status 2	6983 acres

Site Size Range for Community Viability: 805 - 4020 acres

ILLINOIS

SANGAMON RIVER, 144.06 miles

Target Selections: Other Features

High Quality River System	E

Target Selections: Species

Ellipse [L]	C

Threat Rating - Sources of Stress:

High	Development
	Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

The Upper Sangamon River varies in size form a large creek to a medium sized river. Stream habitats include sand and mud bars, riffles, and fairly deep pools. Substrate is largely sand, gravel and cobble. Riparian vegetation varies from a narrow zone of dense woody vegetation in the upper reaches to flood plain woodlands in Champaign and Piatt Counties.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

SAVANNA ARMY DEPOT, 14316 acres

Target Selections: Natural Communities

Black Oak / Lupine Barrens [L/LP]	B
Midwest Dry Sand Prairie [W/LP]	B

Target Selections: Species

Clustered Poppy-mallow [W]	B
Kitten Tails [P]	B
Mohlenbrock's Umbrella-sedge [W]	B

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for incompatible species/community

Biodiversity Rating: High **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

An area of slightly rolling dunes in the floodplain of the Mississippi River on the northern side. This area was used as an ammunition depot during World War II, and is now characterized by the numerous visible rounded bunkers that cover the site. It is an open prairie site with forested bluffs to the north and west (Hanover Bluffs). The site is an important area for grassland birds, and some rare plant species such as kitten tails and false heather.

Current Activities:

Managed Areas:

FDD	Savanna Army Depot [IL]	Status 2	13318 acres
FFW	Upper Mississippi River Fish & Wildlife Refuge [IL]	Status 2	912 acres

Site Size Range for Community Viability: 400 - 2000 acres

ILLINOIS

SILOAM SPRINGS, 3475 acres

Target Selections: Natural Communities

White Oak Central Glaciated Woodland [E/LP] B

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for target, but needs support

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The site occurs on a rolling landscape dissected deeply in areas by streams with associated woodlands, and has some associated prairie remnants. The woodland is closed canopy with predominantly oaks, with some hickory, maples, and ashes. The woodland is surrounded by agricultural land and forest. Historically there were 8-10 springs in this area, around which a bath house was built in the early part of this century, and some of the springs were closed up. There is some prescribed burning and brush clearing by IDNR to keep the prairies open.

Current Activities:

Managed Areas:

SNR Siloam Springs [IL] Status 3 3475 acres

Site Size Range for Community Viability: 200 - 1000 acres

SLICK-CRAWL CAVE, 50 acres

Target Selections: Natural Communities

Wet Aquatic Cave B

Threat Rating - Sources of Stress:

Medium Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This cave is located in a forested bluff area with limited access as it occurs on private property. It is a very wet cave, with deep water near the entrance requiring special precautions. The cave is home to several small but important bat populations, including gray bats. It has remained in relatively pristine conditions due to its difficult entry and obscurity.

Current Activities:

Managed Areas:

PIN Slick-Crawl Cave [IL] Status 4 50 acres

Site Size Range for Community Viability: n/a

ILLINOIS

SPRING BAY FEN, 31 acres

Target Selections: Natural Communities

Dogwood - Willow - Poison Sumac Shrub Fen [P/SP] C

Threat Rating - Sources of Stress:

High Agriculture
Biological Sources: exotic species
Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A fen community on the east side of Peoria Lakes in the Illinois River floodplain. It lies at the base of well-forested bluffs in relatively flat terrain. It is surrounded by a mixture of agricultural and developed land. It contains a healthy population of lady-slipper orchids.

Current Activities:

Managed Areas:

SNR Illinois River [IL] Status 2 16 acres

Site Size Range for Community Viability: 1 - 4 acres

ILLINOIS

SPRING LAKE, 5424 acres

Target Selections: Natural Communities

Midwest Mixed Emergent Deep Marsh [W/LP]	B
Silver Maple - Elm - (Cottonwood) Forest [W/LI]	B

Target Selections: Species

Forked Aster [W]	C

Threat Rating - Sources of Stress:

High In-Stream/Floodplain Alteration
Biological Sources: exotic species
Management: managed for incompatible species/community

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

The Spring Lake wetland complex is a part of the Upper Mississippi River Fish and Wildlife Refuge managed by the USFWS. Spring Lake is a series of emergent marshes, shallow backwater lakes and floodplain forest that is levied off from the Mississippi River. Adjacent to these wetlands is a low sand terrace where dry sand prairie meets the waters edge. The wetlands are dominated by white water lily, arrowleaf and several species of bulrush, while the flood plain forest are predominantly silver maple-cottonwood. The wetland host nearly 100 species of aquatic birds including nesting bald eagles and yellow-headed blackbirds. River otters are found in the backwater lakes of the floodplain forest. A breeding population of Blandings turtle utilizes both the marshes and sand prairies. Little bluestem and Junegrass cover the sand prairies doted with scatter blowouts that support the Gray's umbrella sedge and fameflower.

Current Activities:

Managed Areas:

FFW	Upper Mississippi River Fish & Wildlife Refuge [IL]	Status 2	4585 acres

Site Size Range for Community Viability: 840 - 4200 acres

ILLINOIS

STARVED ROCK COMPLEX, 2254 acres

Target Selections: Natural Communities

Black Oak - White Oak - Hickory Forest [P/LP]	A
Inland Saline Marsh [L/SP]	B
Midwest Sandstone Dry Cliff [W/LI]	A
Midwestern White Oak - Red Oak Forest [W/MX]	B
Sandstone Moist Cliff [W/LI]	B

Target Selections: Species

Forked Aster [W]	B

Threat Rating - Sources of Stress:

High	Biological Sources: exotic species
	Biological Sources: deer browsing
	Management: managed for incompatible species/community

Biodiversity Rating: High **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

High, sheer sandstone bluffs with deep ravines and canyons along the Illinois River characterize this important site. These bluffs are heavily forested, with dry forests on the ridges, and wetter communities in the ravine bottoms. There is some work to control exotics at the site. The area is heavily developed for tourism, with an extensive trail network and associated camp grounds. The area overlooks a lock and dam on the Illinois River. The saline marsh occurs at the eastern most end of the area.

Current Activities:

Managed Areas:

SNR	Starved Rock [IL]	Status 3	2173 acres

Site Size Range for Community Viability: 1220 - 6080 acres

ILLINOIS

SUGAR CREEK - ILLINOIS, 46.30 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Development
Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Sugar Creek is tributary to the Sangamon River, the largest tributary to the Illinois. Set in a large basin with rolling topography and wide, flat valleys, Sugar Creek is known for its high mussel diversity. The creek is generally shallow, with depths usually around two feet. The substrate is a mixture of sand, gravel and silt, as well as mud and gravel along the banks that are ideal for mussel populations. This stream is very similar to the Mackinaw River in size, substrate, and riparian characteristics, but with perhaps a less forested riparian zone. The riparian zone is composed of some areas of dense brush, and some forested areas consisting of willow, cottonwood, and maple trees. This site has very high freshwater mussel diversity with 20 species of live mussels collected since 1980. It also has a nicely wooded riparian zone.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

UPPER EMBARRAS RIVER, 102.72 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Development
Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Upper Embarras River flows through a basin of varied topography ranging from relatively rough and hilly terrain in the upper portion to a more rolling, gently sloping region in its central portion, to a very flat entrance into the Wabash River. It is a stream of moderate size with a predominantly low gradient. The central portion of the river has a wide variety of habitats including gravel and sand bars, silt bottomed pools, fast running riffles, and sandy raceways contribute to unusually rich species diversity. The main channel is very sinuous, restricting water flow, sometimes becoming clogged with vegetative debris. The extreme headwaters of the Embarras have been heavily impacted by flood control and agricultural practices.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

UPPER ILLINOIS RIVER BLUFFS, 206256 acres

Target Selections: Natural Communities

Black Oak - White Oak - Hickory Forest [P/LP]	B	Peoria Wilds Macrosite [IL]
Midwest Glacial Drift Hill Prairie [E/SP]	B	Peoria Wilds Macrosite [IL]
Midwest Glacial Drift Hill Prairie [E/SP]	C	Wier Hill Prairie [IL]
Midwest Glacial Drift Hill Prairie [E/SP]	B	Marshall County CA Hill Prairies [IL]
Midwestern White Oak - Red Oak Forest [W/MX]	B	Peoria Wilds Macrosite [IL]
Northern Dry-mesic Oak Woodland [L/LP]	B	Peoria Wilds Macrosite [IL]
Red Oak-Sugar Maple-Elm Forest [P/LP]	B	Peoria Wilds Macrosite [IL]
Skunk Cabbage Seepage Meadow [L/SP]	C	Miller-Anderson Woods [IL]

Threat Rating - Sources of Stress:

High	Development
	Biological Sources: exotic species
	Management: managed for target, but needs support

Biodiversity Rating: High **Threat:** Medium

Site Characterization: Functional Landscapes including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

Extending from Peoria north to Hennepin along the Illinois River, this site is characterized by a rich and contiguous mosaic of backwater lakes, floodplain areas, and upland woods. The largest population of the Federally threatened decurrent false aster is found at this site, as are some of the highest quality examples of oak-hickory woodlands in the ecoregion. The majestic river bluffs were carved by the ancient Mississippi River before it's channel was moved west during the last ice age.

Current Activities:

TNC is currently working with local and federal land owners of various managed areas at the site to help promote compatible management of public lands as well as protection of additional natural areas throughout the site.

Managed Areas:

FFW	Cameron-Billsbach Unit [IL]	Status 2	1638 acres
SCC	Detweiller Woods [IL]	Status 1	289 acres
SNR	Donnelley [IL]	Status 2	532 acres
SCC	Forest Park [IL]	Status 1	379 acres
SCC	Forest Park South [IL]	Status 1	130 acres
SNR	Hennepin Canal Parkway [IL]	Status 3	257 acres
SNR	Lake Depue [IL]	Status 2	1900 acres
SNR	Marshall County [IL]	Status 3	3189 acres
SNR	Miller-Anderson Woods Nature Preserve [IL]	Status 1	269 acres
SCC	Myer Woods [IL]	Status 1	20 acres
SNR	Park Memorial Woods Nature Preserve [IL]	Status 1	84 acres
SCC	Peoria Wilds [IL]	Status 3	3633 acres
CON	Peoria Wilds [IL]	Status 1	13 acres
SCC	Robinson Park Hill Prairies [IL]	Status 1	137 acres
CON	Senachwine Lake [IL]	Status 1	1200 acres
SNR	Sparland - Marshall County [IL]	Status 3	1079 acres
SNR	Spring Branch - Marshall County [IL]	Status 3	695 acres
PIN	Wier Hill Prairie [IL]	Status 1	7 acres
SNR	Woodford County [IL]	Status 3	2668 acres

Site Size Range for Community Viability: 1631 - 8124 acres

VERMILION RIVER, 17.86 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

Unknown Agriculture

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Vermillion River drains an area of 1331 square miles, and is 90 miles in length. Flowing northwest and draining into the Illinois River, the mainstem is highly variable, ranging in width from 30-90 feet, and changing from a flat, slow moving river with a sand, gravel, and silt substrate in its upper portion, to a faster flowing river with rock and rubble substrate in its lower portion. The riparian zone is often well forested, with some exposed rocky cliffs. This river is home to diverse fish populations and some freshwater mussels.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

WALNUT CREEK, 21.80 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Development
Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The area of the Mackinaw River near Walnut Creek represents one of the few examples of a high quality prairie stream. Some areas in the watershed have well-vegetated riparian buffer areas that prevent runoff from destroying the stream. The substrate is a nice mixture of gravel, mud and sand that is ideal for mussels.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ILLINOIS

WEINBERG-KING NATURAL AREA, 756 acres

Target Selections: Natural Communities

Midwest Sandstone Dry Cliff [W/LI] C

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Surrounding topography is rolling, forested terrain with highly dissected areas cut by numerous tributaries. The cliffs are surrounded by forests on all sides, contained completely within the natural area.

Current Activities:

Managed Areas:

SNR Weinberg-King [IL] Status 3 756 acres

Site Size Range for Community Viability: 5 - 20 acres

WITTER'S BOBTOWN HILL PRAIRIE, 6 acres

Target Selections: Natural Communities

Mississippi River Loess Hill Prairie [L/SP] C

Threat Rating - Sources of Stress:

High Biological Sources: exotic species
Management: managed for target, but needs support

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A small loess hill prairie set within a context of a forested bluff line along a small tributary to the Sangamon River. The bottomlands and upper flat lands are farmed as row-crop agriculture. This prairie is dominated by little blue stem and side oats gramma, with pale purple coneflower, lead plant, purple prairie clover, and scurf pea. It is buffered by 1/2 to 1 mile of forested land, that includes poorer quality hill prairies.

Current Activities:

Managed Areas:

PIN Witter's Bobtown Hill Prairie [IL] Status 1 6 acres

Site Size Range for Community Viability: 10 - 40 acres

ILLINOIS and IOWA

UPPER MISSISSIPPI RIVER / ROCK ISLAND COMPLEX, 162953 acres

Target Selections: Natural Communities

Black Oak / Lupine Barrens [L/LP]	B	Big River State Forest [IL]
Bulrush - Cattail - Burreed Shallow Marsh [W/LP]	C	New Boston Marsh [IL]
Bur Oak - Swamp White Oak Mixed Bottomland Forest [W/LI]	B	Rock Island Complex [IL]
Central Cordgrass Wet Prairie [L/LP]	C	New Crystal Lake Club [IL]
Midwest Cattail Deep Marsh [W/LP]	B	New Crystal Lake Club [IL]
Midwest Dry Sand Prairie [W/LP]	B	Big Sand Mound [IA]
Midwest Dry-mesic Sand Prairie [W/LP]	C	Big River State Forest [IL]
Midwestern White Oak - Red Oak Forest [W/MX]	B	Rock Island Complex [IL]
Pin Oak Mixed Hardwood Forest [P/LP]	C	New Crystal Lake Club [IL]
Temporary Herbaceous Pond [W/SP]	B	Rock Island Complex [IL]
White Oak - Red Oak - Sugar Maple Mesic Forest [P/LP]	B	Rock Island Complex [IL]

Target Selections: Species

Higgins Eye [L]	A-B	Otter Island - Pool #19 [IL]
Higgins Eye [L]	A	Rock Island Complex [IL]
Kitten Tails [P]	B	Big River State Forest [IL]
Regal Fritillary [W]	B	Big Sand Mound [IA]
Rose Turtlehead [W]	B	Nahant Marsh [IA]

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration
	Agriculture
	Biological Sources: exotic species
	Management: managed for incompatible species/community
Medium	Development
	Industry

Biodiversity Rating: Very High **Threat:** High

Site Characterization: Functional Landscapes including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

This is an expansive, linear section of the Upper Mississippi River that follows the main channel and includes land on both sides of the river. This area is diverse, including important populations the endangered Higgins eye mussel in the main channel, and a mosaic of upland and floodplain communities. This complex spans a diverse hydrological and soil gradient from dry and dry sand prairies and Black oak barrens to deep marshes, hardwood and bottomland forests, and temporary ponds. It is characterized by state and federal ownership of many islands and floodplain areas.

Current Activities:

Managed Areas:

SNR	Big River [IL]	Status 3	484 acres
SNR	Blackhawk Bottoms WMA [IA]	Status 2	472 acres
SCC	Buffalo Shores Access [IA]	Status 3	29 acres
SNR	Delabar [IL]	Status 3	3 acres
SCC	Dodge Access [IA]	Status 3	159 acres
SCC	Edgewater Beach [IA]	Status 3	0 acres
SNR	Fairport Campground [IA]	Status 3	61 acres
SNR	Lake Odessa [IA]	Status 2	13 acres
FFW	Mark Twain NWR - Keithsburg Division [IL]	Status 2	1424 acres

FAE	Pool No. 16 [IL]	Status 3	8287 acres
FAE	Pool No. 17 [IL]	Status 3	5031 acres
FAE	Pool No. 18 [IL]	Status 3	1719 acres
SCC	Tama Beach [IA]	Status 3	2 acres
SNR	Wildcat Den State Park [IA]	Status 2	303 acres

Site Size Range for Community Viability: 3245 - 16220 acres

ILLINOIS and MISSOURI

CALHOUN / ALTON BLUFF COMPLEX, 283443 acres

Target Selections: Natural Communities

American Lotus Aquatic Wetland [W/SP]	B	Stump Lake [IL]
Bur Oak - Swamp White Oak Mixed Bottomland Forest [W/LI]	C	Prairie Slough [MO]
Central Limestone Glade [W/SP]	B	Mortland Glade [IL]
Central Limestone Glade [W/SP]	B	Kamp's Glade [IL]
Central Limestone Glade [W/SP]	B	Lead Hollow Glade [IL]
Central Limestone Glade [W/SP]	C	Distillery Hollow Glade [IL]
Dry Terrestrial Cave	B	Brainerd Cave [IL]
Limestone - Dolomite Talus [W/LI]	C	Calhoun Bluffs [IL]
Midwestern White Oak - Red Oak Forest [W/MX]	A-B	Pierre Marquette / Alton Bluffs [IL]
Mississippi River Loess Hill Prairie [L/SP]	C	Jennings Hill Prairie [IL]
Mississippi River Loess Hill Prairie [L/SP]	B	Cap Au Gris Hill Prairie [IL]
Northern Buttonbush Swamp [W/SP]	C	Prairie Slough [MO]
Northern Dry-mesic Oak Woodland [L/LP]	B	Calhoun Bluffs [IL]
Northern Dry-mesic Oak Woodland [L/LP]	B	Pierre Marquette / Alton Bluffs [IL]
Red Oak-Sugar Maple-Elm Forest [P/LP]	B	Pierre Marquette / Alton Bluffs [IL]
Wet Aquatic Cave	B	Twin Culvert Cave [IL]

Target Selections: Species

Bald Eagle [W]	A-B	Pierre Marquette / Alton Bluffs [IL]
Indiana Or Social Myotis [W]	B	Brainerd Cave [IL]
Rose Turtlehead [W]	C	Prairie Slough [MO]

Threat Rating - Sources of Stress:

High	Development
	Agriculture: sedimentation due to agricultural practices
	Biological Sources: exotic species
	Management: managed for target, but needs support
	Management: managed for incompatible species/community
Medium	Recreation

Biodiversity Rating: Very High **Threat:** High

Site Characterization: Functional Landscapes including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

This area incorporates the confluence of the Illinois and Mississippi Rivers with high bluffs of mostly dolomite and some limestone cliffs. The area is predominantly well-forested with dry oak-hickory forests on the ridgetops, and more mesic forest communities including red oak and sugar maples in the ravines to wetter forest communities including silver maple, green ash, elms and hackberry on the floodplain. There is great variation in topography with the high bluffs dropping down to large areas of river floodplain. The bluffs have an assortment of associated loess hill prairies and glades with rare plants with a western affinity such as the Carolina delphinium, the narrow-leaved milkweed, as well as stick leaf in conjunction with little blue-stem, pale purple coneflower, and the plains prickly pear cactus. Large backwater lakes occur here with American lotus. The caves have significant bat populations including the Indian bat. There are important herptofaunal populations including timber rattlesnake and various skinks.

Current Activities:

Managed Areas:

CON	Bannett Spring Savanna [MO]	Status 1	30 acres
SOU	Borrow Pit CA [MO]	Status 3	39 acres
FAE	Calhoun County (Rip Rap Landing) [IL]	Status 2	1172 acres
FFW	Clarence Cannon National Wildlife Refuge [MO]	Status 2	647 acres

CON	Clarksville Island [IL]	Status 1	42 acres
POO	Clarksville Island [IL]	Status 2	818 acres
SOU	Cuivre Island CA [MO]	Status 3	1603 acres
SOU	Dresser Island Access [MO]	Status 3	2 acres
SOU	Hamburg Ferry Access [MO]	Status 3	25 acres
SCC	John M. Olin [IL]	Status 1	6 acres
SOU	Leach (B K) Mem CA [MO]	Status 3	1026 acres
FFW	Mark Twain NWR - Calhoun Division [IL]	Status 2	1882 acres
FFW	Mark Twain NWR - Gilbert Lake Division [IL]	Status 2	788 acres
PIN	Mississippi Sanctuary [IL]	Status 1	38 acres
SOU	Norton Woods Access [MO]	Status 3	2 acres
POO	Oblate Father's Woods [IL]	Status 1	19 acres
SNR	Pere Marquette [IL]	Status 2	8273 acres
FAE	Pool No. 25 (Inc. Reds Landing and Batchtown WFMA)	Status 2	5153 acres
FAE	Pool No. 26 - Calhoun Point [IL]	Status 3	2312 acres
FAE	Pool No. 26 - Fuller Lake [IL]	Status 3	1524 acres
FAE	Pool No. 26 - Glades Hembold [IL]	Status 3	1144 acres
FAE	Pool No. 26 - Godar Diamond [IL]	Status 3	2802 acres
FAE	Pool No. 26 - Stump Lake [IL]	Status 3	4367 acres
SOU	Prairie Slough CA [MO]	Status 3	203 acres
SOU	Prairie Slough DNA [MO]	Status 1	356 acres
SOU	Sandy Island CA [MO]	Status 3	313 acres
CON	Twin Culvert Cave [IL]	Status 1	5 acres
SOU	Upper Mississippi CA [MO]	Status 3	5490 acres
FAE	Westport Island DNA [MO]	Status 1	514 acres

Site Size Range for Community Viability: 2320 - 11520 acres

ILLINOIS and MISSOURI

CEDAR GLEN, 6425 acres

Target Selections: Natural Communities

Northern Dry-mesic Oak Woodland [L/LP]	B	Cedar Glen Kibbe [IL]
Post Oak Central Dry Barrens [L/LP]	C	Cedar Glen Kibbe [IL]

Target Selections: Species

Bald Eagle [W]	B	Alexandria [MO]
Bald Eagle [W]	B	Fox River [MO]
Bald Eagle [W]	A-B	Cedar Glen Kibbe [IL]

Threat Rating - Sources of Stress:

High	Management: managed for target, but needs support
Medium	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A variable, rolling terrain that includes relatively high, dry ridgetops with open woodland communities to floodplain communities. Oak hickory forests and glacial drift hill prairies. Primarily known for its high concentrations of Bald eagles roosting in the winter. These populations utilize the protected oak hickory ravines for roosting, while feeding along the Mississippi River. In particular, eagle feeding below the Keokuk dam is an important tourist site.

Current Activities:

The Conservancy has been carrying out prescribed burning in the post oak woodlands and along the hill prairies. Some research has been maintained at the site in association with Western Illinois University's Kibbe Field Station.

Managed Areas:

CON	Cedar Glen [IL]	Status 1	190 acres
SNR	Mississippi River Sand Hills [IL]	Status 1	53 acres

Site Size Range for Community Viability: 400 - 2000 acres

ILLINOIS and MISSOURI

HANNIBAL BOTTOMS, 32462 acres

Target Selections: Natural Communities

Bulrush - Cattail - Burreed Shallow Marsh [W/LP]	B	Hannibal Bottoms [IL]
Bur Oak - Swamp White Oak Mixed Bottomland Forest [W/LI]	B	Hannibal Bottoms [IL]
Midwest Dry Limestone / Dolostone Cliff [W/LI]	C	Wyaconda River Bluffs [MO]
Silver Maple - Elm - (Cottonwood) Forest [W/LI]	A	Long Island [IL]

Threat Rating - Sources of Stress:

High	Management: managed for target, but needs support
Medium	Biological Sources: exotic species
Unknown	Agriculture

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This large area along the Mississippi River floodplain captures a diverse array of habitats including the river bluff area along the Wyaconda region, and the very flat, expansive floodplain along the Long Island stretch of the Mississippi River. The area has high quality floodplain forests including silver maple, cottonwood, elm and ash in the lower lands at Long Island along the sloughs - and Bur oak and hickory forests on the higher ground. Islands in this area once converted to agriculture are now being replanted to forests. There are occurrences of important bluff/cliff habitat that occur in patches along the river.

Current Activities:

Managed Areas:

SOU	Fabius Chute Access [MO]	Status 3	33 acres
FFW	Mark Twain NWR - Gardner Division [IL]	Status 2	4995 acres
FAE	Pool No. 21 [IL]	Status 3	3113 acres
FAE	Pool No. 22 [IL]	Status 3	4334 acres
SOU	Soulard Access [MO]	Status 3	8 acres
SOU	Steyermark (Julian) Woods CA [MO]	Status 3	28 acres
SOU	Upper Mississippi CA [MO]	Status 3	2138 acres

Site Size Range for Community Viability: 1485 - 7420 acres

INDIANA

KANKAKEE FEN, 3 acres

Target Selections: Natural Communities
Cinquefoil - Sedge Prairie Fen [W/SP] B

Threat Rating - Sources of Stress:
Low Development

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:
Very small, but very high quality prairie fen. Supports many conservative species. Site is not open to visitation

Current Activities:
Fire management and exotic species patrol.

Managed Areas:
CON Kankakee Fen Nature Preserve [IN] Status 1 2 acres

Site Size Range for Community Viability: 1 - 4 acres

LOWE PRAIRIE, 336 acres

Target Selections: Natural Communities
Central Mesic Tallgrass Prairie [L/MX] C

Threat Rating - Sources of Stress:
Very High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:
Small unplowed prairie remnant on very thin soil. Surrounding land is in agriculture, and a buffer could be restored to alter the landscape context of the site.

Current Activities:
IN-FO leases the site annually and has coordinated management. The site was originally covered with hawthorn trees, and was fire suppressed. 80% of hawthorns have been removed and prescribed burns

Managed Areas:
PIN Lowe Prairie [IN] Status 3 80 acres

Site Size Range for Community Viability: 2000 - 10000 acres

INDIANA

OBER SAND SAVANNA, 229 acres

Target Selections: Natural Communities

Black Oak / Lupine Barrens [L/LP] B

Threat Rating - Sources of Stress:

Medium Development: urban and residential development without population growth
Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Small, very high quality black oak/lupine barrens on rolling sand deposits. Potential for significant expansion to the south of the preserve, where over 80 acres of moderately fire suppressed savanna is enrolled in classified forest.

Current Activities:

Maintenance stewardship of the A-ranked savanna - primarily with prescribed fire. Some invasive species control - aspen. Recovering old field to the west of the savanna are being enriched with on-site seed to speed recovery of dry sand prairie.

Negotiations with landowner to the south are on-going. We hope to acquire approximately 80 acres of additional oak barrens, but we will settle for a management agreement in the sort-term.

Managed Areas:

CON	Ober Savanna [IN]	Status 1	20 acres
CON	Ober Savanna Nature Preserve [IN]	Status 1	64 acres

Site Size Range for Community Viability: 200 - 1000 acres

INDIANA

RIVER VIEW HILL PRAIRIE, 28 acres

Target Selections: Natural Communities

Midwest Glacial Drift Hill Prairie [E/SP] B

Threat Rating - Sources of Stress:

High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Riverview Hill Prairie is a small site which consists of several grassy openings on steep slopes above the Tippecanoe River in White County, Indiana. The openings occur along about a quarter mile stretch of the river. The openings are very diverse, with a full compliment of prairie species. Some seep and fen species occur along the wetter lower slopes; e.g. Parnassia, Filipendula, etc. The wooded borders are unremarkable, but could be managed to encourage graminoids.

The Indiana Natural Heritage Data Center has the natural community included in the database as dry-mesic prairie (it would probably be classified as some form of hill prairie), with an occurrence rank of A. There is an historic occurrence (1922) of Cirsium hillii (G3S1) known exactly from this site, but it has not been verified.

A sliver of the site which borders the river is owned by Indiana Department of Natural Resources as part of a land project in which the utility company passed its holdings to IDNR. The remainder (and most important part) of the site is owned by a local cemetery board. TNC and IDNR, Division of Nature Preserves have discussed protection of the site with the Cemetery Board. The Board is not opposed to protection, but is primarily interested in controlling erosion of the cemetery at the top of the slope.

Current Activities:

None - this is a State Division of Nature Preserves Site

Managed Areas:

Site Size Range for Community Viability: 10 - 40 acres

INDIANA

TEFFT SAVANNA MACROSITE, 24209 acres

Target Selections: Natural Communities

Black Oak - White Oak / Blueberry Forest [P/LP]	B	Tefft Savanna Macrosite [IN]
Black Oak / Lupine Barrens [L/LP]	A	Tefft Savanna Macrosite [IN]
Central Wet-mesic Sand Tallgrass Prairie [E/LP]	C	Tefft Savanna Macrosite [IN]
Hardhack Sand Shrub Prairie [E/SP]	B	Tefft Savanna Macrosite [IN]
Mesic Sand Tallgrass Prairie [W/LP]	B	Tefft Savanna Macrosite [IN]
Midwest Dry-mesic Sand Prairie [W/LP]	B	Tefft Savanna Macrosite [IN]
Pin Oak - Swamp White Oak Sand Flatwoods [L/SP]	B	Tefft Savanna Macrosite [IN]
Tussock Sedge Wet Meadow [P/LP]	B	Tefft Savanna Macrosite [IN]

Target Selections: Species

Creeping St. John's-wort [P]	A	Tefft Savanna Macrosite [IN]
Prairie Fame-flower [P]	B	Tefft Savanna Macrosite [IN]

Threat Rating - Sources of Stress:

High Agriculture: row crop farming

Biodiversity Rating: High **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

A complex array of black oak barrens communities. Currently envisioned as a core, satellite array of managed areas. The core (Jasper pulaski, Tefft Savanna and Prairie Border) is a 12,000+ acre complex of habitats ranging form emergent wetland to barrens. Much of the habitat is fire suppressed, but Tefft Savanna and Prairie Border provide patches of well managed habitat in the core. Satellite reserves (Stoutsburg and Nipsco) protect large, viable savanna/prairie remnants but are isolated. The proposed US-FWS refuge is designed to address connectivity at the macrosite, and will target intervening lands for restoration.

Current Activities:

TNC owns and manages NIPSCO and Prairie Border. Both sites are managed as savanna demonstration areas, and provide regional land managers with access to restoration demonstration sites. TNC also leads efforts to protect additional barrens/prairie habitats at the macrosite.

Managed Areas:

SNR	Jasper-Pulaski Fish and Wildlife Area [IN]	Status 3	6538 acres
SNR	Jasper-Pulaski State Nursery [IN]	Status 3	196 acres
CON	Nipsco Savanna Nature Preserve [IN]	Status 2	992 acres
CON	Prairie Border [IN]	Status 1	150 acres
SNR	Stoutsburg (Sandhills) Savanna Nature Preserve [IN]	Status 1	248 acres
SNR	Tefft Savanna Nature Preserve Central [IN]	Status 1	404 acres
SNR	Tefft Savanna Nature Preserve Northeast [IN]	Status 1	79 acres

Site Size Range for Community Viability: 1215 - 6060 acres

INDIANA

TIPPECANOE RIVER, 142.58 miles

Target Selections: Other Features

High Quality River System	E

Target Selections: Species

Clubshell [W]	A-B?
Fanshell [W]	A-B?
Northern Riffleshell [L]	A-B?
Ohio Pigtoe [P]	A-B?
Purple Lilliput [P]	A-B?
Pyramid Pigtoe [P]	A-B?
Rabbitsfoot [W]	A-B?
Rayed Bean [L]	A-B?
Sheepnose [W]	A-B?
Snuffbox [W]	A-B?

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	Agriculture: sedimentation due to agricultural practices
Medium	In-Stream/Floodplain Alteration
	Agriculture: row crop farming

Biodiversity Rating: High **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

Very high-quality aquatic system flowing through deep glacial deposits. Based on recent inventory, this system is thought to support a nearly intact and healthy presettlement community of fish and mussels. Two reservoirs disrupt connectivity between important reaches of the river.

Current Activities:

TNC has received IDEM funding to initiate a watershed project starting in 2000. We are currently funding a strategic analysis of aquatic resources and threats to initiate the project.

Managed Areas:

Site Size Range for Community Viability: n/a

INDIANA

TIPPECANOE STATE PARK, 2642 acres

Target Selections: Natural Communities

Maple-Ash-Elm Swamp Forest [P/LP] B

Threat Rating - Sources of Stress:

Medium Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This State Park consists of roughly 3,000 acres of sandhills, forested sandflats, and floodplain forest, bordering the Tippecanoe River in Pulaski County, Indiana. There are two dedicated State Nature Preserves within the State Park: Sandhills Nature Preserve and Tippecanoe River Nature Preserve.

The most significant natural communities present at the site are the floodplain forests, which contain very large trees, mostly within the nature preserve portion of the site. However, and perhaps more important, there are several endangered species present at the park, including reptiles, birds, fish, mollusks and plants. Probably the most important elements present are mollusks (8 species) which occur in the Tippecanoe River which runs for 4 or 5 miles adjacent to and through the park.

IDNR, Division of Nature Preserves, has dedicated two nature preserves at the park, and has communicated the importance of other natural heritage elements to the Division of State Parks.

Current Activities:

No TNC activity at this site.

Managed Areas:

SNR	Tippecanoe River Nature Preserve [IN]	Status 1	180 acres
SNR	Tippecanoe River State Park [IN]	Status 2	2463 acres

Site Size Range for Community Viability: 200 - 1000 acres

INDIANA and ILLINOIS

KANKAKEE SANDS MACROSITE, 61523 acres

Target Selections: Natural Communities

Black Oak - White Oak / Blueberry Forest [P/LP]	B	Kankakee Sands Macrosite [IN]
Black Oak / Lupine Barrens [L/LP]	A	Kankakee Sands Macrosite [IN]
Central Wet-mesic Sand Tallgrass Prairie [E/LP]	A	Kankakee Sands Macrosite [IN]
Hardhack Sand Shrub Prairie [E/SP]	B	Kankakee Sands Macrosite [IN]
Mesic Sand Tallgrass Prairie [W/LP]	B	Kankakee Sands Macrosite [IN]
Midwest Dry Sand Prairie [W/LP]	B	Kankakee Sands Macrosite [IN]
Midwest Dry-mesic Sand Prairie [W/LP]	A	Kankakee Sands Macrosite [IN]
Midwest Mixed Emergent Deep Marsh [W/LP]	C	Kankakee Sands Macrosite [IN]
Pin Oak - Swamp White Oak Sand Flatwoods [L/SP]	B	Kankakee Sands Macrosite [IN]
Tussock Sedge Wet Meadow [P/LP]	A	Kankakee Sands Macrosite [IN]

Target Selections: Species

Prairie Fame-flower [P]	B	Kankakee Sands Macrosite [IN]

Threat Rating - Sources of Stress:

Very High Agriculture

Biodiversity Rating: High **Threat:** High

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

Landscape scale oak barrens/sand prairie/wetlands complex spanning the Illinois/Indiana State Line. Significant high-quality natural areas are already protected, but sites are fragmented and isolated. IN-TNC is restoring over 7,000 acres of sand prairie matrix to address connectivity and reduced habitat issues. Proposed US-FWS Refuge would address connectivity issues in IL as well as protect key natural areas in Pembroke Township. With US-FWS participation, this site has the potential to approach 30,000 acres of grassland/wetland/barrens mosaic.

Current Activities:

IN-FO has actively protected land at Conrad Savanna and connecting matrix of over 7,000 acres at the site. WE are pursuing aggressive restoration of fire suppressed savanna at Conrad Station as a demonstration site. Sand prairie restoration is proceeding on approximately 400 acres per year. Once the seed nursery is at full production, restoration should increase to 1,000 acres per year. IN-FO is also developing a research consortium to look at ecosystem recover at the site.

Managed Areas:

SNR	Barnes (Bill) Nature Preserve East [IN]	Status 1	67 acres
SNR	Barnes (Bill) Nature Preserve Northeast [IN]	Status 1	47 acres
SNR	Barnes (Bill) Nature Preserve Southeast [IN]	Status 1	57 acres
SNR	Barnes (Bill) Nature Preserve West [IN]	Status 1	37 acres
SNR	Beaver Lake Nature Preserve [IN]	Status 1	671 acres
SNR	Conrad Savanna State Nature Preserve [IN]	Status 1	460 acres
CON	Conrad Station [IN]	Status 1	400 acres
SNR	Iroquois County [IL]	Status 2	2513 acres
CON	Kankakee Sands Restoration [IN]	Status 1	7209 acres
SNR	Prudential Gamebird Habitat Area [IN]	Status 3	14 acres
CON	Rix Wildlife Sanctuary NP [IN]	Status 1	39 acres
SNR	Willow Slough Fish and Wildlife Area [IN]	Status 3	9787 acres

Site Size Range for Community Viability: 1615 - 8060 acres

IOWA

BALDWIN MARSH, 90 acres

Target Selections: Species

Eastern Prairie White-fringed Orchid [W] B

Threat Rating - Sources of Stress:

Low In-Stream/Floodplain Alteration: dams

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This upland marsh is small, but is significant as one of the only examples of an upland marsh in that area, and for an extraordinarily large population of the eastern prairie white-fringed orchid. In 1998 1,560 plants were observed in flower/bud. As such, it is by far the largest population of either the eastern or western prairie white-fringed orchid in Iowa.

Current Activities:

The Jackson County Conservation Board currently owns 15 acres at the site, but additional buffer is needed to adequately protect the marsh and orchids. The orchid population was inventoried in 1994 (74 flowering plants observed), and then in 1998 (1,560 observed) and 1999 (report not submitted yet).

Managed Areas:

SCC Baldwin Marsh [IA] Status 1 15 acres

Site Size Range for Community Viability: n/a

CEDAR BLUFFS, 1278 acres

Target Selections: Natural Communities

Sandstone Moist Cliff [W/LI] C

Threat Rating - Sources of Stress:

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Cedar Bluffs features a remarkably scenic terrain which includes 100-foot bluffs of sandstone rising above the Des Moines River, steep walled box canyons cut into the bluffs, small waterfalls, plunge pools, vertical rock cliffs, large-block rock talus, and modern alluvial cutbanks. The flora and fauna of the rich deciduous woodlands and sandstone cliffs combine with unique geological, historical and archaeological features to produce a complex blend of natural and cultural features.

Current Activities:

Cedar Bluffs Natural Area is a 225-acre area owned by the Mahaska County Conservation Board that has been dedicated as a state preserve.

Managed Areas:

SCC Cedar Bluffs Natural Area [IA] Status 1 225 acres

Site Size Range for Community Viability: 5 - 20 acres

IOWA

CEDAR RIVER, 145.71 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

The Cedar River is a large interior river with no dams and a relatively undisturbed riparian corridor. It has an above average density of fishes including paddlefish, shovelnose sturgeon, blue sucker, and a variety of non-game fish.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

CHEQUEST CREEK, 33.12 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Chequest Creek is a medium size stream having a well-meandered channel and wooded riparian zone. Pool and riffle sequences are common where the stream intercepts bedrock. This stream segment supports a reasonably diverse, endemic assemblage of warmwater fishes, including the relatively rare Orangethroat Darter (Etheostoma spectabile).

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

DES MOINES RIVER, 113.29 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High
- In-Stream/Floodplain Alteration: dams
- In-Stream/Floodplain Alteration: channelization
- Agriculture
- Agriculture: increased nutrient input due to livestock
- Agriculture: increased nutrient input due to agricultural practices
- Agriculture: sedimentation due to agricultural practices
- Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

The Des Moines River is a large interior river with variety of substrates and habitats. In June 1996 a Lake Sturgeon (Acipenser fulvescens) was captured immediately downstream from the low head dam at Ottumwa.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

DINESEN PRAIRIE STATE PRESERVE, 25 acres

Target Selections: Species

Western Prairie Fringed Orchid [W]	B

Threat Rating - Sources of Stress:

Biodiversity Rating: Low **Threat:**

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Dinesen Prairie is a small but diverse example of the tallgrass prairie of western Iowa. Plant communities range from wet prairie dominated by slough grass and sedges, to mesic prairie dominated by big and little bluestem. The rolling terrain with loess-capped hilltops is typical of the Southern Iowa Drift Plain.

Current Activities:

Dinesen Prairie Wildlife Area is a 20-acre State Preserve owned and managed by the Shelby County Conservation Board.

Managed Areas:

SCC	Dinesen Prairie Wildlife Area [IA]	Status 2	20 acres

Site Size Range for Community Viability: n/a

IOWA

EAST NISHNABOTNA RIVER, 5.81 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The East Nishnabotna River is a meandered reach of river between the towns of Stennett and Red Oak, Iowa. This reach is one of the few (only?) unchannelized reaches of the East Nishnabotna River and is one of the few unchannelized reaches in all of southwest Iowa.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

EAST NODAWAY RIVER, 2.55 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This stretch of the East Nodaway River contains pool and riffle areas due to the outcrop of limestone bedrock. The site contains a disjunct population of the central stoneroller (Campostoma anomalum).

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ELK RIVER, 1545 acres

Target Selections: Species

Pleistocene Disc [P]	B

Threat Rating - Sources of Stress:

High	Agriculture: grazing
Medium	Resource Extraction: forestry

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site features wooded ravines and steep slopes along the lower end of the Elk River. There are historic records of ice caves, and the site contains the southernmost known location for the pleistocene disc, but key plant species typical of well developed algific talus slopes are absent.

Current Activities:

The Clinton County Conservation Board owns and manages a former Girl Scout camp along the upper portion of this stretch of the river.

Managed Areas:

SCC	Camp Miss-Elk-Ton [IA]	Status 3	39 acres

Site Size Range for Community Viability: n/a

IOWA

FARM CREEK, 149 acres

Target Selections: Species

Northern Wild Monkshood [P] B?

Threat Rating - Sources of Stress:

High	Resource Extraction: forestry
Medium	Agriculture: grazing
Low	Agriculture: pesticide application

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site contains one algific talus slope with a population of northern wild monkshood, within the context of steep forested slopes and ravines.

Current Activities:

There is currently no protection activity in this area.

Managed Areas:

Site Size Range for Community Viability: n/a

FLAHERTY PRAIRIE / LITTLE PRAIRIE COMPLEX, 38 acres

Target Selections: Species

Prairie Bush-clover [P] B

Threat Rating - Sources of Stress:

High	Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The site features scenic rolling topography dissected by a stream and its small tributaries with mesic to dry-mesic prairie. There is a good mixture of prairie grasses, but the overall diversity is low. It contains the most southerly known population of prairie bush clover, and is the largest known prairie in Clark County.

Current Activities:

The site is privately owned, and most of the landowner contacts have been with biologists monitoring the prairie bush clover.

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

KELLERTON, 10562 acres

Target Selections: Natural Communities

Midwest Dry-mesic Prairie [W/LP] C

Threat Rating - Sources of Stress:

Medium Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This site features a complex of prairie and pasture that is characteristic of the rolling topography of this portion of the Southern Iowa Drift Plain. The prairie is degraded and fragmented, but occurs in the context of a grassland landscape which provides important habitat for many upland grassland birds. As with the Pawnee Prairie site, this area has good potential for doing landscape scale conservation. Intensive restoration and reconstruction will be needed to achieve the potential for this site.

Current Activities:

This site has been targeted for acquisition by the Iowa Department of Natural Resources as a conservation area for upland grassland birds.

Managed Areas:

Site Size Range for Community Viability: 200 - 1000 acres

LAKE AHQUABI / HOOPER, 1745 acres

Target Selections: Species

Earleaf Foxglove [W] A

Threat Rating - Sources of Stress:

Low Recreation: general purpose recreational use (includes hiking, biking, skiing, camping, etc.)

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Lake Ahquabi / Hooper site includes a large artificial lake surrounded by oak woodlands, and wetlands. It includes a state park with general purpose recreational use, and a state wildlife management area with hunting and fishing.

Current Activities:

Most of the area is owned and managed by the Iowa Department of Natural Resources as a state park (785 acres) and as a public hunting areas (329 acres). The Warren County Conservation Board also owns and manages about 160 acres as an outdoor education center.

Managed Areas:

SNR	Hooper Wildlife Area [IA]	Status 2	329 acres
SNR	Lake Ahquabi State Park [IA]	Status 2	785 acres
SCC	Warren County Conservation Board [IA]	Status 3	160 acres

Site Size Range for Community Viability: n/a

IOWA

LICK CREEK, 4.06 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Lick Creek is a small stream flowing through a mostly undisturbed forest watershed. The stream supports a moderately diverse fish assemblage, including the relatively rare Orangethroat Darter (Etheostoma spectabile). The majority of the watershed area is within the Lick Creek Unit of Shimek State Forest. A reasonably good example of an endemic, warmwater, stream fish community in the southeast Iowa portion of the ecoregion.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

LONG CREEK - DECATUR, 11.36 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

This stream segment is fairly well meandered, has occasional pool and riffle sequences and fairly abundant woody debris accumulations. The riparian vegetation is mostly timber. This stream segment supports a fairly diverse endemic assemblage of warm water fish species that is representative of less impacted streams in the southcentral Iowa portion of the ecoregion. The stream supports trout-perch (Percopsis omiscomaycus), a relatively rare inhabitant of southern Iowa streams.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

LONG CREEK - LOUISA, 23.53 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High
- In-Stream/Floodplain Alteration: dams
- In-Stream/Floodplain Alteration: channelization
- Agriculture
- Agriculture: increased nutrient input due to livestock
- Agriculture: increased nutrient input due to agricultural practices
- Agriculture: sedimentation due to agricultural practices
- Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A medium-size stream having a well meandered channel and timbered riparian zone. Pool and riffle sequences are common in this segment. Large woody debris accumulations provide additional structure and habitat for aquatic organisms. This stream segment supports a diverse, endemic assemblage of warm water fish species that is representative of relatively unimpacted streams in the southeast Iowa portion of the ecoregion.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

LOWER CEDAR RIVER, 22351 acres

Target Selections: Natural Communities

Northern Poor Fen [P/SP]		B	Cone Lake [IA]
Northern Poor Fen [P/SP]		B	Red Cedar Wildlife Area [IA]
Skunk Cabbage Seepage Meadow [L/SP]		C	Lindle Woods [IA]
Swamp White Oak Woodland [L/SP]		B	Swamp White Oak Woodland [IA]

Threat Rating - Sources of Stress:

Very High	In-Stream/Floodplain Alteration
High	Development: second home development
	Agriculture
Medium	Resource Extraction: mining

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

The Lower Cedar River is a high quality river system with a fairly intact floodplain. It features significant occurrences of rare communities such as sand prairie, riparian and upland forests, woodlands/savannas, fens, and wetland complexes. This complex of communities provides critical habitat for many herps.

Current Activities:

Numerous state and county public areas are located throughout its length, and many areas qualify for the federal Wetland Reserve Program. The Nature Conservancy owns two preserves along the Lower Cedar River Corridor, and this site was selected a Phase I site.

Managed Areas:

SCC	Cedar Bluffs Recreation Area [IA]	Status 3	176 acres
SCC	Gedney Lake [IA]	Status 3	18 acres
SCC	McKeown Bridge River Access [IA]	Status 3	7 acres
SNR	Red Cedar Wildlife Area [IA]	Status 2	565 acres
CON	Red Cedar Woodland [IA]	Status 1	34 acres
SCC	Saulsbury Bridge Rec. Area [IA]	Status 3	675 acres
CON	Swamp White Oak Savanna [IA]	Status 1	372 acres
SNR	Wiese Slough [IA]	Status 2	758 acres

Site Size Range for Community Viability: 13 - 52 acres

IOWA

LYTLE CREEK, 540 acres

Target Selections: Natural Communities

Algific Talus Slope [P/SP]	A

Target Selections: Species

Hubricht's Vertigo [P]	B
Iowa Golden-saxifrage [P]	BC
Northern Wild Monkshood [P]	A
Pleistocene Disc [P]	A

Threat Rating - Sources of Stress:

High Agriculture: grazing

Biodiversity Rating: High **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This site is part of a complex of 15 algific talus slopes that straddle the boundary between the Central Tallgrass Prairie and the Prairie Forest Border ecoregions along Lytle Creek. The portion that falls within the Central Tallgrass Prairie Ecoregion features steep forested slopes and. The site contains 7 algific talus slopes within the context of steep forested slopes and ravines, and agricultural uplands and valley floors.

Current Activities:

One of the algific talus slopes is protected within the 31-acre Algific Talus Slope WMA owned and managed by the Iowa Department of Natural Resources.

Managed Areas:

SNR	Algific Talus Slope WMA [IA]	Status 1	31 acres

Site Size Range for Community Viability: 5 - 20 acres

IOWA

MANIKOWSKI PRAIRIE, 410 acres

Target Selections: Natural Communities

Midwest Dry Limestone - Dolomite Prairie [P/SP]	B
Midwest Dry-mesic Limestone - Dolomite Prairie [P/SP]	B

Threat Rating - Sources of Stress:

Medium Resource Extraction: mining

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Manikowski Prairie includes very diverse dry-mesic to mesic prairie associated with limestone outcrops in gently rolling topography. The abundance of bird-foot violets support a good population of regal fritillaries. The Ottoe skipper has also been documented at the site.

Current Activities:

The Clinton County Conservation owns and manages the 40-acre Manikowski Prairie, which was dedicated as a State Preserve. They intend to expand their ownership to include additional prairie and buffer. Manikowski Prairie adjoins almost 900 acres of State land (Goose Lake Wildlife Area) which includes a large wetland area.

Managed Areas:

SNR	Goose Lake Wildlife Area [IA]	Status 1	4 acres
SCC	Manikowski Prairie SP [IA]	Status 1	17 acres

Site Size Range for Community Viability: 20 - 80 acres

MILLS COUNTY NO. 3, 97 acres

Target Selections: Species

Western Prairie Fringed Orchid [W]	B

Threat Rating - Sources of Stress:

Very High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This is fairly level wet-mesic prairie on silty-clay loam soil. It contains a medium-size population of the western prairie white-fringed orchid.

Current Activities:

This is a privately owned prairie. Contact with the owner has primarily been by biologists monitoring the orchid populations.

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

PIKE RUN, 5.00 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

Pike run is a well-meandered floodplain stream with the growth of rooted aquatic vegetation. This site is one of the few well vegetated, low-gradient streams in the state. The fish population includes the relatively rare grass pickerel (Esox americanus) and the very rare pirate perch (Aphredoderus sayanus).

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

PINE CREEK, 1212 acres

Target Selections: Natural Communities

Algific Talus Slope [P/SP]	A

Target Selections: Species

Northern Wild Monkshood [P]	A
Pleistocene Disc [P]	A

Threat Rating - Sources of Stress:

High	Resource Extraction: forestry
Medium	Agriculture: grazing
Low	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site contains 2 algific talus slopes with populations of northern wild monkshood and the pleistocene disc, within the context of steep forested slopes and ravines.

Current Activities:

Pine Valley Nature Area (628 acres), owned and managed by the Jackson County Conservation Board protects the core portion of this site.

Managed Areas:

SCC	Pine Valley Nature Area [IA]	Status 3	628 acres

Site Size Range for Community Viability: 5 - 20 acres

POWELL PRAIRIE, 10 acres

Target Selections: Species

Western Prairie Fringed Orchid [W]	B

Threat Rating - Sources of Stress:

Very High	Agriculture
High	Agriculture: haying

Biodiversity Rating: Low **Threat:**

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Powell is a small but highly diverse prairie located in the rolling topography of the Southern Iowa Drift Plain. It contains a fairly large population of the western prairie white-fringed orchid.

Current Activities:

This is a privately owned prairie. Contact with the owner has primarily been by biologists monitoring the orchid populations.

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

ROLLING THUNDER, 1701 acres

Target Selections: Natural Communities

Central Mesic Tallgrass Prairie [L/MX]	C

Target Selections: Species

Regal Fritillary [W]	B

Threat Rating - Sources of Stress:

High Development: urban and residential development due to increase in local population

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Rolling Thunder is located on steeply rolling topography of the Southern Iowa Drift Plain. Dry-mesic and mesic prairie dominate on the ridges and slopes. The creek bottoms are mostly wooded, and trees are shrubs are invading the prairie. A small population of the federally threatened prairie bush clover has been found on the county-owned property.

Current Activities:

The Nature Conservancy owns and manages a 100-acre preserve (Medora Prairie) within the site. Rolling Thunder Prairie, a 284-acre area owned and managed by the Warren County Conservation Board is about 1 mile from Medora Prairie. The portion with the most prairie (123 acres) is a dedicated State Preserve.

Managed Areas:

CON	Medora Prairie [IA]	Status 1	103 acres
SCC	Rolling Thunder (non-IAFO) [IA]	Status 1	284 acres

Site Size Range for Community Viability: 2000 - 10000 acres

IOWA

SHEEDER PRAIRIE, 25 acres

Target Selections: Species

Western Prairie Fringed Orchid [W] B

Threat Rating - Sources of Stress:

High	Agriculture: sedimentation due to agricultural practices
	Biological Sources: exotic species
Medium	Agriculture: increased nutrient input due to agricultural practices

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Sheeder Prairie is located in the rolling topography of the Southern Iowa Drift Plain. Ridges and slopes are dominated by diverse mesic prairie, but the draws have suffered invasion by woody species and weeds. It contains a medium size population of the western prairie white-fringed orchid.

Current Activities:

The entire site is owned and managed by the Iowa Department of Natural Resources as a State Preserve. The orchid population has been monitored fairly regularly.

Managed Areas:

SNR	Sheeder Prairie SP [IA]	Status 1	23 acres

Site Size Range for Community Viability: n/a

IOWA

THOMPSON RIVER, 38.33 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

The Thompson River in Decatur County is well meandered with a riparian corridor in relatively good condition. In terms of aquatic habitat and riparian corridor, it is probably the highest quality large stream in southern Iowa.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

WAPSIPINICON RIVER, 17.54 miles

Target Selections: Other Features

High Quality River System	E

Target Selections: Species

Higgins Eye [L]	B?

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: High **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This segment of the Wapsipinicon River has a high amount of connectivity with the floodplain and there are many associated wetlands. There is not a lot of information available about the biological assemblages of the lower Wapsipinicon River; however, the habitat is unique in the Iowa portion of the ecoregion from the standpoint of its riparian corridor, meandering channel with islands and numerous wetlands.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

WEST NISHNABOTNA RIVER, 9.84 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: increased nutrient input due to livestock
	Agriculture: increased nutrient input due to agricultural practices
	Agriculture: sedimentation due to agricultural practices
	Agriculture: pesticide application

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This is a meandered reach of the West Nishnabotna River from Macedonia down river to Willow Slough State Area. The site is one of the few remaining meandered reaches of a larger stream/river in southwest Iowa.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA

WOODSIDE PRAIRIE, 7 acres

Target Selections: Species

Mead's Milkweed [L]	C
Western Prairie Fringed Orchid [W]	B

Threat Rating - Sources of Stress:

Very High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Woodside Prairie is a small, but incredibly diverse mesic to dry-mesic prairie located in the rolling topography of the Southern Iowa Drift Plain. The exposure is primarily west-facing, with dry-mesic to mesic ridges and slopes, and a wet-mesic draw. It contains one of the larger Iowa populations of western prairie white-fringed orchid (as many as 118 flowing plants have been observed), and the largest Iowa population of Mead's milkweed. A small, but stable population of regal fritillaries is also at the site. The site is hayed annually in September.

Current Activities:

Iowa chapter staff and local prairie enthusiasts maintain contact with the owner. She is very interested in the prairie and as long as she lives it will be used for prairie hay, but after she dies its future is uncertain. The orchids and milkweeds are monitored on a fairly regular basis.

Managed Areas:

Site Size Range for Community Viability: n/a

IOWA and MISSOURI

LOESS HILLS, 711972 acres

Target Selections: Natural Communities

Central Cordgrass Wet Prairie [L/LP]	B	Squaw Creek NWR [MO]
Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	A-B	Broken Kettle Grasslands [IA]
Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	A-B	Loess Hills WMA [IA]
Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	A-B	Elk Point Grasslands [IA]
Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	B	Grant Center [IA]
Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	BC	Folsom Lake [IA]
Eastern Great Plains Bur Oak Woodland [E/LP]	B	Thurman [IA]
Eastern Great Plains Bur Oak Woodland [E/LP]	B	Loess Hills WMA [IA]
Eastern Great Plains Bur Oak Woodland [E/LP]	B	Elk Point Grasslands [IA]
Eastern Great Plains Bur Oak Woodland [E/LP]	B	Waubonsie State Park [IA]
Eastern Great Plains Bur Oak Woodland [E/LP]	B	Little Sioux Complex [IA]
Eastern Great Plains Bur Oak Woodland [E/LP]	A	Broken Kettle Grasslands [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	C	Star School Hill Prairie Complex [MO]
Loess Hills Little Bluestem Dry Prairie [E/LP]	A-B	Broken Kettle Grasslands [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	A	Elk Point Grasslands [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	A-B	Waubonsie State Park [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	C	Squaw Creek NWR [MO]
Loess Hills Little Bluestem Dry Prairie [E/LP]	A-B	Loess Hills WMA [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	A-B	Little Sioux Complex [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	AB	Grant Center [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	C	Thurman [IA]
Loess Hills Little Bluestem Dry Prairie [E/LP]	B	Folsom Lake [IA]
River Bulrush Marsh [W/LP]	B	Squaw Creek NWR [MO]

Target Selections: Species

A Sedge [P]	A	Squaw Creek NWR [MO]
Bald Eagle [W]	A	Squaw Creek NWR [MO]
Ottoe Skipper [W]	A	Broken Kettle Grasslands [IA]
Ottoe Skipper [W]	AB	Loess Hills WMA [IA]
Prairie Dunewort [P]	B	Elk Point Grasslands [IA]
Prairie Dunewort [P]	A-B	Broken Kettle Grasslands [IA]
Prairie Dunewort [P]	AB	Loess Hills WMA [IA]
Regal Fritillary [W]	A	Broken Kettle Grasslands [IA]

Threat Rating - Sources of Stress:

Very High	Development: urban and residential development due to increase in local population
	Development: second home development
	Resource Extraction: mining
High	Biological Sources: exotic species
Low	Agriculture: grazing

Biodiversity Rating: Very High **Threat:** High

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

The Loess Hills are a globally unique landform stretching for 200 miles along the western borders of Iowa and Missouri. The extent and depth (up to 200 feet deep) of these wind-blown deposits are matched only by similar deposits in China, and their steep, rugged topography harbors most of Iowa's extant prairie (about 20,000 acres). The dry habitats also harbor species normally found much

further west in the dry mixed grass prairie of the Great Plains.

Current Activities:

Due to their significance, the Loess Hills have received a lot of attention. Portions of the Loess Hills received recognition as a National Natural Landmark in 1986, and more recently they have been the focus of a push for a National Park. A Congressionally authorized National Park Service Study to study protection options was begun in the fall 1999. The Loess Hills Alliance was created by the Iowa Legislature in 1998 to provide a local voice for protection efforts. The Iowa Conservancy is a voting member of the Alliance and is working with the Park Service and Alliance to ensure that conservation efforts are consistent with biodiversity protection. The Conservancy has had a robust program in the Loess Hills for eight years, including a survey of prairie areas, a site conservation plan, an active acquisition and stewardship program, and two to three on-site conservation practitioners. The Conservancy has protected almost 4,500 acres in the hills (as of January 2000), and other conservation organizations have protected in excess of 12,000 acres in parks, wildlife areas and preserves. The acquisition program is focused on eleven priority sites, while stewardship and outreach are being implemented region-wide. Conservancy-protected areas include Broken Kettle Grasslands, which protects the best known examples in the world of two prairie community types, and Folsom Point Prairies, which protects the best prairie remnants in the southern portion of the Loess Hills.

Managed Areas:

SOU	Brickyard Hill CA [MO]	Status 3	2007 acres
SOU	Brickyard Hill Loess Mound DNA [MO]	Status 1	80 acres
CON	Broken Kettle Grasslands [IA]	Status 1	1448 acres
SCC	Chris Larson Park [IA]	Status 3	3 acres
SNR	Deer Creek Lake [IA]	Status 3	1008 acres
SCC	Five Ridge Prairie SP [IA]	Status 1	846 acres
SNR	Forneys Lake W.A. [IA]	Status 2	68 acres
CON	Knapp Prairie [IA]	Status 1	25 acres
SNR	Little Sioux Unit [IA]	Status 2	1687 acres
SNR	Loess Hills WMA [IA]	Status 2	2704 acres
CON	McCormack (Jamerson C) CA [MO]	Status 3	123 acres
SOU	McCormack Loess Mounds DNA [MO]	Status 1	116 acres
SCC	Mile Hill Recreation Area [IA]	Status 2	36 acres
SNR	Mondamin Unit [IA]	Status 2	948 acres
SOU	Monkey Mountain CA [MO]	Status 3	730 acres
SNR	Mount Talbot SP [IA]	Status 1	42 acres
SCC	Pawnee Recreation Area [IA]	Status 3	9 acres
SNR	Pisgah Unit [IA]	Status 2	1853 acres
SNR	Preparation Canyon State Park [IA]	Status 2	340 acres
SNR	Preparation Canyon Unit [IA]	Status 1	3062 acres
SOU	Riverbreaks CA [MO]	Status 3	2229 acres
CON	Sioux City Prairie [IA]	Status 1	153 acres
SNR	Smith Area [IA]	Status 2	197 acres
FFW	Squaw Creek National Wildlife Refuge [MO]	Status 2	1322 acres
SOU	Star School Hill Prairie CA [MO]	Status 3	136 acres
SOU	Starschool Hill Prairie DNA [MO]	Status 1	79 acres
SNR	Stone State Park [IA]	Status 2	1025 acres
SNR	Turin Loess Hills SP [IA]	Status 1	119 acres
SNR	Waubonsie State Park [IA]	Status 2	1224 acres

Site Size Range for Community Viability: 13600 - 68000 acres

KANSAS

BIG SOLDIER CREEK, 24.98 miles

Target Selections: Other Features
High Quality River System E

Threat Rating - Sources of Stress:
High Agriculture

Biodiversity Rating: Very High **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:
Long narrow watershed is located in the Dissected Till Plains of the Central Lowlands physiographic province. The stream varies in character with occasional pool / riffle sequences separated with long runs and pool areas. Substrates are varied and riparian fringe is fragmented. Moderate to high fish and mussel diversity with several species being very rare for this ecoregion. Both fish and mussel populations are very high in some sections.

Current Activities:
None.

Managed Areas:

Site Size Range for Community Viability: n/a

DUTCH CREEK, 8.67 miles

Target Selections: Other Features
High Quality River System E

Threat Rating - Sources of Stress:
High Agriculture

Biodiversity Rating: Very High **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:
Pool / riffle stream whose headwater tributaries drain rangeland while the lower portion lies within a heavily wooded valley. This small headwater stream supports a diverse fauna characteristic of both intermittant and perennial streams.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

KANSAS

FLINT HILLS TALLGRASS PRAIRIE, 1357290 acres

Target Selections: Natural Communities

Central Mesic Tallgrass Prairie [L/MX]	B	Pottawatomie Tallgrass Prairie [KS]
Flint Hills Tallgrass Prairie [P/MX]	B	Mill Creek Tallgrass Prairie [KS]
Flint Hills Tallgrass Prairie [P/MX]	B	Northern Flint Hills Tallgrass Prairie [KS]

Target Selections: Species

Regal Fritillary [W]	A	Northern Flint Hills Tallgrass Prairie [KS]

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: dams
Medium	Agriculture
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Landscapes including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

This site is at the northern edge of the largest remaining area of native tallgrass prairie in North America. The topography comprises level to gently rolling uplands situated on Permian limestones and shales. Numerous headwater streams, which ultimately give rise to or join the rivers of eastern Kansas, have their source in this region. Extensive upland areas are used for spring and summer grazing of cattle, while most floodplains along larger streams and rivers have been converted to cropland, especially for corn, soybeans, and milo. A number of rare fishes occur in the region, including the Hornyhead chub, Topeka shiner, Southern redbelly dace, Blue Sucker, Brindled Madtom, and Blackside Darter. Historically, the rare Western prairie fringed orchid occurred in the region.

Current Activities:

The Nature Conservancy manages two preserves in the Kansas Flint Hills; however, both are outside this Conservation Area.

Managed Areas:

FAE	Carnahan Creek [KS]	Status 4	1020 acres
FAE	Fancy Creek State Park [KS]	Status 4	394 acres
PCN	Jeffery Energy Center [KS]	Status 4	9678 acres
SNR	Pottawatomie County State Lake No. 1 [KS]	Status 4	171 acres
SNR	Pottawatomie County State Lake No. 2 [KS]	Status 4	190 acres
FAE	Randolph State Park [KS]	Status 4	233 acres
FAE	River Pond State Park [KS]	Status 4	28 acres
SNR	Shawnee County State Lake [KS]	Status 4	496 acres
FAE	Spillway State Park [KS]	Status 4	191 acres
FAE	Tuttle Creek Lake [KS]	Status 4	2298 acres
FAE	Tuttle Creek Lake/Wildlife Area [KS]	Status 4	9615 acres
FAE	Tuttle Creek Lake/Wildlife Area [KS]	Status 4	3670 acres

Site Size Range for Community Viability: 6000 - 30000 acres

KANSAS

FORT LEAVENWORTH, 4800 acres

Target Selections: Natural Communities

Cottonwood - Sycamore Forest [P/SP]	B
Pecan - Sugarberry Forest [P/LI]	B
White Oak - Hickory Forest [L/LP]	B

Threat Rating - Sources of Stress:

Very High	In-Stream/Floodplain Alteration: levees
	Development: roads
High	Development

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Ft. Leavenworth Military Reservation is home to an active military base. It is situated on rolling hills and bluffs above the Missouri River floodplain and on a small portion of the river floodplain. Oak-hickory forest and maple-basswood forest dominate the uplands and steep northeast-facing slopes above the river. The level to gently undulating river floodplain supports one of the largest remnants of old growth floodplain forest along the lower Missouri River. The site's natural communities support nearly 20 species of state-rare plants and animals. In addition, the installation has tremendous cultural and historical significance.

Current Activities:

None.

Managed Areas:

FDD	Ft. Leavenworth Military Reservation [KS]	Status 4	8656 acres

Site Size Range for Community Viability: 850 - 4240 acres

KANSAS

FRENCH CREEK PRAIRIE, 79 acres

Target Selections: Species

Mead's Milkweed [L] B

Threat Rating - Sources of Stress:

Medium Agriculture: haying
Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Small, mesic to wet mesic, upland, tallgrass prairie remnant situated on an E-facing slope above French Creek. This site is hay annually, and it supports a sizeable populations of the federally protected plant Mead's milkweed.

Current Activities:

None.

Managed Areas:

Site Size Range for Community Viability: n/a

KANSAS RIVER, 175.80 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

Very High In-Stream/Floodplain Alteration
In-Stream/Floodplain Alteration: dredging
In-Stream/Floodplain Alteration: levees
High Development
Agriculture

Biodiversity Rating: High **Threat:** Medium

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

This large river forms the approximate southern limit of Pleistocene glaciation in Kansas. A major tributary of the Missouri River, the Kansas River has been impacted heavily by a variety of human activities, including agriculture, sand dredging, dam construction, and urbanization. Nevertheless, it still supports several rare species, including Pallid sturgeon, Sturgeon chub, Sicklefin chub, Least tern, Piping plover, and Bald eagle.

Current Activities:

None.

Managed Areas:

Site Size Range for Community Viability: n/a

KANSAS

NORTH ELM CREEK, 15.43 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High Agriculture

Biodiversity Rating: High **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

Moderate gradient stream with high instream habitat diversity. Good pool / riffle sequencing. Spring-fed along lower third of length. Limited woody riparian areas. Rare species, diverse assemblage with spring-dwelling fauna.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

ROCKEFELLER PRAIRIE, 14 acres

Target Selections: Species

Earleaf Foxglove [W]	A
Mead's Milkweed [L]	B
Western Prairie Fringed Orchid [W]	C

Threat Rating - Sources of Stress:

Low Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Small, mesic, upland, tallgrass prairie remnant on a level ridge north of the Kansas River floodplain. This site supports two populations of three rare plants: Mead's milkweed, Western prairie fringed orchid, and Earleaf foxglove. Although the site is small and isolated from other remnant prairies, it is managed by the University of Kansas as a nature preserve and is used for nondestructive, long-term ecological research by scientists from KU and other universities.

Current Activities:

None.

Managed Areas:

SUN	KS Ecol. Reserves/Fitch Natural Hist. Res. [KS]	Status 1	1 acres
SUN	KS Ecol. Reserves/Rockefeller Exp. Tract [KS]	Status 1	5 acres
SUN	Rockefeller Native Prairie [KS]	Status 1	10 acres

Site Size Range for Community Viability: n/a

KANSAS

STRAIGHT CREEK, 44.08 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Agriculture

Biodiversity Rating: High **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

Low gradient, sand-bottom stream with good intact riparian fringe. Lower portion of stream in broad floodplain that was the result of glacier meltwater flow. Representative assemblage for sand-bottom prairie streams, moderate-high diversity for stream type.

Current Activities:

Managed Areas:

Site Size Range for Community Viability: n/a

WYANDOTTE COUNTY PARK, 1826 acres

Target Selections: Natural Communities

White Oak - Hickory Forest [L/LP] B

Threat Rating - Sources of Stress:

Medium Recreation: general purpose recreational use (includes hiking, biking, skiing, camping, etc.)

Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site is situated on the hills and bluffs overlooking the Missouri River, just north of the Kansas City metropolitan area. The bedrock comprises Pennsylvanian limestones and shales, which are overlain by a discontinuous loess mantle. The site supports a high-quality occurrence of oak-hickory forest and small remnants of maple-basswood forest, in which six state-rare plants have been documented.

Current Activities:

None.

Managed Areas:

SCC Wyandotte County Park [KS] Status 4 1900 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

ACCOLA WOODS, 67 acres

Target Selections: Natural Communities

Swamp White Oak Woodland [L/SP] C

Threat Rating - Sources of Stress:

Medium Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A wooded area of upland slopes and creek bottoms along South Branch of Sugar Creek, in moderately deep glacial loess and till which mantles Mississippian limestone and dolomite. Vegetation consists of degraded woodlands, with a prominent canopy component of Swamp White Oak; understory vegetation is largely composed of non-conservative woodland plants, although nottoway brome and spinulose shield fern are documented at the site. It has a surprisingly rich overall diversity for such a small tract. The site is bordered by croplands and intensively grazed pasture. Owned by the Nature Conservancy.

Current Activities:

Research consists of vegetation monitoring, woody vegetation permanent macroplots and a lichen study. Management includes prescribed fire to most of the site every three to five years.

Managed Areas:

CON Accola Woods [MO] Status 1 67 acres

Site Size Range for Community Viability: 10 - 40 acres

MISSOURI

BEN WATTS KNOB, 667 acres

Target Selections: Natural Communities

Chinquapin Oak - Red Cedar Dry Alkaline Forest [P/LP]	C
White Oak - Mixed Oak / Redbud Dry-mesic Alkaline Forest [P/LP]	C
White Oak - Red Oak - Sugar Maple Mesic Forest [P/LP]	C

Threat Rating - Sources of Stress:

High	Resource Extraction: forestry
Medium	Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

High quality knob with a mosaic of relatively undisturbed dry, mesic and dry-mesic limestone dolomite forest on relatively steep north and south slopes and in east running draw between two main arms of knob. Dry forest is found on noses facing south into the draw. Plant community consists of old second growth (80-120 years old) of black oak, white oak, white ash and black hickory. Site is in private ownership.

Current Activities:

Registered through the Natural Areas Registry Program.

Managed Areas:

Site Size Range for Community Viability: 600 - 3000 acres

BIG LAKE SP, 755 acres

Target Selections: Natural Communities

Midwest Cattail Deep Marsh [W/LP]	C

Threat Rating - Sources of Stress:

High	Agriculture

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

One of the few remaining oxbow marshes along the Missouri River providing refuge for wetland plants, migrating waterfowl and other wetland animals. Includes freshwater marsh dominated by typical wetland species, and riparian forest. Wetlands are degraded and are lacking the natural processes that at one time sustained dynamic communities. Site provides habitat for migrating waterfowl. The Missouri Department of Natural Resources owns and manages a portion of the oxbow and marsh. Squaw Creek National Wildlife Refuge is located 4 miles east of the park.

Current Activities:

None

Managed Areas:

SNR	Big Lake SP [MO]	Status 3	274 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

CHEVALIER BLUFF SPRINGS, 69 acres

Target Selections: Natural Communities

Great Plains Fen [L/SP]	C

Threat Rating - Sources of Stress:

Very High	In-Stream/Floodplain Alteration
High	Management

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A deep muck fen complex near eight spring outlets with low to moderate diversity. There are at least three 1-2 acre fens grading into poorer quality wetland at base of north-facing bluff in Missouri River floodplain. Woody and exotic invasion is moderate to heavy. Species found include cut-leaved water parsnip and marsh skullcap. Site is privately owned and drainage has been attempted in the past.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: 1 - 4 acres

MISSOURI

CROWDER STATE PARK, 2020 acres

Target Selections: Natural Communities

White Oak Central Glaciated Woodland [E/LP] B

Threat Rating - Sources of Stress:

High	Agriculture: grazing
	Agriculture: row crop farming
Medium	Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A mature oak/hickory woodland dominated by white, black, burr and post oak. There are areas of forest that have degraded into stands of maple. The area has good bird diversity including a rookery. A section of Sugar Creek runs through the park and the park boundary lies along the Thompson River. A forested wetland with silver maple and cottonwood is found along the old river channel. Short-leaf pines were planted by the CCC in 1938. A degraded wet meadow was acquired in 1991 and is in need of management. The area is variable in quality with scattered anthropogenic disturbances (old fields, homestead sites). Abandoned fescue and cropfields comprise about 20% of park. In future plans, several of the old fields will be restored to upland prairie. Most of park has been identified by The Department of Natural Resources for ecological stewardship with restoration potential.

Current Activities:

None

Managed Areas:

SNR	Crowder SP [MO]	Status 3	1683 acres

Site Size Range for Community Viability: 200 - 1000 acres

DEER RIDGE CA, 404 acres

Target Selections: Species

Rose Turtlehead [W] A

Threat Rating - Sources of Stress:

Medium Management

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Over 80% of the site is in upland timber including white oak, red oak and several species of hickory. The bottomland consists of silver maple, pin oak, cottonwood, river birch, sycamore and hackberry. The North Fabius River flows through the tract and there are 25 ponds and a 48 acre lake on the site. The Missouri Department of Conservation manages the site for hunting, fishing and timber.

Current Activities:

None

Managed Areas:

SOU	Deer Ridge CA [MO]	Status 3	320 acres

Site Size Range for Community Viability: n/a

MISSOURI

DES MOINES RIVER RAVINES NA, 147 acres

Target Selections: Natural Communities

Central Maple - Basswood Forest [L/LP] C

Threat Rating - Sources of Stress:

High Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This area supports cove ravines along steep, north-facing slopes overlooking the Des Moines River. These steep slopes support an unusually rich flora including many ferns, snow trillium, white baneberry, spikenard and blue cohosh. Other communities include a mesic limestone/dolomite forest and exposed limestone bluffs. The Department of Natural Resources owns the area.

Current Activities:

None

Managed Areas:

SNR	Battle of Athens SHS [MO]	Status 3	98 acres
SNR	Des Moines River Ravines DNA [MO]	Status 1	48 acres

Site Size Range for Community Viability: 200 - 1000 acres

EAST TARKIO PRAIRIE, 623 acres

Target Selections: Natural Communities

Midwest Dry-mesic Prairie [W/LP] C

Threat Rating - Sources of Stress:

Medium Agriculture: row crop farming

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site lies at the upper headwaters of Tarkio Creek and Long Branch Creek flows through the area, bisecting the prairie. The diverse prairie flora is on loess and glacial till soils. There is an interesting small shrub component of dwarf chinquapin oak, hazelnut and prairie willow. The Missouri Department of Conservation is restoring some degraded portions of the site to prairie.

Current Activities:

None

Managed Areas:

SOU	Tarkio Prairie CA [MO]	Status 3	475 acres
SOU	Tarkio Prairie DNA [MO]	Status 1	57 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

FOXGLOVE PRAIRIE CA, 206 acres

Target Selections: Species

Earleaf Foxglove [W] A

Threat Rating - Sources of Stress:

High Development: urban and residential development due to increase in local population
Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This native prairie named after the target species found there is a rolling, brushy prairie formed predominately on silty clay loam and clay loam soils. The area has good plant diversity including small populations of hairy parsley and prickly pear cactus, which are associated with small areas of limestone outcrop. Owned by the Missouri Department of Conservation.

Current Activities:

None

Managed Areas:

SOU Foxglove CA [MO] Status 3 55 acres

Site Size Range for Community Viability: n/a

GOOSE POND, 334 acres

Target Selections: Natural Communities

Midwest Mixed Emergent Deep Marsh [W/LP] B

Threat Rating - Sources of Stress:

Medium In-Stream/Floodplain Alteration
Management: managed for incompatible species/community
Unknown Development: roads

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This remnant spring-fed freshwater marsh is in the western floodplain of the Mississippi River, in a former river channel of the Des Moines River. Open water varies with precipitation and several springs issue from the east side. The adjacent western section is man-made. The original channel system is now dissected by several highways, and most of it has been ditched, drained and farmed. The area is bound by wet grassland and pasture, and is surrounded by cropland. Goose Pond is home to the Blanding's Turtle, Central Mudminnow and the Illinois Mud Turtle. The site is in private ownership.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

GRASSY LAKE / MAPLE LAKE, 1732 acres

Target Selections: Natural Communities

Central Water Lily Aquatic Wetland [W/SP] C

Threat Rating - Sources of Stress:

High	Development: urban and residential development due to increase in local population
Medium	In-Stream/Floodplain Alteration: channelization
	Management: managed for incompatible species/community

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This shallow freshwater marsh/wet prairie/ shrub swamp community occurs in the Mississippi River floodplain. The shallow marsh is dominated by large continuous stands of yellow pond lily and the wet prairie is dominated by prairie cord grass and bur marigold. This is one of the largest remaining natural marshland lakes in Missouri. It has never been plowed and although it has drainage ditches, the natural quality remains high. It is managed by a duck hunting club.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: 5 - 20 acres

MISSOURI

GREEN HILLS, 32731 acres

Target Selections: Natural Communities

White Oak Central Glaciated Woodland [E/LP]		B	Thousand Hills SP [MO]

Threat Rating - Sources of Stress:

Medium	Agriculture
	Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This rugged mainly forested landscape is interspersed with prairie and woodlands. Old field and man-made ponds are scattered throughout the area. The landscape had small prairie remnants with prairie chicken populations in the past. The mesic and dry-mesic woodlands have degraded into restorable old growth woodlands and secondary growth forests. The canopy is 90 to 120 years old and the herbaceous ground layer diversity is high. The restoration potential of the prairie/savanna remnants is high. The north end of Big Creek Conservation Area is managed for demonstration grazing in cooperation with Northeast Missouri State University. The area is mostly in private ownership, yet the Department of Natural Resources and Department of Conservation own sites in the landscape.

Current Activities:

None

Managed Areas:

SOU	Big Creek CA [MO]	Status 3	677 acres
SOU	Sugar Creek CA [MO]	Status 3	2529 acres
SNR	Thousand Hills SP [MO]	Status 3	3160 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

GRINDSTONE CREEK, 3.58 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

Medium Agriculture: grazing

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This smaller order medium-sized prairie stream in the Grand River Basin has high macroinvertebrate richness and diversity. The substrate consists of sand, silt and bedrock. The surrounding ridges have afforded some protection from agriculture. Although there are few unique species found in the watershed, the habitat quality appears good and the floodplain processes and riparian corridor are intact. It is surrounded by forest, row crop and pasture. The site is surrounded by private ownership.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

HELTON PRAIRIE, 2741 acres

Target Selections: Natural Communities

Central Mesic Tallgrass Prairie [L/MX]	C

Target Selections: Species

Western Prairie Fringed Orchid [W]	B

Threat Rating - Sources of Stress:

Medium	Agriculture
	Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This high-quality upland prairie is on gently rolling topography of a deep layer of loess and glacial till. The prairie is mainly mesic with some wet-mesic prairie along the small drainages. The prairie has excellent plant diversity with rare plants such as Mead's Milkweed and the Western Prairie Fringed Orchid. Along the drainages there is some woody invasion and evidence of past grazing and local erosion. It is bordered by young forest land to the south and cropfield to the east. The former croplands adjacent to the prairie are being restored, using fire as one management tool.

Current Activities:

None

Managed Areas:

SOU	Helton (The Wayne) Mem WA [MO]	Status 3	2490 acres
SOU	Helton Prairie CA [MO]	Status 2	2490 acres
SOU	Helton Prairie DNA [MO]	Status 1	33 acres

Site Size Range for Community Viability: 2000 - 10000 acres

MISSOURI

HICKORY CREEK, 4.72 miles

Target Selections: Species

Topeka Shiner [P] C

Threat Rating - Sources of Stress:

Medium Agriculture: sedimentation due to agricultural practices
Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This fourth order creek is a high quality prairie stream that maintains good pool and ripple complexes. It is relatively unimpacted by channelization. Much of the well developed floodplains within the watershed are in rowcrop production. Most of the land is managed by full-time farmers and some landowners participate in the USFWS Partners for Fish and Wildlife program focusing on the Topeka shiner and its habitat.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

LINCOLN HILLS, 24798 acres

Target Selections: Natural Communities

Dry Terrestrial Cave	B	Cuivre River SP [MO]
Ozark Limestone Glade [P/LP]	C	Cuivre River SP [MO]
Sinkhole Pond Marsh [P/SP]	C	Cuivre River SP [MO]
Wet Aquatic Cave	B	Cuivre River SP [MO]
White Oak - Hickory Forest [L/LP]	B	Cuivre River SP [MO]
White Oak Central Glaciated Woodland [E/LP]	B	Cuivre River SP [MO]

Threat Rating - Sources of Stress:

High	Development: urban and residential development due to increase in local population
Medium	Development
	Recreation: general purpose recreational use (includes hiking, biking, skiing, camping, etc.)
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This landscape, although glaciated, is characterized by ozark-like landscape. It has geologic features and natural communities such as karst topography and limestone glades due to the geologic uplifting of the region. This area supports over 30 species on the state's list of species of conservation concern, and species at the northern periphery of their range. Significant natural communities include: savannas, woodlands, forests, glades, prairies, pond marsh, limestone talus and cliffs and many features of karst topography such as losing streams, springs, sinkholes, sinkhole ponds, and caves. The landscape is highly fragmented, the only sizable remnant is the 6400 acre Cuivre River State Park. The park encompasses a substantial portion of the dissected watershed of Big Sugar Creek and is primarily covered by good quality dry-mesic woodland. Both the Department of Natural Resources and the Department of Conservation own sites in the landscape.

Current Activities:

Vegetation monitoring at Cuivre River State Park

Managed Areas:

SNR	Cuivre River SP [MO]	Status 2	4418 acres
SNR	George A. Hamilton Forest DNA [MO]	Status 1	40 acres
SOU	Logan (William R) CA [MO]	Status 3	1703 acres
SNR	Pickeral Weed Pond DNA [MO]	Status 1	8 acres
SOU	Vonaventure Mem Forest & WA [MO]	Status 3	194 acres
SOU	Vonaventure Mem Forest CA [MO]	Status 3	194 acres

Site Size Range for Community Viability: 605 - 3020 acres

MISSOURI

LITTLE BEAN MARSH, 2887 acres

Target Selections: Natural Communities

Midwest Mixed Emergent Deep Marsh [W/LP] B

Threat Rating - Sources of Stress:

Medium In-Stream/Floodplain Alteration

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This high quality natural marsh is in the old Missouri floodplain. A slough and bottomland forest are found on the site. It adjoins Bean Lake, one of four oxbows remaining on the Missouri River in Missouri. Least bittern and yellow-headed blackbirds are found at the site. Some plants of note are bergia, a rare sedge (Carex sychnocephala), purple spikerush and Rocky Mountain bullrush. It is on the fringes of greater Kansas City Metropolitan area and the lake has high recreational use. The Missouri Department of Conservation manages the area.

Current Activities:

None

Managed Areas:

SOU	Little Bean Marsh CA [MO]	Status 3	201 acres
SOU	Little Bean Marsh DNA [MO]	Status 1	221 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

LITTLE TARKIO PRAIRIE, 68 acres

Target Selections: Natural Communities

Eastern Great Plains Big Bluestem Loess Prairie [E/MX] C

Target Selections: Species

Western Prairie Fringed Orchid [W] C

Threat Rating - Sources of Stress:

High Agriculture

Medium Agriculture: pesticide application

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This small upland prairie on a westerly facing slope has a small wooded draw on the south side of the site. It is the last intact dry-mesic prairie in the county and is surrounded by agriculture. There is some brome invasion along upper slopes due to a dirt road. The site has been managed for hay using progressive farming techniques and is periodically burned. The Missouri Department of Conservation has recently acquired the prairie.

Current Activities:

None

Managed Areas:

SOU Little Tarkio Prairie [MO] Status 1 68 acres

Site Size Range for Community Viability: 2000 - 10000 acres

LOCUST CREEK, 93.03 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Agriculture: increased nutrient input due to livestock

Unknown In-Stream/Floodplain Alteration: channelization

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This fair sized stream has fair to good riparian conditions throughout the watershed. There is an unique assemblage of fish and many disturbance intolerant species. An excellent representation of prairie fishes is found, including a high concentration of trout perch. The substrate consists of mostly sand with some gravel and silt. Ridges on the west side have offered some protection from agriculture. For the past five years, large bank restoration projects have taken place. The area flows through Department of Conservation lands.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

LONG BRANCH SP, 2224 acres

Target Selections: Natural Communities

Central Bur Oak Openings [E/SP] C

Threat Rating - Sources of Stress:

High Development
Agriculture: grazing

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Small white oak dominated savanna and prairie remnant found within larger tracts of degraded forest. It is actively managed by the Missouri Department of Natural Resources to restore representative northern Missouri landscape. Provides habitat for Henslow's sparrow and a state-listed sedge. The Department of Conservation and US Army Corps of Engineers also own areas within the site.

Current Activities:

None

Managed Areas:

SOU	Atlanta CA [MO]	Status 3	363 acres
FAE	Long Branch Lake [MO]	Status 3	375 acres
SNR	Long Branch SP [MO]	Status 3	465 acres

Site Size Range for Community Viability: 10 - 40 acres

LOUTRE RIVER, 1.46 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

Medium Agriculture

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This small headwater stream is a transition stream that crosses over from prairie into a more ozarkian stream. The stream has short riffles and large long pools. The substrate is small gravel with interstitial areas filled in with silt. The area is surrounded by row crops with some forested areas. More than 29 fish species of high diversity of taxonomic and ecological types are found. Important species include the sand shiner, bluntnose minnow and orange throat darter. The surrounding land is in private ownership.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

LOWRY MARSH, 905 acres

Target Selections: Natural Communities

Bulrush - Cattail - Burreed Shallow Marsh [W/LP] B

Threat Rating - Sources of Stress:

Medium In-Stream/Floodplain Alteration: levees

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This wetland complex of freshwater marsh and wet-mesic prairie is located in the historic channel of Weldon Fork of the Grand River. The wet-mesic prairie/marsh mosaic is in the center and to the south of the marsh. A low quality wet-mesic savanna dominated by swamp white oak is found to the north. The site also encompasses a forest and cool-season pasture. The site contains six rare or endangered species including several sedges, marsh skullcap, star duckweed, tufted loosestrife, and the rare northern leopard frog. The area is heavily used by waterfowl and it provides habitat for several other uncommon bird species including upland sandpipers, sedge wrens, bobolinks and sora rails. The site is owned by the Department of Conservation.

Current Activities:

None, previous Registry site.

Managed Areas:

SOU Lowry Marsh DNA [MO] Status 1 110 acres

Site Size Range for Community Viability: 200 - 1000 acres

MACKENZIE FEN, 144 acres

Target Selections: Natural Communities

Great Plains Fen [L/SP] C

Threat Rating - Sources of Stress:

Medium In-Stream/Floodplain Alteration: channelization

Development: urban and residential development due to increase in local population

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Sedge dominated deep muck fens at base of steep hill. Channelization of the Little Blue and Missouri Rivers changed their impact on the fens from periodic flooding. The two fens are fed by four calcareous seep springs. The site is surrounded by old fields on three sides and is below a small (.3 acres) steep mesic forest on the south side. There is a remnant ditch west of the fen from past drainage efforts. The three private owners live on top of the steep east-west ridge.

Current Activities:

Registered through the Natural Areas Registry Program

Managed Areas:

Site Size Range for Community Viability: 1 - 4 acres

MISSOURI

MIDDLE FABIUS, 5.21 miles

Target Selections: Other Features
High Quality River System E

Threat Rating - Sources of Stress:
Medium Agriculture

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:
Small stream in the Mississippi river basin with some Mississippian limestone, which is an unique geology for prairie area streams. The stream has well developed pools and a fairly sandy substrate. The stream has high richness and diversity of benthic invertebrates with good habitat, it is of "Retevene Stream" quality. Intact ecological processes include floodplain processes, riparian corridor, and woody debris generation. The surrounding land is in private ownership.

Current Activities:
None

Managed Areas:

Site Size Range for Community Viability: n/a

MORRIS PRAIRIE, 76 acres

Target Selections: Natural Communities
Midwest Dry-mesic Prairie [W/LP] C

Threat Rating - Sources of Stress:
High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:
A dry-mesic prairie with moderate to high diversity in a rolling upland prairie landscape. Some eroded slopes and woody draws are found on the site. Unique plants include dwarf chinquapin oak, tall agrimony and pale and eared false foxglove. Timothy and deadly nightshade were established in 1989 from hay bales. The landowners have a management agreement with the Department of Conservation.

Current Activities:
Registered through the Natural Areas Registry Program

Managed Areas:
PIN Morris Prairie [MO] Status 4 76 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

OLD CATHOLIC CHURCH CEMETERY PRAIRIE, 30 acres

Target Selections: Species

Mead's Milkweed [L] C

Threat Rating - Sources of Stress:

High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A small annually hayed dry-mesic prairie at top of east facing slope (3-9%) grading down into a mesic prairie on the lower slope and in the swale. Soil is adair loam formed on glacial till. The 0.3 acre cemetery is kept closely mowed throughout the year. Some disturbance is associated with old St. Mary's Church site which was active until 1932 and burned in the late 30's. There is some red clover invasion along the south edge. Owned by the Catholic Diocese of Kansas City.

Current Activities:

Registered through the Natural Areas Registry Program

Managed Areas:

Site Size Range for Community Viability: n/a

REBEL'S COVE CA, 2831 acres

Target Selections: Natural Communities

Northern Buttonbush Swamp [W/SP] B

Pin Oak Mixed Hardwood Forest [P/LP] C

Threat Rating - Sources of Stress:

Medium Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

One of the last unchannelized portions of the Chariton River flows through the site. The river makes a 2.5 mile loop around Parson's Bend in the center of the area and is known as "The Narrows". The meandering river channel has created several oxbow lakes and natural marshes along the river, providing unique fish and wildlife habitat. The area also contains a heron rookery and has been the site of otter and ruffed grouse releases. The area is over 50% forested, the remainder is broken up into various habitat types, including croplands, haylands, old fields, natural wetlands and ponds. The Missouri Department of Conservation's management consists of farming, timber harvest and controlled burning.

Current Activities:

None

Managed Areas:

SOU Rebel's Cove CA [MO] Status 3 1632 acres

Site Size Range for Community Viability: 210 - 1040 acres

MISSOURI

RIVERLANDS, 249 acres

Target Selections: Species

Decurrent False Aster [E] A

Threat Rating - Sources of Stress:

Medium In-Stream/Floodplain Alteration: dams
In-Stream/Floodplain Alteration: levees

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Large restoration project on the Mississippi River adjacent to the Melvin Price Locks and Dam Spur Dike in low open wet sandy alluvium that is seasonally inundated. Site consists of diverse prairie-marsh community, sloughs and mud flats. The area provides habitat for migratory waterbirds and protection of endangered and threatened species. The Melvin Price navigation pool raised groundwater and surface water levels which created approximately 300 acres of
freshwater marshes dispersed throughout the area. Owned and managed by the US Army Corps of Engineers.

Current Activities:

None

Managed Areas:

FAE Prairie Marsh Restoration Area [MO] Status 2 249 acres

Site Size Range for Community Viability: n/a

SALT FORK FEN, 333 acres

Target Selections: Natural Communities

Great Plains Fen [L/SP] C

Threat Rating - Sources of Stress:

High Agriculture: increased nutrient input due to agricultural practices
Biological Sources: exotic species
Medium Agriculture: grazing

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A raised peat mound fen surrounded by grass fields and bisected by a NW-SE electrified fence. The fen is being grazed and the margins are bare and trampled. Smooth cone sedge is the dominate species south of the fence. There are several hundred plants of marsh marigold. Other plants include spotted joe pye weed, turtlehead, and lake bank sedge, and there is a localized population of reed canary grass. The site is in private ownership.

Current Activities:

Registered through the Natural Areas Registry Program

Managed Areas:

Site Size Range for Community Viability: 1 - 4 acres

MISSOURI

SALT RIVER NARROWS, 1100 acres

Target Selections: Natural Communities

Chinquapin Oak - Red Cedar Dry Alkaline Forest [P/LP] C

Threat Rating - Sources of Stress:

Medium Agriculture
Resource Extraction: forestry

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site is a semi-open glade with southwest exposure. The unique topography gives rise to diverse communities such as limestone glade, shale glade-savanna, dry mesic limestone forest, limestone glade, and dry limestone forest, that are compacted in a small area. As a result, there is a high diversity of plant species. The massive shale outcrop is overlain by limestone and eroded away by the Salt River. The dip between the 2 layers gives rise to dry-mesic forest between the two glade types. The short bluffs at the tip harbor dry limestone forest, and the scattered mature oaks gives the site a savanna appearance. There is erosion from a road cut at the base of the slope and woody invasion at the south end of the site. It has been grazed and logged in the past. Both private and USACOE ownership.

Current Activities:

None

Managed Areas:

FAE Mark Twain Lake USACOE [MO] Status 3 676 acres

Site Size Range for Community Viability: 200 - 1000 acres

SHOAL CREEK, 1.39 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Agriculture

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This clear, medium-size prairie stream of the Chariton basin has well defined pools and riffles and a sandy substrate. The creek flows into North Blackbird Creek. The floodplain processes, hydrologic regime and riparian corridor are all intact. It has over 27 species of fish from a diversity of taxonomic and ecological groups, including the quillback, river carpsucker, bigmouth shiner, brassy minnow, Johnny darter, and blackside darter. The surrounding land is in private ownership.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

SOUTH RIVER, 2.13 miles

Target Selections: Other Features

High Quality River System	E

Threat Rating - Sources of Stress:

High	Development: industrial/commerical point source pollution
	Agriculture: sedimentation due to agricultural practices
Medium	Development: urban and residential development due to increase in local population

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This river is a small to medium size meandering tributary to the Mississippi River with deep pools and bluffs. There is some Mississippian limestone, which is an unique geology for prairie area streams. It has a high fish species richness typical of a good prairie stream. Species include red shiner, bluntnose minnow and redfin shiner. The riparian corridor has been protected by the local topography. The surrounding land is in private ownership.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

SPADDERDOCK BOTTOMS, 1444 acres

Target Selections: Species

Decurrent False Aster [E] B

Threat Rating - Sources of Stress:

Medium In-Stream/Floodplain Alteration: dams
Agriculture: sedimentation due to agricultural practices

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Site is adjacent to the Mississippi River and is part of the Melvin Price Dam mitigation project. The bottomlands consist of wet-mesic forests and the area is a prime waterfowl habitat. An east-west levee and roads are found throughout the site. Decurrent false aster populations are established in a low area of former soybean fields, and along a thinly wooded roadside ditch on the west side of a state highway. The population was augmented by salvaged plants. The site is owned by US Army Corps of Engineers and managed by Missouri Department of Conservation.

Current Activities:

None

Managed Areas:

SOU	Upper Mississippi CA [MO]	Status 3	157 acres
FAE	West Alton Conservation Area [MO]	Status 3	157 acres

Site Size Range for Community Viability: n/a

SPRING CREEK, 5.70 miles

Target Selections: Other Features

High Quality River System E

Threat Rating - Sources of Stress:

High Agriculture: increased nutrient input due to agricultural practices

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A high quality prairie stream in the Chariton basin with intact habitat. Many of the ecological processes are intact. Unique fish species and a high diversity of invertebrates with many disturbance intolerant taxa are found in the watershed. The substrate is mostly sand. Some woody agriculture along the bottomlands and wooded on slope. Found along central ridge along the highest elevation in north-central Missouri. Over 2 miles away, a CAFO in the upper end of the watershed has had several spills.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

STATELINE FEN, 28 acres

Target Selections: Natural Communities

Great Plains Fen [L/SP] C

Threat Rating - Sources of Stress:

High Agriculture: grazing

Medium Agriculture

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This small seepage fen is located at the base of a north-facing slope. The southern portion is fen and grades to seep-fed marsh in the northern portion. The site is dominated by cattails with local woody thickets of pussy willow and dogwood. Lake-bank sedge, willow herb, gooseberry are found in the fen. The surrounding forest is heavily grazed and the fen is hydrologically impacted. The site is in private ownership.

Current Activities:

Registered through the Natural Areas Registry Program

Managed Areas:

Site Size Range for Community Viability: 1 - 4 acres

STEGMAN PRAIRIE, 282 acres

Target Selections: Natural Communities

Midwest Dry-mesic Prairie [W/LP] C

Threat Rating - Sources of Stress:

High Agriculture

Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This dry-mesic prairie is in a rolling landscape dominated by grasses including side-oats grama. The surrounding rural landscape is grazed, hayed and cropped. The site has been heavily grazed in the past and there is low plant diversity. Little information is known about this privately owned site.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

SUGAR CREEK - MISSOURI, 22.71 miles

Target Selections: Species

Topeka Shiner [P] C

Threat Rating - Sources of Stress:

High	Agriculture: sedimentation due to agricultural practices
Medium	Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This creek is a tributary of the highly altered (channelized) Thompson River. The lowermost four miles of Sugar Creek has also been channelized. The rest of Sugar Creek has been spared from direct degradation through head cutting by exposed bedrock located immediately upstream from Hwy 146 near Brimson. The watershed is a mosaic of cropland and grassland/pasture land. Rare fish include Topeka shiner and troutperch. It is an Agricultural Non-point Source Special Area Land Treatment (AgNPS SALT) watershed and a focus area for the USFWS Partners for Fish and Wildlife program focusing on the Topeka shiner and its habitat. The watershed has been targeted for the Missouri Department of Conservation's Streams for the Future program which provides technical support and cost share money for watershed practices.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI

SWAN LAKE, 40146 acres

Target Selections: Natural Communities

Bur Oak - Swamp White Oak Mixed Bottomland Forest [W/LI]	B	Swan Lake [MO]
Central Cordgrass Wet Prairie [L/LP]	C	Swan Lake [MO]
Silver Maple - Elm - (Cottonwood) Forest [W/LI]	B	Swan Lake [MO]

Target Selections: Species

Bald Eagle [W]	B	Swan Lake [MO]

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: channelization
	Agriculture
	Agriculture: sedimentation due to agricultural practices

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This large Missouri River floodplain restoration landscape includes the Grand River and Locust Creek, an active meandering river system, and a representation of major wetland communities, including bottomland forests, wet savannas, freshwater marsh, shrub swamp, oxbows, sloughs and a natural lake. Frequent flood events result in heavy deposition of silt from channelized upstream reaches of Locust Creek. The bottomland forest consists of shellbark hickory, cottonwood and bur, pin and swamp white oaks. The wet prairie, with wet savanna borders and a mosaic of open water marshes and shrub swamp slough are underlain by alluvial silt loam soils. The cordgrass prairie and marsh are surrounded by wet bottomland forest along Locust Creek. Characteristic plants include cordgrass, cow parsnip, blue flag, arrowhead and smartweed. This area provides habitat for one of only three viable populations of the Eastern Massassauga Rattlesnake in the state. Several Missouri listed species including the flat floater, marsh wren and trout perch are found. This area has six significant bodies of water (Che-Ru Lake, Bittern Marsh, Jo Shelby Lake, Silver lake, Swan lake, and South pool), and there are high concentrations of waterfowl found in the landscape. This landscape has large areas in state and government ownership (MDC, DNR, USFWS).

Current Activities:

None

Managed Areas:

SNR	Cordgrass Bottoms DNA [MO]	Status 1	94 acres
SOU	Fountain Grove CA [MO]	Status 3	5006 acres
SNR	Locust Creek DNA [MO]	Status 1	303 acres
SNR	Pershing SP [MO]	Status 3	1910 acres
SOU	Swan Lake CA [MO]	Status 3	1456 acres
FFW	Swan Lake National Wildlife Refuge [MO]	Status 2	9510 acres
SOU	Swan Lake WA [MO]	Status 3	1456 acres
SOU	Yellow Creek CA [MO]	Status 3	63 acres
SOU	Yellow Creek DNA [MO]	Status 1	544 acres

Site Size Range for Community Viability: 1480 - 7400 acres

MISSOURI

TOMBSTONE CREEK, 19.35 miles

Target Selections: Species

Topeka Shiner [P] C

Threat Rating - Sources of Stress:

High Agriculture: sedimentation due to agricultural practices

Medium Agriculture: grazing

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This fourth order creek is a high quality prairie stream. Tombstone Creek is the largest tributary of Sugar Creek. The average gradient of the creek is 20 feet per mile. Rare fish include Topeka shiner and troutperch. The pre-settlement watershed was predominantly prairie with timber restricted to streamside areas. The current watershed is a mosaic of cropland and grassland/pasture land. Most of the land is managed by full-time farmers and is under the same government environmental programs as Sugar Creek.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

TRICE-DEDMAN WOODS, 89 acres

Target Selections: Natural Communities

White Oak Central Glaciated Woodland [E/LP] C

Threat Rating - Sources of Stress:

High Development

Agriculture

Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A mesic and dry-mesic old-growth woodland, dominated by white oaks in the 160-180 year age class. Topography is gently rolling, with a small intermittent creek running through the TNC preserve. Surrounding lands are row crop or pasture. There is a small abandoned limestone quarry west of the site. Soils are deep, moderately well-drained upland soils developed in loess and glacial till. Owned by TNC and managed by TNC and The Department of Natural Resources.

Current Activities:

Vegetation sampling, exotic species control, prescribed fire at 10 acre research plot completed by DNR.

Managed Areas:

CON Trice-Dedman Woods [MO] Status 1 60 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

TUCKER PRAIRIE, 1005 acres

Target Selections: Natural Communities

Little Bluestem Hardpan Prairie [P/LP] C

Threat Rating - Sources of Stress:

Medium Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

A flat, upland tallgrass prairie surrounded on three sides by cropland. Interstate 70 runs along the north boundary. The soil is derived from loess overlying glacial till at the southern edge of continental glaciation. It lies at the southern edge of the ecoregion. Cedar, elm and hawthorn trees have invaded the prairie along some of the small drainage thickets. The prairie is dominated by prairie grasses such as big bluestem, little bluestem and Indian grass with switch grass and slough grass occurring in the wetter areas. Owned by the University of Missouri, there is an active biological research and field station on site.

Current Activities:

None

Managed Areas:

PCE Tucker Prairie [MO] Status 1 145 acres

Site Size Range for Community Viability: 200 - 1000 acres

MISSOURI

VAN METER MARSH, 1866 acres

Target Selections: Natural Communities

Bulrush - Cattail - Burreed Shallow Marsh [W/LP]	C
White Oak - Red Oak - Sugar Maple Mesic Forest [P/LP]	B

Threat Rating - Sources of Stress:

High	In-Stream/Floodplain Alteration: levees
	Agriculture: sedimentation due to agricultural practices
	Agriculture: row crop farming

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Wetland complex (ca. 200 acres) consisting of freshwater marsh, shrub swamp, wet bottomland forest and several small calcareous seeps in the floodplain of the Missouri River. Bordered by mesic forest and dry-mesic forest. Supports several species listed in Missouri including a pond snail, star duckweed, and tufted loosestrife. Ecological management consisting of hydrologic manipulation and prescribed burns has improved the integrity of the communities. The area is owned and managed by the Missouri Department of Natural Resources.

Current Activities:

None

Managed Areas:

SNR	Van Meter Forest DNA [MO]	Status 1	118 acres
SNR	Van Meter SP [MO]	Status 3	655 acres

Site Size Range for Community Viability: 400 - 2000 acres

MISSOURI

VERONICA BAIER, 39 acres

Target Selections: Natural Communities

Limestone - Dolomite Talus [W/LI] C

Threat Rating - Sources of Stress:

High Development: urban and residential development due to increase in local population

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The limestone bluff and talus community along Bear Creek is dominated by arrow-wood, blue beech and wild hydrangea. Few contiguous forest tracts of this size exist in the surrounding fragmented region. The community is surrounded by a diverse landscape with large areas of native woodland vegetation and extensive frontage along the Cuivre River. The site also encompasses the headwater for a large permanent stream, Bear Creek. The floodplains associated with the Cuivre River and Bear Creek are moderately degraded. Upland wooded areas predominate much of the area ard have the typical assemblage of trees that characterize woodlands on well-drained soils, including white oak, black oak, slippery elm and black cherry. Some small limestone glades occur on south and west facing side slopes, these are largely overgrown and in need of management. The mesic lower slopes and cove hollows are more floristically diverse. Some of the old fields have grown into brush and a portion of the site is leased by TNC to a local farmer.

Current Activities:

Present ownership of the site; in process of selling property with conservation easement to protect bluff community.

Managed Areas:

CON Veronica Baier [MO] Status 2 39 acres

Site Size Range for Community Viability: 5 - 20 acres

WHITE BEAR CAVE, 13 acres

Target Selections: Species

Indiana Or Social Myotis [W] C

Threat Rating - Sources of Stress:

High Agriculture

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

An old rock quarry mine that has a small population of Indiana bats. It is a hibernaculum and a summer male roost site. Little information is known about the privately owned site.

Current Activities:

None

Managed Areas:

Site Size Range for Community Viability: n/a

MISSOURI and IOWA

PAWNEE PRAIRIE, 30525 acres

Target Selections: Natural Communities

Midwest Dry-mesic Prairie [W/LP] B Pawnee Prairie [MO,IA]

Threat Rating - Sources of Stress:

Medium Agriculture
Agriculture: grazing
Agriculture: row crop farming
Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This open prairie landscape on gently rolling hills represents perhaps the best landscape conservation potential on deep loamy soils in the ecoregion. Despite the degraded condition of the prairie remnants, the Dunn Ranch tract is the best quality large example in the project area and has been long recognized as a critical nucleus. It is habitat to many upland grassland birds such as greater prairie chicken, sedge wren, upland sandpiper and henslow sparrow. The Missouri Department of Conservation, Iowa Department of Natural Resources and The Nature Conservancy own property in the landscape.

Current Activities:

Intensive restoration efforts- fire, grazing, brush and weed control, de novo restoration of formerly converted lands, involving planting materials from local populations of prairie grasses and wildflowers on approx. 25% of tract. Working with Missouri Department of Conservation on on-site nursery. Animal restoration includes prairie chickens and bison. On-site staff recently hired.

Managed Areas:

CON	Dunn Ranch [MO]	Status 1	2281 acres
CON	Pawnee Prairie [MO]	Status 1	422 acres
SOU	Pawnee Prairie CA [MO]	Status 3	312 acres
SNR	Ringgold Wildlife Area [IA]	Status 2	1200 acres

Site Size Range for Community Viability: 200 - 1000 acres

NEBRASKA

CORNHUSKER SCOUT RESERVATION, 836 acres

Target Selections: Natural Communities

Eastern Great Plains Big Bluestem Loess Prairie [E/MX] B

Threat Rating - Sources of Stress:

High Biological Sources: exotic species

Medium Agriculture: haying

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Scout Camp occupies rolling hills and draws. Most of the site is upland tallgrass prairie that is hayed. Several of the larger draws and a small stream valley are occupied by oak forests. The site is located in a landscape of mixed cropland and pasture land. The Boys Scouts have a building site on the property which includes lodges, a swimming pool, and managers house.

Current Activities:

TNC staff has talked with the Scout Camp staff regarding a conservation easement or management agreement.

Managed Areas:

Site Size Range for Community Viability: 2000 - 10000 acres

GIFFORD POINT, 2300 acres

Target Selections: Natural Communities

Cottonwood - Black Willow Forest [W/LI] C

Threat Rating - Sources of Stress:

Very High In-Stream/Floodplain Alteration: channelization

Biological Sources: deer browsing

Biodiversity Rating: Low **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Gifford Point occupies a bend in the channelized Missouri River just south of Omaha. The majority of Gifford Point is floodplain forest dominated by cottonwoods and young green ash. Most of this is fairly young forest which has developed since channelization of the river. The site also contains about 400 acres of cropland. The site is used as an educational farm by the city of Omaha.

Current Activities:

TNC has no involvement with Gifford Point.

Managed Areas:

SCC Gifford Point [NE] Status 2 1700 acres

Site Size Range for Community Viability: 640 - 3200 acres

NEBRASKA

KREBS PRAIRIE, 15 acres

Target Selections: Species

Western Prairie Fringed Orchid [W] B

Threat Rating - Sources of Stress:

Medium Agriculture: haying
Biological Sources: exotic species

Biodiversity Rating: Low **Threat:**

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

Tallgrass prairie on the bluff tops overlooking the Platte River. This prairie is bordered by native wooded draws on all but the north side. The owners house borders the site on the north. Scattered housing is located throughout the general area of the prairie.

Current Activities:

The site owners are very conservation orientated. The site is on the Nebraska Natural Areas Register.

Managed Areas:

Site Size Range for Community Viability: n/a

NEBRASKA

LANCASTER COUNTY SALT MARSHES, 8320 acres

Target Selections: Natural Communities

Central Plains Spikegrass Saline Prairie [E/LP]	B	Jack Sinn WMA [NE]
Central Plains Spikegrass Saline Prairie [E/LP]	C	Arbor Lake WMA [NE]
Central Plains Spikegrass Saline Prairie [E/LP]	A	Little Salt Marsh Preserve [NE]
Eastern Great Plains Saline Marsh [W/SP]	B	Jack Sinn WMA [NE]
Eastern Great Plains Saline Marsh [W/SP]	B	Arbor Lake WMA [NE]
Eastern Great Plains Saline Marsh [W/SP]	A	Little Salt Marsh Preserve [NE]

Target Selections: Species

A Tiger Beetle [E]	C	Jack Sinn WMA [NE]
A Tiger Beetle [E]	B	Arbor Lake WMA [NE]
A Tiger Beetle [E]	A	Little Salt Marsh Preserve [NE]

Threat Rating - Sources of Stress:

Very High	Development: urban and residential development due to increase in local population
High	In-Stream/Floodplain Alteration: channelization
	Groundwater Withdrawl
Medium	Agriculture: grazing
	Biological Sources: exotic species

Biodiversity Rating: High **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

The Lancaster County Saltmarshes occur in the floodplains of Salt Creek, Little Salt Creek, and Rock Creek. These streams are on the outskirts of Lincoln. The majority of the landscape surrounding the remaining marshes is in cropland. Residential development is imposing on the marshes in areas. The remaining marshes are consists of a mosaic of saline meadows, salt flats, and shallow water areas.

Current Activities:

TNC is owner of the Little Salt Fork Marsh. They are actively pursuing additions to this preserve.

Managed Areas:

SNR	Arbor Lake WMA [NE]	Status 2	75 acres
SNR	Jack Sinn Memorial WMA [NE]	Status 2	1025 acres
CON	Little Salt Fork Marsh [NE]	Status 1	277 acres

Site Size Range for Community Viability: 630 - 3120 acres

NEBRASKA

LOWER PLATTE, 156.43 miles

Target Selections: Natural Communities

Riverine Sand Flats [W/LI]	B

Target Selections: Species

Interior Least Tern [P]	B
Pallid Sturgeon [W]	C
Piping Plover [P]	B

Threat Rating - Sources of Stress:

Very High	In-Stream/Floodplain Alteration: dams
	Groundwater Withdrawl
	Development: urban and residential development without population growth
High	Agriculture: increased nutrient input due to agricultural practices
Medium	Development: sewage disposal
	Recreation: boating

Biodiversity Rating: Medium **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

The Lower Platte River floodplain is several miles wide. The majority of the floodplain is occupied by cropland. Remnant wet meadows still occur in areas, though most have been degraded. Floodplain woodlands border the river in many areas. The channel of the Platte is wide and shallow with many sandbars. Recreational development (cabins) is common along many areas of the river.

Current Activities:

TNC is not currently active on the Lower Platte.

Managed Areas:

Site Size Range for Community Viability: 5 - 20 acres

NEBRASKA

NINE-MILE PRAIRIE, 250 acres

Target Selections: Species

Western Prairie Fringed Orchid [W] B

Threat Rating - Sources of Stress:

High	Management
Medium	Biological Sources: exotic species

Biodiversity Rating: Low **Threat:**

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This tallgrass prairie occurs on rolling loess hills. It contains many woody ravines. It's bordered by cropland and grazed pasture, except on the north where it's bordered by an old munitions plant.

Current Activities:

The site is owned by The University of Nebraska Foundation and is protected as a conservation and research site. The site is managed primarily for research purposes and its biological diversity has suffered because of lack of active management.

Managed Areas:

Site Size Range for Community Viability: n/a

OTOE CREEK PRAIRIE, 145 acres

Target Selections: Natural Communities

Central Wet-mesic Tallgrass Prairie [L/LP] B

Threat Rating - Sources of Stress:

Very High	Groundwater Withdrawl
	Development: second home development
	Agriculture: pesticide application
High	Agriculture: haying
	Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** High

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This site occurs in the floodplain of the Platte River. The 120 acre wet-mesic prairie is bordered on one site by a road and grazed native meadow on adjacent sites.

Current Activities:

TNC has approached the one owner of property at the site regarding conservation actions, but currently no action is being pursued by TNC.

Managed Areas:

Site Size Range for Community Viability: 200 - 1000 acres

NEBRASKA

PAWNEE COUNTY GRASSLANDS, 186216 acres

Target Selections: Natural Communities

Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	C	Pawnee County Grasslands [NE]

Target Selections: Species

Regal Fritillary [W]	A	Pawnee County Grasslands [NE]

Threat Rating - Sources of Stress:

Very High	Agriculture: grazing
	Agriculture: row crop farming
High	Agriculture: pesticide application
	Agriculture: haying
	Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

Pawnee County is a mosaic of cropland, reseeded warm and cool-season grasslands and grazed and hayed native prairie. Most of the County is not prime cropland because of the glacial till soils.

Current Activities:

TNC is not currently active in Pawnee County.

Managed Areas:

SNR	Bowwood WMA [NE]	Status 2	319 acres
SNR	Burchard Lake WMA [NE]	Status 2	559 acres
SNR	Lores Branch WMA [NE]	Status 2	131 acres
SNR	Mayberry WMA [NE]	Status 2	200 acres
SNR	Pawnee Prairie WMA [NE]	Status 2	1116 acres
SNR	Prairie Knoll WMA [NE]	Status 2	120 acres
SNR	Taylor's Branch WMA [NE]	Status 2	240 acres

Site Size Range for Community Viability: 2000 - 10000 acres

NEBRASKA

PONCA STATE PARK, 865 acres

Target Selections: Natural Communities

Basswood - Bur Oak Forest [L/LP] B

Threat Rating - Sources of Stress:

Very High Development: second home development

Medium Recreation: general purpose recreational use (includes hiking, biking, skiing, camping, etc.)

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority II

Physical Description:

Ponca State Park occurs on the wooded bluffs of the Missouri River. The bluff woodland are dominated by bur oak and basswood. A recent addition to the park includes about 100 acres of floodplain cropland that may be restored to native prairie. Land outside the park, but still in conservation area, is a mosaic of woodlands, cropland and degraded native prairie.

Current Activities:

TNC is currently not active in this area.

Managed Areas:

SNR Ponca SP [NE] Status 3 849 acres

Site Size Range for Community Viability: 200 - 1000 acres

REIGLE MEADOW, 100 acres

Target Selections: Species

Western Prairie Fringed Orchid [W] B

Threat Rating - Sources of Stress:

Very High Agriculture: row crop farming

High Agriculture: pesticide application

Biological Sources: exotic species

Biodiversity Rating: Low **Threat:**

Site Characterization: Functional Sites including aquatic or terrestrial sites **Staging:** Priority II

Physical Description:

This meadow is a combination of wetter swales and somewhat drier ridges. Prairie cordgrass, bluejoint and sedge dominate the site. Roads border the meadow on the north and west. Railroad tracks along the east.

Current Activities:

No conservation activities are presently on going at the site. Owner now hays the prairie.

Managed Areas:

Site Size Range for Community Viability: n/a

NEBRASKA

UNCHANNELIZED MISSOURI, 78.61 miles

Target Selections: Natural Communities

Riverine Sand Flats [W/LI]	B

Target Selections: Species

Interior Least Tern [P]	B
Lake Sturgeon [W]	C
Pallid Sturgeon [W]	C
Piping Plover [P]	B
Sicklefin Chub [L]	C
Sturgeon Chub [W]	B

Threat Rating - Sources of Stress:

Very High	In-Stream/Floodplain Alteration: dams
	Development: second home development
	Biological Sources: exotic species
Medium	Agriculture: increased nutrient input due to agricultural practices
	Recreation: boating

Biodiversity Rating: High **Threat:** High

Site Characterization: Functional Sites including aquatic and terrestrial sites **Staging:** Priority I

Physical Description:

The unchannelized Missouri occupies the stretch of the river below Gavins Point Dam to Sioux City. Much of the river's floodplain is in cropland in this reach. Floodplain woodlands dominated by cottonwoods are common. The river channel itself is wide and meandering with wooded islands and sandbars. Occasional marshes are found along the channel. Recreational development (cabins) are common along this stretch of the river.

Current Activities:

TNC is currently not active in this area.

Managed Areas:

Site Size Range for Community Viability: 5 - 20 acres

NEBRASKA

WINNEBAGO / OMAHA WOODLAND, 28504 acres

Target Selections: Natural Communities

Basswood - Bur Oak Forest [L/LP]	B	Winnebago / Omaha Woodland [NE]
Basswood - Bur Oak Forest [L/LP]	C	Basswood Ridge WMA [NE]

Threat Rating - Sources of Stress:

Medium Agriculture: grazing
Resource Extraction: forestry
Biological Sources: exotic species

Biodiversity Rating: Low **Threat:** Low

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

The Winnebago /Omaha Reservation occupies the floodplain and bluffs of the channelized Missouri River. The remaining floodplain forest is cottonwood dominated. Reed canary grass infested wetlands are interspersed with the woodlands along with more natural wetlands. The bluffs support bur oak and basswood dominated forests. The land within the landscape is both under the ownership of the tribes and private individuals. Cropland is interspersed with the forest in areas. Houses are also scattered through the area. Roads within the landscape are very primitive in areas.

Current Activities:

TNC is currently not active in this area.

Managed Areas:

SNR	Basswood Ridge WMA [NE]	Status 2	222 acres

Site Size Range for Community Viability: 400 - 2000 acres

NEBRASKA and KANSAS

MISSOURI RIVER BLUFFLANDS, 31430 acres

Target Selections: Natural Communities

Eastern Great Plains Bur Oak Woodland [E/LP]	B	Rulo Bluff / Mosquito Bluff [NE]
White Oak - Hickory Forest [L/LP]	B	Indian Caves SP [NE]
White Oak - Hickory Forest [L/LP]	B	Rulo Bluff / Mosquito Bluff [NE]

Threat Rating - Sources of Stress:

High	Agriculture: grazing
	Resource Extraction: forestry
Medium	Development: second home development
	Biological Sources: exotic species

Biodiversity Rating: Medium **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This site occupies the floodplain and bluffs of the channelized Missouri River in far southeastern Nebraska and northeastern Kansas. The large majority of the floodplain is in cropland. The bluffs are a mosaic of woodland, small prairie remnants and cropland.

Current Activities:

TNC owns and manages the Rulo Bluffs Preserve.

Managed Areas:

SOU	Deroin Bend CA [MO]	Status 3	0 acres
SNR	Indian Cave SP [NE]	Status 3	2945 acres
CON	Rulo Bluffs Preserve [NE]	Status 1	444 acres

Site Size Range for Community Viability: 600 - 3000 acres

NEBRASKA and KANSAS

ROSE CREEK PRAIRIES, 96599 acres

Target Selections: Natural Communities

Dakota Sandstone Tallgrass Prairie [P/MX]	B	Steele City Canyon [NE]
Eastern Great Plains Bur Oak Woodland [E/LP]	C	Steele City Canyon [NE]
Great Plains Fen [L/SP]	B	Steele City Canyon [NE]
Midwest Sandstone Dry Cliff [W/LI]	C	Steele City Canyon [NE]

Threat Rating - Sources of Stress:

Very High	Agriculture: row crop farming
High	Agriculture: pesticide application
	Agriculture: grazing

Biodiversity Rating: Medium **Threat:** Low

Site Characterization: Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This site occupies somewhat rough topography on the bluffs and breaks of the Little Blue River and Rose Creek. Dakota Sandstone is exposed in the area and soils are generally shallow overlying the sandstone. Also many sandstone outcrops in canyons. Many of the uplands are covered with somewhat degraded tallgrass prairie, interspersed with cropland. Many of the canyons and draws are bur oak dominated, but most have been heavily invaded by cedars.

Current Activities:

TNC is currently not active in the area.

Managed Areas:

SNR	Rock Creek Station SHP [NE]	Status 3	357 acres
SNR	Rock Creek Station SRA [NE]	Status 3	39 acres
SNR	Rock Glen WMA [NE]	Status 2	725 acres

Site Size Range for Community Viability: 406 - 2024 acres

NEBRASKA and SOUTH DAKOTA

BAZILE CREEK UPLANDS, 171321 acres

Target Selections: Natural Communities

Basswood - Bur Oak Forest [L/LP]	B	Bazile Creek Uplands [NE,SD]
Eastern Great Plains Big Bluestem Loess Prairie [E/MX]	C	Bazile Creek Uplands [NE,SD]
Eastern Great Plains Bur Oak Woodland [E/LP]	C	Bazile Creek Uplands [NE,SD]

Threat Rating - Sources of Stress:

High	Development: second home development
	Agriculture: grazing
	Agriculture: row crop farming
	Biological Sources: exotic species
Medium	Agriculture: haying

Biodiversity Rating: Low **Threat:** Medium

Site Characterization: Potential Functional Landscapes including aquatic or terrestrial sites **Staging:** Priority I

Physical Description:

This site borders the bluffs and breaks of Bazile Creek and the Missouri River and portions of the floodplains. The Missouri River along this stretch is now part of Lewis and Clark Lake. The bluffs here are steep most were naturally prairie covered with woodlands on steep north- and east-facing slopes and in the floodplains. Cropland and old cropfields are fairly common. Much of the remaining native prairie has been encroached with by redcedars and exotic cool-season grasses. Woodlands have become more extensive in recent years because of the spread of redcedar. Most of the natural woodlands are bur oak dominated, second growth stands which are now infested with redcedar. Floodplain along Bazile Creek are dominated by cottonwoods.

Current Activities:

No current TNC activity.

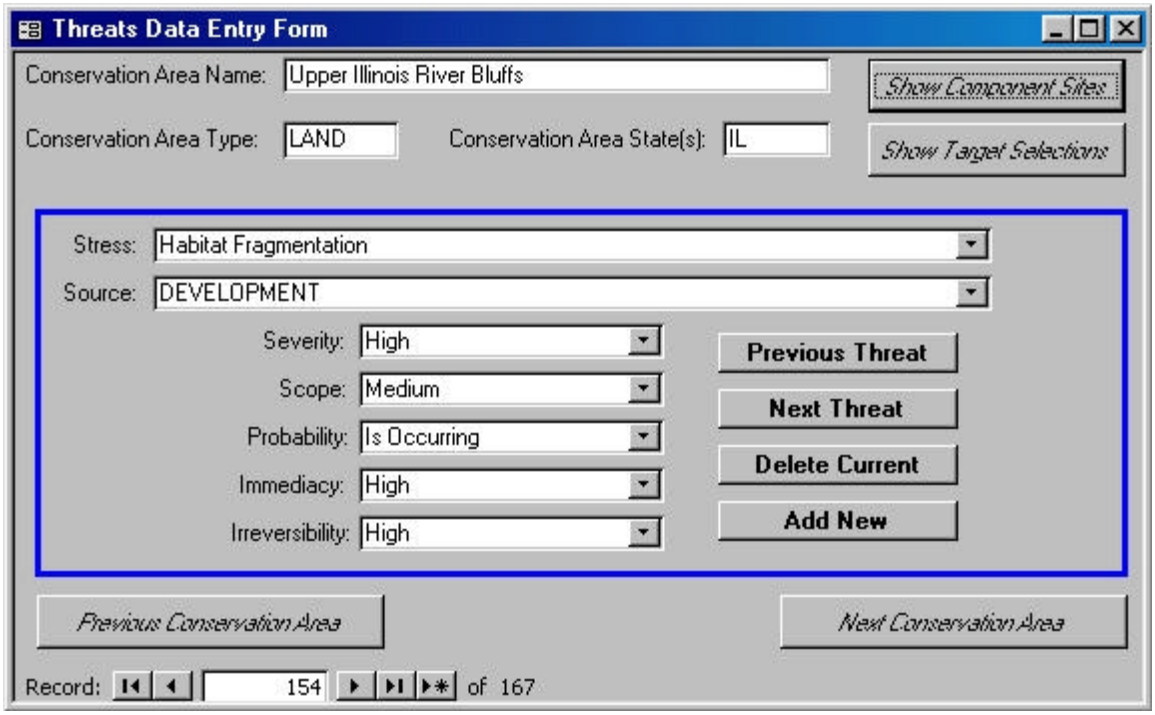
Managed Areas:

SNR	Bazile Creek WMA [NE]	Status 2	3857 acres
SNR	Ferry Landing SRA [NE]	Status 3	28 acres
SNR	Lewis and Clark Lake SRA [NE]	Status 3	2017 acres

Site Size Range for Community Viability: 2400 - 12000 acres

Appendix F: Threats assessment database

The Central Tallgrass Prairie ecoregional planning team conducted a threats assessment of conservation areas using methodology originally developed by the Great Lakes ecoregional planning team. Because of the complexity of the overall threats assessment process and the realization that a hard-copy form would be difficult to create, the team decided to collect information using an electronic form built with a Microsoft Access database. Several benefits were realized by using this automated approach. First, the database was quick and easy to distribute via electronic mail to people responsible for conducting the assessment. Second, use of the database ensured respondents conduct a comprehensive threats assessment of all conservation areas. Third, the electronic form required users to answer questions using a standard list of responses. Finally, the approach eliminated errors often associated with transposing information from hard-copy forms and saved significant data entry time.



An example of the threats assessment data entry form. Users could navigate between sites, view information on target selections and nested sites, and answer assessment questions by selecting choices from drop-down menus.

Appendix G: Managed Areas Database

The managed areas in this appendix are sorted by state and then by a land owner classification scheme developed at the Nature Conservancy's Midwestern Resource Office. Within each owner category the managed areas are organized by name.

Management level denotes the relative degree of management commitment to maintainance of biodiversity within each managed area. The GAP classification scheme with the following defintions was used for this purpose:

Status 1 = An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, intensity, and legacy) are allowed to proceed without interference or are mimicked through management.

Status 2 = An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance.

Status 3 = An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type (e.g., logging) or localized intense type (e.g., mining). It also confers protection to federally listed endangered and threatened species throughout the area.

Status 4 = There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types. The area generally allows conversion to unnatural land cover throughout.

Size in acres refers to the amount of the managed area captured within currently defined conservation area boundaries. This figure may or may not represent the total size of the managed area.

STATE

Owner Category

Managed Area Name	Management Level	Size in Acres
ILLINOIS		
Federal - Army Corps of Engineers		
Calhoun County (Rip Rap Landing)	Status 2	1172
Pool No. 16	Status 3	8287
Pool No. 17	Status 3	5031
Pool No. 18	Status 3	1719
Pool No. 21	Status 3	3113
Pool No. 22	Status 3	4334
Pool No. 25 (Inc. Reds Landing and Batchtown WFMA)	Status 2	5153
Pool No. 26 - Calhoun Point	Status 3	2312
Pool No. 26 - Fuller Lake	Status 3	1524
Pool No. 26 - Glades Hembold	Status 3	1144
Pool No. 26 - Godar Diamond	Status 3	2802
Pool No. 26 - Stump Lake	Status 3	4367
Federal - Department of Defense		
Savanna Army Depot	Status 2	13318
Federal - Fish and Wildlife Service		
Cameron-Billsbach Unit	Status 2	1638
Chautauqua National Wildlife Refuge	Status 2	4702
Emiquon NWR - approved boundary	Status 4	1755
Emiquon NWR - current holdings	Status 2	110
Mark Twain NWR - Calhoun Division	Status 2	1882

Mark Twain NWR - Gardner Division	Status 2	4995
Mark Twain NWR - Gilbert Lake Division	Status 2	788
Mark Twain NWR - Keithsburg Division	Status 2	1424
Meredosia National Wildlife Refuge	Status 2	6260
Upper Mississippi River Fish & Wildlife Refuge	Status 2	912
Upper Mississippi River Fish & Wildlife Refuge	Status 2	4585
Federal - Forest Service		
Joliet Arsenal	Status 2	249
Local - City or County		
Aroma Park Forest Preserve	Status 3	137
Braidwood Dunes and Savanna	Status 1	245
Carpenter Park	Status 1	341
Detweiller Woods	Status 1	289
Forest Park	Status 1	379
Forest Park South	Status 1	130
John M. Olin	Status 1	6
Myer Woods	Status 1	20
Peoria Wilds	Status 3	3633
Robinson Park Hill Prairies	Status 1	137
Sand Ridge Savannah	Status 1	115
Private - Corporation		
Calamus Lake	Status 1	129
Caterpillar Woods	Status 4	522
Private - Individual		
Des Plaines	Status 4	4485
Meredosia Hill Prairie	Status 4	20
Mississippi Sanctuary	Status 1	38
Revis Hill Prairie	Status 4	
Slick-Crawl Cave	Status 4	50
Stubblefield Woodlots	Status 1	15
Thaddeus Stubblefield Grove	Status 1	30
Wier Hill Prairie	Status 1	7
Witter's Bobtown Hill Prairie	Status 1	6
Private - Organization - Conservation		
Burr Oak Groves	Status 1	50
Cedar Glen	Status 1	190
Chinquapin Bluffs	Status 1	719
Clarksville Island	Status 1	42
Hanover Bluff	Status 1	389
Peoria Wilds	Status 1	13
Senachwine Lake	Status 1	1200

Spunky Bottoms	Status 1	1156
Twin Culvert Cave	Status 1	5
Private - Organization - Other		
Clarksville Island	Status 2	818
Oblate Father's Woods	Status 1	19
Pin Oak Lakes	Status 4	
State/Province - Natural Resources		
Anderson Lake	Status 2	2084
Banner Marsh	Status 3	32
Beaver Dam	Status 3	75
Big River	Status 3	484
Burton Cave	Status 1	82
Delabar	Status 3	3
Donnelley	Status 2	532
Funks Grove	Status 1	11
Goose Lake Prairie	Status 2	2504
Grubb Hollow Prairie	Status 1	45
Hennepin Canal Parkway	Status 3	257
Illinois & Michigan Canal	Status 3	50
Illinois River	Status 2	16
Iroquois County	Status 2	2513
Kankakee River	Status 3	4216
Lake Depue	Status 2	1900
Lee County (Green River)	Status 3	2201
Long Branch Sand Prairie	Status 1	92
Louis H. Barkhausen	Status 2	1016
Manito Prairie	Status 1	25
Marshall County	Status 3	3189
Matanzas Prairie	Status 1	38
Miller-Anderson Woods Nature Preserve	Status 1	269
Mississippi River Sand Hills	Status 1	53
Momence Wetlands	Status 1	50
Park Memorial Woods Nature Preserve	Status 1	84
Pecumsaugan Creek/Blackball Mine	Status 1	133
Pere Marquette	Status 2	8273
Revis Hill Prairie Nature Preserve	Status 1	64
Rice Lake	Status 3	4866
Sand Prairie-Scrub Oak	Status 1	1376
Sand Ridge	Status 3	14
Sand Ridge	Status 2	6983
Sanganois	Status 3	8809
Shelbyville Lake	Status 2	4

Siloam Springs	Status 3	3475
Site M	Status 2	174
Sparland - Marshall County	Status 3	1079
Spring Branch - Marshall County	Status 3	695
Starved Rock	Status 3	2173
Weinberg-King	Status 3	756
Wilmington Shrub Prairie	Status 1	157
Woodford County	Status 3	2668

State/Province - University

Robert Allerton Park	Status 3	3052

INDIANA

Private - Individual

Lowe Prairie	Status 3	80

Private - Organization - Conservation

Conrad Station	Status 1	400
Kankakee Fen Nature Preserve	Status 1	2
Kankakee Sands Restoration	Status 1	7209
Nipsco Savanna Nature Preserve	Status 2	992
Ober Savanna	Status 1	20
Ober Savanna Nature Preserve	Status 1	64
Prairie Border	Status 1	150
Rix Wildlife Sanctuary NP	Status 1	39

State/Province - Natural Resources

Barnes (Bill) Nature Preserve East	Status 1	67
Barnes (Bill) Nature Preserve Northeast	Status 1	47
Barnes (Bill) Nature Preserve Southeast	Status 1	57
Barnes (Bill) Nature Preserve West	Status 1	37
Beaver Lake Nature Preserve	Status 1	671
Conrad Savanna State Nature Preserve	Status 1	460
Jasper-Pulaski Fish and Wildlife Area	Status 3	6538
Jasper-Pulaski State Nursery	Status 3	196
Prudential Gamebird Habitat Area	Status 3	14
Stoutsburg (Sandhills) Savanna Nature Preserve	Status 1	248
Tefft Savanna Nature Preserve Central	Status 1	404
Tefft Savanna Nature Preserve Northeast	Status 1	79
Tippecanoe River Nature Preserve	Status 1	180
Tippecanoe River State Park	Status 2	2463
Willow Slough Fish and Wildlife Area	Status 3	9787

IOWA

Local - City or County

Baldwin Marsh	Status 1	15
Buffalo Shores Access	Status 3	29
Camp Miss-Elk-Ton	Status 3	39
Cedar Bluffs Natural Area	Status 1	225
Cedar Bluffs Recreation Area	Status 3	176
Chris Larson Park	Status 3	3
Dinesen Prairie Wildlife Area	Status 2	20
Dodge Access	Status 3	159
Edgewater Beach	Status 3	0
Five Ridge Prairie SP	Status 1	846
Gedney Lake	Status 3	18
Manikowski Prairie SP	Status 1	17
McKeown Bridge River Access	Status 3	7
Mile Hill Recreation Area	Status 2	36
Pawnee Recreation Area	Status 3	9
Pine Valley Nature Area	Status 3	628
Rolling Thunder (non-IAFO)	Status 1	284
Saulsbury Bridge Rec. Area	Status 3	675
Tama Beach	Status 3	2
Warren County Conservation Board	Status 3	160

Private - Organization - Conservation

Broken Kettle Grasslands	Status 1	1448
Knapp Prairie	Status 1	25
Medora Prairie	Status 1	103
Red Cedar Woodland	Status 1	34
Sioux City Prairie	Status 1	153
Swamp White Oak Savanna	Status 1	372

State/Province - Natural Resources

Algific Talus Slope WMA	Status 1	31
Blackhawk Bottoms WMA	Status 2	472
Deer Creek Lake	Status 3	1008
Fairport Campground	Status 3	61
Forneys Lake W.A.	Status 2	68
Goose Lake Wildlife Area	Status 1	4
Hooper Wildlife Area	Status 2	329
Lake Ahquabi State Park	Status 2	785
Lake Odessa	Status 2	13
Little Sioux Unit	Status 2	1687
Loess Hills WMA	Status 2	2704
Mondamin Unit	Status 2	948

Mount Talbot SP	Status 1	42
Pisgah Unit	Status 2	1853
Preparation Canyon State Park	Status 2	340
Preparation Canyon Unit	Status 1	3062
Red Cedar Wildlife Area	Status 2	565
Ringgold Wildlife Area	Status 2	1200
Sheeder Prairie SP	Status 1	23
Smith Area	Status 2	197
Stone State Park	Status 2	1025
Turin Loess Hills SP	Status 1	119
Waubonsie State Park	Status 2	1224
Wiese Slough	Status 2	758
Wildcat Den State Park	Status 2	303

KANSAS

Federal - Army Corps of Engineers

Carnahan Creek	Status 4	1020
Fancy Creek State Park	Status 4	394
Randolph State Park	Status 4	233
River Pond State Park	Status 4	28
Spillway State Park	Status 4	191
Tuttle Creek Lake	Status 4	2298
Tuttle Creek Lake/Wildlife Area	Status 4	3670
Tuttle Creek Lake/Wildlife Area	Status 4	9615

Federal - Department of Defense

Ft. Leavenworth Military Reservation	Status 4	8656

Local - City or County

Wyandotte County Park	Status 4	1900

Private - Corporation

Jeffery Energy Center	Status 4	9678

State/Province - Natural Resources

Pottawatomie County State Lake No. 1	Status 4	171
Pottawatomie County State Lake No. 2	Status 4	190
Shawnee County State Lake	Status 4	496

State/Province - University

KS Ecol. Reserves/Fitch Natural Hist. Res.	Status 1	1
KS Ecol. Reserves/Rockefeller Exp. Tract	Status 1	5
Rockefeller Native Prairie	Status 1	10

MISSOURI

Federal - Army Corps of Engineers

Long Branch Lake	Status 3	375

Mark Twain Lake USACOE	Status 3	676
Prairie Marsh Restoration Area	Status 2	249
West Alton Conservation Area	Status 3	157
Westport Island DNA	Status 1	514
Federal - Fish and Wildlife Service		
Clarence Cannon National Wildlife Refuge	Status 2	647
Squaw Creek National Wildlife Refuge	Status 2	1322
Swan Lake National Wildlife Refuge	Status 2	9510
Private - College		
Tucker Prairie	Status 1	145
Private - Individual		
Morris Prairie	Status 4	76
Private - Organization - Conservation		
Accola Woods	Status 1	67
Bannett Spring Savanna	Status 1	30
Dunn Ranch	Status 1	2281
McCormack (Jamerson C) CA	Status 3	123
Pawnee Prairie	Status 1	422
Trice-Dedman Woods	Status 1	60
Veronica Baier	Status 2	39
State/Province - Natural Resources		
Battle of Athens SHS	Status 3	98
Big Lake SP	Status 3	274
Cordgrass Bottoms DNA	Status 1	94
Crowder SP	Status 3	1683
Cuivre River SP	Status 2	4418
Des Moines River Ravines DNA	Status 1	48
George A. Hamilton Forest DNA	Status 1	40
Locust Creek DNA	Status 1	303
Long Branch SP	Status 3	465
Pershing SP	Status 3	1910
Pickeral Weed Pond DNA	Status 1	8
Thousand Hills SP	Status 3	3160
Van Meter Forest DNA	Status 1	118
Van Meter SP	Status 3	655
State/Province - Other		
Atlanta CA	Status 3	363
Big Creek CA	Status 3	677
Borrow Pit CA	Status 3	39
Brickyard Hill CA	Status 3	2007
Brickyard Hill Loess Mound DNA	Status 1	80

Cuivre Island CA	Status 3	1603
Deer Ridge CA	Status 3	320
Deroin Bend CA	Status 3	0
Dresser Island Access	Status 3	2
Fabius Chute Access	Status 3	33
Fountain Grove CA	Status 3	5006
Foxglove CA	Status 3	55
Hamburg Ferry Access	Status 3	25
Helton (The Wayne) Mem WA	Status 3	2490
Helton Prairie CA	Status 2	2490
Helton Prairie DNA	Status 1	33
Leach (B K) Mem CA	Status 3	1026
Little Bean Marsh CA	Status 3	201
Little Bean Marsh DNA	Status 1	221
Little Tarkio Prairie	Status 1	68
Logan (William R) CA	Status 3	1703
Lowry Marsh DNA	Status 1	110
McCormack Loess Mounds DNA	Status 1	116
Monkey Mountain CA	Status 3	730
Norton Woods Access	Status 3	2
Pawnee Prairie CA	Status 3	312
Prairie Slough CA	Status 3	203
Prairie Slough DNA	Status 1	356
Rebel's Cove CA	Status 3	1632
Riverbreaks CA	Status 3	2229
Sandy Island CA	Status 3	313
Soulard Access	Status 3	8
Star School Hill Prairie CA	Status 3	136
Starschool Hill Prairie DNA	Status 1	79
Steyermark (Julian) Woods CA	Status 3	28
Sugar Creek CA	Status 3	2529
Swan Lake CA	Status 3	1456
Swan Lake WA	Status 3	1456
Tarkio Prairie CA	Status 3	475
Tarkio Prairie DNA	Status 1	57
Upper Mississippi CA	Status 3	5490
Upper Mississippi CA	Status 3	157
Upper Mississippi CA	Status 3	2138
Vonaventure Mem Forest & WA	Status 3	194
Vonaventure Mem Forest CA	Status 3	194
Yellow Creek CA	Status 3	63
Yellow Creek DNA	Status 1	544

NEBRASKA

Local - City or County

Gifford Point	Status 2	1700

Private - Organization - Conservation

Little Salt Fork Marsh	Status 1	277
Rulo Bluffs Preserve	Status 1	444

State/Province - Natural Resources

Arbor Lake WMA	Status 2	75
Basswood Ridge WMA	Status 2	222
Bazile Creek WMA	Status 2	3857
Bowwood WMA	Status 2	319
Burchard Lake WMA	Status 2	559
Ferry Landing SRA	Status 3	28
Indian Cave SP	Status 3	2945
Jack Sinn Memorial WMA	Status 2	1025
Lewis and Clark Lake SRA	Status 3	2017
Lores Branch WMA	Status 2	131
Mayberry WMA	Status 2	200
Pawnee Prairie WMA	Status 2	1116
Ponca SP	Status 3	849
Prairie Knoll WMA	Status 2	120
Rock Creek Station SHP	Status 3	357
Rock Creek Station SRA	Status 3	39
Rock Glen WMA	Status 2	725
Taylor's Branch WMA	Status 2	240

Appendix H: Site Prioritization Information

The conservation areas in this appendix are organized by priority level, then state, and within state by name.

Priority I Sites

Illinois

- Green River CA
- Illinois River Floodplain Complex
- Kankakee River
- Mason County Sands
- Pike County Bluffs
- Prairie Parklands Macrosite
- Sand Ridge Macrosite
- Savanna Army Depot
- Starved Rock Complex
- Upper Illinois River Bluffs

Illinois and Iowa

- Upper Mississippi River / Rock Island Complex

Illinois and Missouri

- Calhoun / Alton Bluff Complex
- Hannibal Bottoms

Indiana

- Tefft Savanna Macrosite
- Tippecanoe River

Indiana and Illinois

- Kankakee Sands Macrosite

Iowa

- Lytle Creek
- Wapsipinicon River

Iowa and Missouri

- Loess Hills

Kansas

- Big Soldier Creek
- Dutch Creek
- Flint Hills Tallgrass Prairie
- Kansas River
- North Elm Creek
- Straight Creek

Missouri

- Green Hills
- Lincoln Hills
- Swan Lake

Missouri and Iowa

- Pawnee Prairie

Nebraska

- Lancaster County Salt Marshes
- Pawnee County Grasslands
- Unchannelized Missouri
- Winnebago / Omaha Woodland

Nebraska and Kansas

- Missouri River Blufflands
- Rose Creek Prairies

Nebraska and South Dakota

- Bazile Creek Uplands

Priority II Sites

Illinois

- Aroma Park Forest Preserve
- Black Ball Mines
- Bur Oak Groves
- Burton Cave
- Calamus Lake
- Carpenter Park
- Caterpillar Woods
- Chinquapin Bluffs
- Coneflower Hill Prairie
- Cox Creek Hill Prairie Complex
- Funks Grove
- Hanover Bluff
- Illinois River - Kankakee
- Illinois River - LaGrange Reach
- Illinois River - Peoria Lake
- Kankakee River Floodplain Complex
- Kilbuck Creek
- Little Vermillion River
- Lower Fox River
- Mackinaw River
- Manito Prairie
- Mazon River
- Meredosia Hill Prairie
- Mississippi River
- Mississippi River (545-550)
- Momence Wetlands
- North Fork Vermillion River
- Otter Creek
- Panther Creek
- Pin Oak Lakes
- Polk Township Prairies
- Revis Hill Prairie
- Robert Allerton Park
- Salt Creek
- Sangamon River
- Siloam Springs
- Slick-Crawl Cave
- Spring Bay Fen
- Spring Lake
- Sugar Creek - Illinois
- Upper Embarras River
- Vermilion River
- Walnut Creek
- Weinberg-King Natural Area
- Witter's Bobtown Hill Prairie

Illinois and Missouri

- Cedar Glen

Indiana

- Kankakee Fen
- Lowe Prairie
- Ober Sand Savanna
- River View Hill Prairie
- Tippecanoe State Park

Iowa

- Baldwin Marsh
- Cedar Bluffs
- Cedar River
- Chequest Creek
- Des Moines River
- Dinesen Prairie State Preserve
- East Nishnabotna River
- East Nodaway River
- Elk River
- Farm Creek
- Flaherty Prairie / Little Prairie Complex
- Kellerton
- Lake Ahquabi / Hooper
- Lick Creek
- Long Creek - Decatur
- Long Creek - Louisa
- Lower Cedar River
- Manikowski Prairie
- Mills County No. 3
- Pike Run
- Pine Creek
- Powell Prairie
- Rolling Thunder
- Sheeder Prairie
- Thompson River
- West Nishnabotna River
- Woodside Prairie

Kansas

- Fort Leavenworth
- French Creek Prairie
- Rockefeller Prairie
- Wyandotte County Park

Missouri

- Accola Woods
- Ben Watts Knob
- Big Lake SP
- Chevalier Bluff Springs
- Crowder State Park
- Deer Ridge CA
- Des Moines River Ravines NA
- East Tarkio Prairie
- Foxglove Prairie CA
- Goose Pond
- Grassy Lake / Maple Lake
- Grindstone Creek
- Helton Prairie
- Hickory Creek
- Little Bean Marsh
- Little Tarkio Prairie
- Locust Creek
- Long Branch SP
- Loutre River
- Lowry Marsh
- Mackenzie Fen
- Middle Fabius
- Morris Prairie
- Old Catholic Church Cemetery Prairie
- Rebel's Cove CA
- Riverlands
- Salt Fork Fen
- Salt River Narrows
- Shoal Creek
- South River
- Spadderdock Bottoms
- Spring Creek
- Stateline Fen
- Stegman Prairie
- Sugar Creek - Missouri
- Tombstone Creek
- Trice-Dedman Woods
- Tucker Prairie
- Van Meter Marsh
- Veronica Baier
- White Bear Cave

Nebraska

- Cornhusker Scout Reservation
- Gifford Point
- Krebs Prairie
- Lower Platte
- Nine-Mile Prairie
- Otoe Creek Prairie
- Ponca State Park
- Reigle Meadow

Appendix I: Site Selection Advisory Team Guidelines[1]

A system for modifying an existing suite of sites (portfolio) is essential if it is to remain current and pertinent to the ongoing conservation work of the Conservancy and its partners. Without such a means, the portfolio would become obsolete and in time relegated to the dusty backroom shelves or archives. In fact, this has been the fate of many conservation plans. Because conservation action by the Conservancy now and in the coming years will be linked tightly to ecoregional portfolios, the need for maintaining its relevancy is paramount.

Any process for modifying an ecoregional portfolio must have firm guiding principles, yet be flexible enough to accommodate the multiple scenarios that are likely to play out between iterations of the full planning process. Portfolio design is principally a science-driven process (modified at least to some extent by feasibility); the primary underpinnings of the portfolio are the quality or viability of target occurrences selected to meet established ecoregional conservation goals. Consequently, as was the case in the initial portfolio design process, guidelines for portfolio modification must be scientifically sound in order to preserve its integrity. It is recommended that the specific scientific guidelines set in place for the assembly of the initial ecoregional portfolio (e.g., selection of targets, setting of goals and viability guidelines) be followed when considering modification, unless they have been determined to be scientifically flawed and in need of revision.

The first iteration portfolios may be, for many reasons, imperfect; huge data gaps exist, assembly methodologies are imperfect, and conservation goals are largely unsubstantiated. Therefore, a process for modification must be able to accommodate the varied circumstances that might warrant a change in the ecoregional portfolio. A review of portfolio assembly processes utilized to date by the Conservancy has enabled an identification of the primary circumstances which provide valid rationale for portfolio modification (Table 1). These six items will serve as the basis for which modifications to the portfolio will be considered.

The Modification Process

In order to be a useful tool for the Conservancy, a portfolio modification process must meld the need for scientific integrity with the organizational realities of those charged with the implementation of the portfolio. Although it is science that drives the development of the portfolio (thereby identifying the priority sites for conservation action in an ecoregion), the ultimate decision as to where conservation action is to be initiated (within or outside the portfolio) falls to the state director (and in some instances a program manager). It is, in turn, the responsibility of the divisional director to hold a state director accountable for achieving success within the ecoregional portfolio. Therefore, a well-designed modification process must account for the needs and responsibilities of each of these interests: science, implementation (state director or program manager), oversight (divisional director), and data management.

To address these needs, a succinct portfolio modification process was developed for the Central Tallgrass Prairie ecoregion. The portfolio modification process involves four primary steps:

1) A request, backed by scientific justification, to have an existing portfolio modified (sites added or deleted, or target occurrences added or deleted from an existing portfolio site).
2) A review of the proposal on scientific grounds by a site selection advisory team.
3) A final decision by the advisory team, with notice provided to the Divisional Director.
4) Records are updated as needed to track the changes.

Decisions will be reviewed as part of subsequent iterations of the plan.

[1] Information adapted from a draft process outlined by Ostlie and Martin, 1999

TABLE 1: VALID RATIONALE FOR MODIFYING AN EXISTING ECOREGIONAL PORTFOLIO.

1. Ecoregional goals were not fully achieved for a conservation target, either for the numerical or spatial stratification component of the goal. As such, viable occurrences may be added to the portfolio accordingly. Justification for modifying the portfolio under this item may be based on any of four factors:
   a. Insufficient documented viable occurrences of a target were identified to meet either the numerical or spatial stratification component of its set conservation goals.
   b. Analysis of ecoregional plans throughout the range of a target has revealed that the rangewide conservation goal of a target has not been achieved.
   c. An established conservation goal for a target, through PVA analysis, has been found to be inadequate to ensure its long-term viability.
   d. Viable occurrences of sufficient quality for a community target are no longer extant in the ecoregion (or portion thereof); a lesser-quality occurrence (not used to meet conservation goals) is included to fulfill coarse filter or restoration needs.

2. Evidence suggests that a conservation target should be added or deleted from the list used to assemble the existing portfolio. Justification for adding or dropping a target may be based on any of four factors:
   a. Additional inventory has identified new conservation targets in the ecoregion.
   b. The global status of a species has changed, resulting in a change in its global rank.
   c. Taxonomic changes recognize new taxa of conservation concern, or no longer recognize previously valid taxa.
   d. The existing portfolio did not sufficiently include certain groups (e.g., aquatic communities, birds) in its assembly.

3. The existing portfolio does not adequately capture the full array of viable, native species in the ecoregion. As such, additional sites may be added to capture common species (i.e., secondary targets) not sufficiently represented in the existing portfolio (although this rationale should be used sparingly unless conservation goals for primary targets have largely been or have no possibility of being met). Justification for adding sites may be based on any of two factors:
   a. The suite of secondary targets used to test the adequacy of the portfolio was too narrow in scope and did not adequately represent all taxa.
   b. A lack of data on the distribution and viability of secondary targets hindered the adequate testing of the portfolio.

4. A portfolio target occurrence is no longer viable or among the most viable in the ecoregion. Justification for modifying the existing portfolio may be based on four factors:
   a. The quality of target occurrence selected to meet ecoregion conservation goals has changed over time and no longer meets minimum viability criteria.
   b. Guidelines used to assess the quality of an occurrence (i.e., EORANK SPECS) have been modified, and the quality of a target occurrence is now below the minimum viability threshold used to assemble the portfolio.
   c. A portfolio target occurrence is surpassed in quality by a viable non-portfolio occurrence. This may be the result of a long-term decline in quality of a portfolio target occurrence, a long-term increase in quality of non-portfolio occurrence, or an adjustment based on better information.
   d. Established guidelines for identifying the highest quality occurrences for portfolio assembly were not adequately followed by all members of the assembly team, and errant nominations were made.

5. Target information (occurrence presence and quality) used to select a site for the portfolio was inaccurate, as determined by additional inventory.

6. A conservation site not captured by the existing portfolio possesses highly viable occurrences of multiple conservation targets, and would add greater efficiency to the portfolio over an existing portfolio site(s). This rationale should be used sparingly and with caution due to the significant ramifications it may have on the larger portfolio.

Appendix J: Data Gaps

The lack of comprehensive data will always be an obstacle toward reaching the ultimate goal of developing an ecoregional conservation design that ensures the long-term viability of all native species and natural communities. Compiling information on data gaps and research needs will benefit the Conservation Design process as well as help set priorities for inventory within each state to inform the second iteration of the Ecoregional Plan.

These data can be placed into one of three different categories: geographic data gaps, conservation target data gaps, and gaps related to the ecoregional planning process.

Geographical Data Gaps

Although the Central Tallgrass Prairie is well inventoried relative to other Great Plains ecoregions, certain geographic portions are poorly inventoried.

Nebraska and Kansas. Because there were limited existing biological data on natural plant communities of the western part of the ecoregion, the team decided to conduct rapid ecological assessments (REAs) to gather information on natural plant communities in areas identified as untilled landscapes in two Nebraska counties (Johnson and Gage) and northeast Kansas. Inventory work of the identified untilled landscapes was conducted during the spring and summer of 1998. Potential sites were identified thorough the examination of recent satellite images, color infrared air photographs, driving county roads, and conversations with landowners. In Nebraska, 28 prairies were surveyed, although no new sites were found for inclusion in the portfolio (Steinauer 1998). Six ranch properties and 26 hay meadows were surveyed in northeast Kansas. The sites were ground truthed, and no large inconsistencies between the satellite imagery and actual vegetation cover was found. Populations of Mead's milkweed (Asclepias meadii), a federally threatened species, were found on three hay meadow sites. The ranch properties' overall quality rated a grade "B" (Kindscher and Loring 1998). Additional survey work is recommended for these areas.

Missouri. County level natural feature inventories have been completed for all of the Missouri counties in the Central Tallgrass Ecoregion. These inventories focused on existing high quality element occurrences, and little information is available about restorable examples in much of the region. The Conservancy and Missouri Department of Conservation are currently in the middle of a joint three year partnership to provide this information for northeastern Missouri, and it is possible that significant examples of degraded but restorable landscapes will emerge from this process.

Illinois. Although the general character of the natural communities in the Calhoun/Alton Bluffs Complex and the Upper Illinois River Bluffs landscape areas is known to state ecologists, given the ecoregional significance of these areas, a more comprehensive inventory of the areas is warranted.

Conservation Target Data Gaps

Numerous data gaps for the ecoregional conservation targets were identified throughout the planning process, for both communities and species. Specific areas of concern are secondary targets, birds, and aquatic communities.

Secondary Targets. Secondary targets were not selected for the ecoregion, due in part to lack of a consensus regarding the appropriate methodology to utilize for their selection. The value of selecting secondary targets is that they can be used to evaluate the effectiveness of the portfolio for conserving the full range of biodiversity in the ecoregion, including those species that are perhaps more common globally. Prior to the second iteration of the plan, the Assessment and

Design Team will develop a list of secondary targets and check the current portfolio, using this process to make recommendations for the second iteration of the plan.

Birds. Few bird species were included as conservation targets due to a lack of information at the time targets were being selected. It is recommended that bird conservation be addressed as part of a secondary targets evaluation of the portfolio, and that declining and vulnerable bird species be included as targets in the second iteration of the plan.

Aquatic communities. While the expert nomination process for identifying aquatic sites in the ecoregion was adequate for this first iteration, it is desirable to complete an aquatic community classification for the ecoregion to describe the aquatic communities in a manner consistent with that being used in other ecoregions. As of the writing of this report, a proposal is under review by the USEPA to fund aquatic classification across a large region which includes the Central Tallgrass Prairie Ecoregion. If the proposal is funded, a complete aquatic classification should be complete by the middle of 2002. Additional information on this project can be obtained from the Conservancy's Freshwater Initiative.

Ecoregional Planning Process Gaps

From a process standpoint, information gaps also plagued the planning effort. These occurred primarily in the areas of viability assessment and restoration.

Viability assessment issues. The general lack of species population viability data made it difficult to set rangewide and ecoregional conservation goals. Procedures for setting site viability were applied differently across the ecoregion, a fact which was only noticed during the portfolio assessment phase. Thus, it was quite late in the process when a system to comprehensively evaluate the viability of sites for the selected targets was implemented and the portfolio was modified to reflect the more rigorous viability standards. Had such an analysis been performed earlier on, perhaps during the site selection process, much time would have been saved later during the assessment phase.

Restoration. No other ecoregional planning effort had explicitly taken on the role of restoration in ecoregional conservation, thus the restoration team had the difficult task of charting new territory. This entailed a certain amount time spent testing different hypotheses, some of which were not fruitful in and of themselves. While the incorporation of restoration goals did prolong the amount of time it took to complete this ecoregional plan, it is hoped that planning efforts in other ecoregions will benefit from the time and attention given to exploring the issue here.

Appendix K: Literature Cited

Anderson, M. 1996. Strategy and application of the community classification to ecoregional planning: Northern Appalachian Ecoregion (NAP). Internal memo, The Nature Conservancy.

Anderson, R.C. 1982. An evolutionary model summarizing the roles of fire, climate and grazing in the origin and maintenance of grasslands: An end paper. Pp. 297-308, *In:* J.R. Estes, R.J. Tyrl and J.N. Brunken (eds.), Grasses and Grasslands: Systematics and Ecology. University of Oklahoma Press, Norman.

Anderson, R.C. 1990. The historic role of fire in the North American grassland. Pp. 8-18, *In:* S.L. Collins and L.L Wallace (eds.), Fire in North American Tallgrass Prairies. University of Oklahoma Press, Norman.

Apfelbaum, S.I. and K.A. Chapman. 1996. Ecological restoration: A practical approach. *In:* M.S. Boyce and A.W. Haney (eds.), Ecosystems Management: Applications for sustainable Forest and Wildlife Resources. Yale University Press, New Haven, CT.

Axelrod, D.I. 1985. Rise of the grassland biome, central North America. Botanical Review 51(2): 163-201.

Bailey, R.G. 1994. Ecoregions of the United States (revised map). U.S. Department of Agriculture, Forest Service. Washington DC.

Bailey, R.G. 1995. Description of the ecoregions of the United States. 2nd ed. rev. and expanded (1st ed. 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: USDA Forest Service. 108 p. with separate map at 1:7,500,000.

Chaplin, S.C., W.R. Ostlie, R.E. Schneider and J.S. Kenney. 1996. A multiple-scale approach to conservation planning in the Great Plains. Pp. 187-201, *In:* F.B. Samson and F.L. Knopf (eds.), Prairie Conservation: Preserving North America's Most Endangered Ecosystem. Island Press, Covello, CA.

Collins, S.L. and D.J. Gibson. 1990. Effects of fire on community structure in tallgrass and mixed-grass prairie. Pp. 81-98, *In:* S.L. Collins and L.L. Wallace (eds.), Fire in the North American Tallgrass Prairie. University of Oklahoma Press, Norman.

Committee on Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy. 1992. Restoration of Aquatic Ecosystems, National Academy Press, Washington, DC.

Cox, J., R. Kautz, M. Mclaughlin and T. Gilbert. 1994. Closing gaps in Florida's wildlife habitat conservation system. Florida Game and Freshwater Fish Commission, Tallahassee. 239 pp.

Daubenmire, R. 1968. Plant communities. Harper and Row, New York. 300 pp.

Diamond, D.D. and F.K. Smeins. 1988. Gradient analysis of remnant True and Upper Coastal Prairie grasslands of North America. Canadian Journal of Botany 68: 2152-2163

Faber-Langendoen, D., and Midwest State Heritage Program Ecologists. 1996. Terrestrial vegetation of the midwest United States. from, international classification of ecological communities: Terrestrial vegetation of the United States. Draft version. The Nature Conservancy, Arlington, VA.

Grossman, D.H., et al. 1998. International classification of ecological communities: terrestrial vegetation of the United States. Volume I. The national vegetation classification system: development, status and applications. The Nature Conservancy, Arlington VA.

Herkert, J.R. 1994. the effects of habitat fragmentation on Midwestern Grassland Bird communities. Ecological Applications 4:461-471.

Higgins, K.F. 1986. Interpretation and compendium of historical fire accounts in the northern Great Plains. Resource Publication 161, U.S. Department of the Interior, Fish and Wildlife Service. 39 pp.

Higgins, J., and B. Richter. 1998. "Incorporating aquatic species and communities into ecoregional planning". The Nature Conservancy.

Higgins, J., Lammert, Bryer, DePhilip and Grossman. 1998. “Protocol for delineation and description of macrohabitats and aggregation of valley segments and lake types into macrohabitat classes”. Freshwater conservation in the Great Lakes Basin: Development and application of a aquatic community classification framework. The Nature Conservancy.

Jordan, W.R., M.E. Gilpin, and J.D. Aber (eds.) 1987. Restoration Ecology: a synthetic approach to ecological research. Cambridge University Press, NY.

Kindscher, K. and H. Loring. 1998. A survey of large ranches and prairie remnants in the Flint Hills and Central Tallgrass Prairie Ecoregion of Kansas. Draft Report. Kansas Biological Survey.

Knopf, F.L. 1994. Scale perspectives on avian diversity in western riparian systems. Conservation Biology 8(3): 669-676.

Kucera, C.L. 1992. Tall-grass prairie. Pp. 227-268, *In:* R.T. Coupland (ed.), Ecosystems of the World: Natural Grasslands (Introduction and Western Hemisphere). Elsevier Science Publishing Company, New York.

Ladd, D. 1991. Reexamination of the role of fire in Missouri oak woodlands. Proceedings of the Oak Woods Management Workshop. Eastern Illinois University, Charleston, IL. 67-80.

Lammert, M., J. Higgins, D. Grossman, and M. Bryer. 1997. A classification framework for freshwater communities. Proceedings of The Nature Conservancy’s Aquatic Community Classification Workshop. New Haven, MO. April 9-11, 1996. 16 pp.

Loveland, T.R. and H.L. Hutcheson. 1995. Monitoring changes in landscapes from Satellite imagery. Pp. 468-473, *In:* E.T. LaRoe, G.S. Farris, C.E. Puckett, P.D. Doran and M.J. Mac (eds.), Our Living Resources: A report to the Nation on the Distribution, Abundance and Health of the U.S. Plants, Animals and Ecosystems. U.S. Department of the Interior, National Biological Service, Washington, DC.

McNab, W. H. and P.E. Avers, comps. 1994. Ecological subregions of the United States: Section descriptions. Administrative Publication WO-WSA-5.Washington, D.C. U.S. Department of Agriculture, Forest Service. 267 pp.

Noss, R., E. LaRoe, and J. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degredation. Biological Report 28, U.S. Department of Interior, National Biological Service, Washington DC.

Ostlie, W.R., R.E. Schneider, J.M. Aldrich, T.M. Faust, R.L.B. McKim and S.J. Chaplin. 1996. The status of biodiversity in the Great Plains. The Nature Conservancy, Arlington, VA. 325 pp.

Packard, S. and C.F. Mutel (eds.). 1997. The Tallgrass Restoration Handbook. Island Press, Washington, DC.

Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The natural flow regime: a paradigm for river conservation and restoration. BioScience 47(11):769-784.

Poiani, K., B. Richter, M. Anderson, and H. Richter. 1999. Biodiversity conservation at multiple scales. BioScience: in press.

Pyne, S.J. 1982. Fire in America; a cultural history of wildland and rural fire. Princeton University Press, Princeton.

Richter, B. 1995. Functional landscapes. Unpublished report to The Nature Conservancy. 23 pp.

Risser, P.G. 1985. Grasslands. Pp. 232-256, *In:* B.F. Chabot and H.A. Mooney (eds.), Physiological Ecology of North American Plant Communities. Chapman and Hall, NY. 351 pp.

Risser P.G. 1990. Landscape processes and the vegetation of the North American grassland. Pp. 133-146, *In:* S.L. Collins and L.L. Wallace (eds.), Fire in North American Tallgrass Prairies. University of Oklahoma Press, Norman. 175 pp.

Roe, F.G. 1951. The North American buffalo: A critical study of the species in the wild state. University of Toronto Press, Toronto, ON. 991 pp.

Singh, J.S., W.K. Lauenroth and R.K. Heitschmidt. 1983. Structural and functional attributes of the vegetation of northern mixed prairie of North America. Botanical Review 49: 117-149.

Sparks, R.E. 1995. Need for ecosystem management of large rivers and their floodplains. BioScience 45(3):168-182.

Sparks, R.E., J.C. Nelson, and Y. Yin. 1998. Naturalization of the flood regime in regulated rivers: the case of the upper Mississippi River. BioScience 48(9):706-720

Steinauer, R. 1998. Southeast Nebraska Tallgrass Prairie Inventory: Johnson, Gage and Jefferson Counties. Final Report. The Nature Conservancy.

The Nature Conservancy. In prep. Setting Conservation Goals for Ecological Communities. The Nature Conservancy.

The Nature Conservancy, Northern Tallgrass Prairie Ecoregional Planning Team. 1998. Ecoregional planning in the Northern Tallgrass Prairie ecoregion.The Nature Conservancy, Midwest Regional Office, Minneapolis, MN.

The Nature Conservancy. 1996a. Conservation by design: A framework for mission success. Arlington, VA. 10 pp.

The Nature Conservancy. 1996b. Designing a geography of hope: Guidelines for ecoregion-based conservation in The Nature Conservancy. Arlington, VA. 77 pp.

The Nature Conservancy. 1994a. Standardized national vegetation classification system. Arlington, VA. 209 pp.

The Nature Conservancy. 1994b. Rare plant communities of the conterminous United States. Arlington, VA. 620 pp.

The Nature Conservancy Ecology Working Group. 1997. International Classification of Ecological Communities: Terrestrial Vegetation of the United States. Arlington, VA.

Vogl, R.J. 1974. Effects of fire on grasslands. Pp. 139-194, *In:* T.T. Kozlowsky and C.E. Ahlgren (eds.), Fire in Ecosystems. Academic Press, New York.

Weaver, J.E. and F.W. Albertson. 1956. Grasslands of the Great Plains: Their nature and use. Johnsen Publishing Co., Lincoln, NE. 395 pp.

Wells, P.V. 1965. Scarp woodlands, transported grassland soils, and concept of grassland climate in the Great Plains region. Science 148: 246-249.

Wells, P.V. 1970. Historical factors controlling vegetation patterns and floristic distributions in the central Great Plains region of North America. Pp. 211-221, *In:* W. Dort and J.K. Jones (eds.), Pleistocene and Recent Environments of the Central Great Plains. University of Kansas, Department of Geology Special Publication 3. University Press of Kansas, Lawrence.