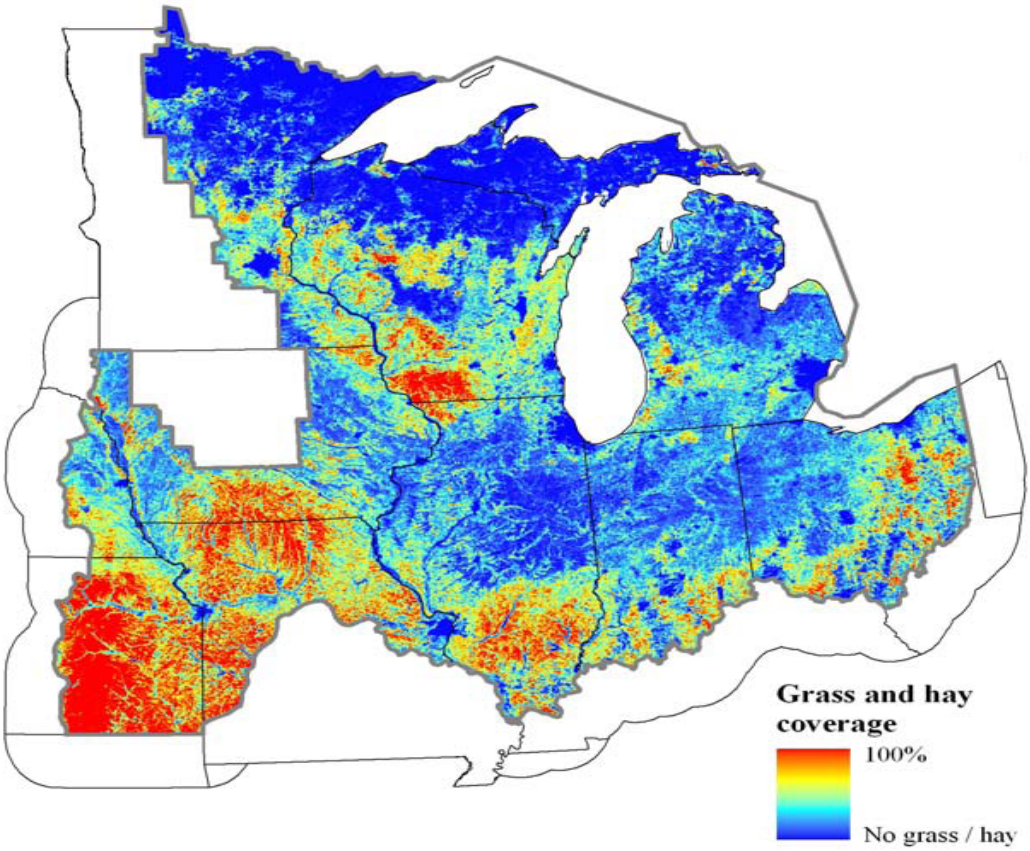
Feasibility Study, Master Plan and

Environmental Impact Statement for the

SOUTHWEST WISCONSIN GRASSLAND & STREAM CONSERVATION AREA



A REPORT TO THE NATURAL RESOURCES BOARD

May 19, 2009

Cover Map taken from *USFWS Upper Mississippi/Great Lakes Region Joint Venture Plan, 2007*

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Key to Acronyms used in document

BCA	Bird Conservation Area
CREP	Conservation Reserve Enhancement Program (USDA)
CRP	Conservation Reserve Program (USDA)
CSP	Conservation Stewardship Program (USDA)
EQIP	Environmental Quality Incentive Program (USDA)
FRPP	Farm and Ranchlands Protection Program (USDA)
GRP	Grasslands Reserve Program (USDA)
LIP	Landowner Incentive Program (USFWS)
MRPHA	Military Ridge Prairie Heritage Area
NRCS	Natural Resources Conservation Service
PATS	(Wisconsin's) Program on Agriculture and Technology Studies
SAFE	State Acres for Wildlife Enhancement (USDA)
SGCN	Species of Greatest Conservation Need
SWGSCA	Southwest Wisconsin Grassland and Stream Conservation Area
TNC	The Nature Conservancy
TPE	The Prairie Enthusiasts
USDA	United States Department of Agriculture
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
WHIP	Wildlife Habitat Incentives Program (USDA)

I. PROJECT OVERVIEW

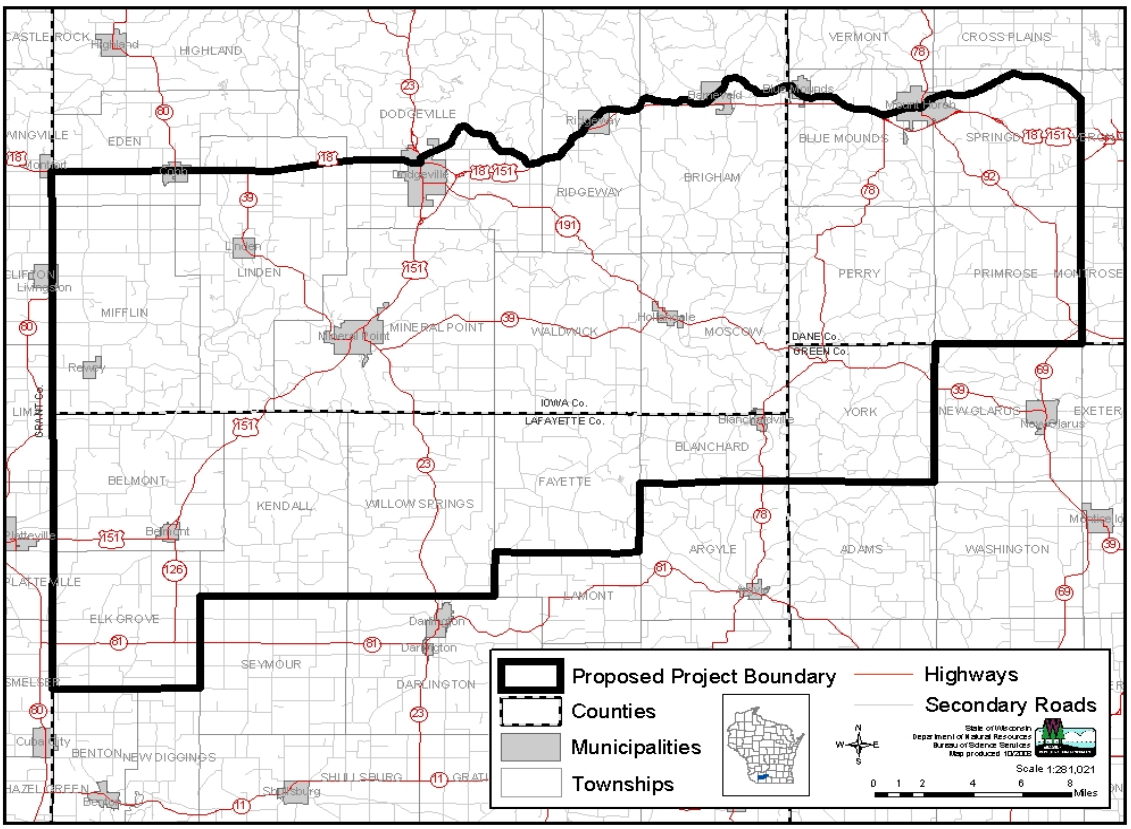
The vision for the Southwest Wisconsin Grassland and Stream Conservation Area (**SWGSCA**) is to work with a diverse group of partners to conserve and enhance functioning grassland, savanna and stream ecosystems in Southwest Wisconsin, set within a rural landscape of working farms.

Southwestern Wisconsin has been recognized for many years as one of the best grassland conservation opportunities in the Upper Midwest. The area stands out for its distinct combination of resources: exceptional populations of grassland birds; a high number of prairie remnants; concentrations of rare plants and animals, and spring-fed streams, all set within this expansive rural farming region of open fields, croplands, oak groves and pastures.

The numerous prairie remnants in southwest Wisconsin are the remains of the original tallgrass prairie and oak savanna that once covered this region and harbored abundant populations of grassland animals including Greater Prairie-chickens and Sharp-tailed Grouse. These prairie remnants are still surrounded by a rural, relatively treeless landscape supporting rare species that, like grassland birds, are adapted to an open landscape.

The rivers and streams that drain the area's ridgetops vary in quality and condition. Increased grassland cover, improved agricultural practices and streambank management have demonstrably improved water quality in many area streams. Others still suffer from poor water quality and sedimentation. These "Impaired" streams, as well as the area's Outstanding/Exceptional Resource Waters, are project priorities.

Figure 1: *Project boundary for SW Grassland and Stream Conservation Area*



Opportunities to protect open grasslands, prairie remnants, and priority streams can be found across the entire project area. One of the primary goals for the project is to establish three **Bird Conservation Areas** for declining grassland birds in the project area. Bird Conservation Areas (BCAs) are large, predominantly treeless areas of at

least 10,000 acres, each with a 2,000-acre core of permanent, contiguous grassland, surrounded by a matrix of cropland and scattered grassland fields. Populations of grassland birds are in serious decline across their ranges, and the long-term sustainability of rare birds like the Upland Sandpiper, Northern Harrier, or Western Meadowlark depends upon large, wide-open landscapes. While such landscapes are now largely absent from Wisconsin (and much of the entire Upper Midwest), they still are found in the proposed SWGSCA region of Wisconsin.

We will need to focus our efforts to build these three BCAs. Our focusing approach looks for landscapes where we can build BCAs, and simultaneously protect prairies, rare species, and priority streams. Prairies and prairie species will be much more viable in the long-term when embedded within a larger grassland landscape. For example, the endangered Regal Fritillary butterfly needs open horizons, where this strong flier can find mates and food, and colonize other areas. Area streams benefit from the infiltration and groundwater recharge that surrounding grass-covered uplands provide. Also, protection and management resources are limited, so we want to achieve the greatest benefit per acre protected.

The Department is proposing to protect 12,000 acres (through acquisition and easement) across the 473,900-acre project area (see Table 3, p 50 for a list of townships in the boundary). Of this total, 8-9,000 acres will be allocated to three Focus Areas where we will establish the BCAs. Our primary role in the larger Partnership will be to protect and manage three 2,000-acre cores of permanent grassland in the BCAs, plus up to 1,000-acres of additional permanent grasslands surrounding these cores within a 10,000-acre mosaic of grassland and farmland. (See Sections IV and V(C), below, for complete descriptions and illustrations of a BCA.) We will reserve the remaining 3-4,000 acres for opportunities to protect prairies, rare species and streams across the entire project area. We believe that 12,000 acres is a feasible acreage goal over the short-term. We acknowledge that this acreage goal may need to be adjusted at a later date according to the principles of Adaptive Management and Strategic Habitat Conservation, as we implement the project and evaluate the level of success in achieving our habitat and population goals.

Less than 1 percent of southwestern Wisconsin is in public ownership; very little land is available for public recreation. This project would provide new areas for nature-based recreation, which also brings additional outdoor tourism opportunities to the region. The Department's "Payment in Lieu of Taxes" program would ensure that local communities maintain (or even increase) their local tax base.

The overall success of this project will depend upon working in coordination with our many Partners and landowners, who have been protecting and managing grasslands, farmlands, streams and prairies in this area for many years. We will aim to keep working farms on areas of prime agricultural land. The existing ***Military Ridge Prairie Heritage Area***, included in the eastern portion of the SWGSCA boundary (see p. 19), serves as a model for our partnering approach.

Partners such as The Prairie Enthusiasts, Driftless Area Land Conservancy, and The Nature Conservancy, are already building potential BCAs in the Military Ridge project; they would continue to protect grasslands, prairies and farmlands through easement or acquisition. The U.S. Dept. of Agriculture's Farm and Ranchland Protection Program would help maintain the open, rural landscape through conservation easements for working farms. Programs actively enrolling landowners in USDA's set-aside Conservation Reserve Program, such as NRCS and Pheasants Forever, will help provide a shifting mosaic of longer-term grass cover around the BCA cores and across the surrounding landscape. Financial and technical assistance to private landowners for land management activities are provided through other USDA programs and through the U.S. Fish & Wildlife Service. Trout Unlimited is working in the area to restore and manage area streams. As always, we would work only with willing landowners.

II. PROJECT NEED

Tallgrass prairie and oak savanna are among the most threatened ecosystems in Wisconsin and North America as a whole. In Wisconsin and neighboring states, less than 1/10th of one percent of the original habitat remains. Consequently, about 20% of Wisconsin's original prairie flora, and many of our prairie invertebrates, are now considered rare. Streams unaffected by human disturbance have vanished from the landscape.

Across the Midwest, the loss of original unplowed prairie sod, and the more recent rise of more intensive, mechanized agricultural practices, have caused grassland birds to decline at a steeper rate and more consistently than any other group of birds in the region. Long-term sustainability of populations of area-dependent species such as short-eared owls, northern harriers, western meadowlarks, upland sandpipers, and greater prairie-chickens depends upon large, open landscapes of 10,000 acres or more. Landscapes of this size will accommodate the area needs of all other obligate grassland bird species.

Such large grasslands are now nearly absent from the state – especially in the original range of native grasslands in southern and western Wisconsin – however an opportunity for this type of landscape-scale approach to conservation still exists in this agricultural region of southwestern Wisconsin.

This area sits within the **"Southwest Savanna Ecological Landscape"** (see inset, next page, for description). Historically, this was a region of tallgrass prairie and oak savanna. Today it has one of the highest percentages of farmland among other regions of Wisconsin. The ***Wisconsin Wildlife Action Plan*** (see p. 18) and its recently completed Implementation Strategy for 2008-2015 identify this area as the state's best opportunity to protect remaining native prairies and oak savannas, and high-quality cool- and warm-water streams, within a larger managed grassland landscape. Managed grasslands are fields of native or non-native grasses, such as farm pastures, grass hay fields, and Conservation Reserve Program (CRP) fields, and are an integral part of the southwest Wisconsin landscape. They are critical in maintaining high water quality and their conservation is a key element in our efforts to reduce the steady and significant decline in grassland bird populations that is occurring throughout the Midwest. Many grassland birds are area-sensitive, requiring large, treeless expanses for successful reproduction and long-term conservation.

The Department currently owns approximately 9,800 acres within the entire 1.2 million-acre "Southwest Savanna Ecological Landscape," and 4,418 acres within the proposed project area (see Table 1 below). This comprises less than 1% of the total land base. Yellowstone Lake Wildlife Area is the largest property, with several smaller State Natural Areas. Blue Mounds State Park is to the north of Highway 18/151, just outside of the project area. While Yellowstone Lake and Blue Mounds provide very important recreational opportunities, they do not contain significant areas of prairie or savanna.

Table 1: *Department-owned properties in the project area:*

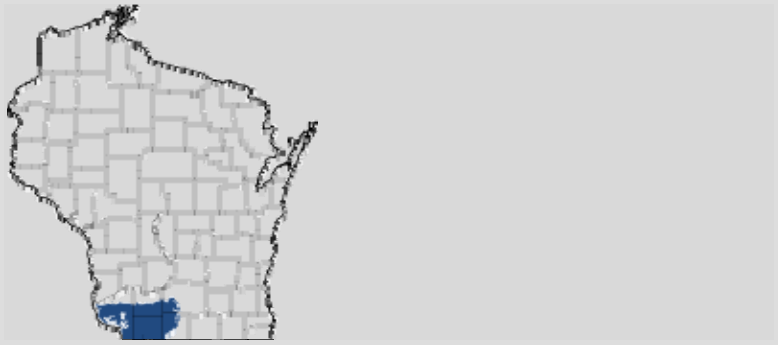
Property Name	Size (in acres)
Yellowstone Lake State Wildlife Area	4,047
Yellowstone Savanna State Natural Area	*220 (contained in total above)*
York Prairie State Natural Area	145
Pecatonica River Woods State Natural Area	110
Belmont Mound Woods State Natural Area	60
Belmont Prairie State Natural Area	36
Ipswich Prairie State Natural Area	20
Total	**4,418**

Significance of the Southwest Savanna Ecological Landscape

Over the past 15 years, the Southwest Savanna Ecological Landscape has been identified repeatedly as a priority area for conservation work. Two publications from DNR's Science Services have emphasized the importance of this area. The 1997 DNR publication, "Management of Habitat for Grassland Birds: A Guide for Wisconsin" identified three areas here as high priority landscapes for grassland bird conservation (Sample and Mossman 1997). The report "Identification of Landscape Management Opportunities and Needs in Wisconsin" delineated the same three areas as significant opportunities for prairie ecosystem conservation (Krause and Henderson 1995). One of the areas, the current Military Ridge Prairie Heritage Area (see p. 19), was identified as the best opportunity in the state for conserving upland prairie ecosystems. The Wisconsin Chapter of The Nature Conservancy selected the Military Ridge area for its first landscape-scale prairie and savanna project.

The importance of this area was again underscored when it was selected for both the Conservation Reserve Program's Conservation Priority Area, and as the USDA's Conservation Reserve Enhancement Program (CREP) southern grassland project area. Finally, the *Wisconsin Land Legacy Report* (Pohlman et al. 2006) identifies eight Legacy Places for the landscape.

The "Southwest Savanna Ecological Landscape"



An Ecological Landscape is an area that has similar climate, soils, existing and pre-settlement plant communities, topography, types of aquatic features present, and other factors. There are 16 Ecological Landscapes in Wisconsin.

The "Southwest Savanna Ecological Landscape" consists of 1,200,000 acres (1,875 sq. miles) in the far southwestern part of the state. It is characterized by deeply dissected topography, unglaciated for the last 2.4 million years, with broad open hilltops and stream valleys, and steep wooded slopes. Historic vegetation consisted of tall prairie grasses and forbs with oak savannas and some wooded slopes of oak forest. Almost three-quarters of the current vegetation is agricultural crops with lesser amounts of grasslands, barrens, and urban areas. Warm-water streams flow throughout this Ecological Landscape and include the Pecatonica and Galena Rivers. This region is highly dependent on agriculture; it has one of the state's highest percentages of farmland and market value per acre of agricultural products sold. The counties of the Southwest Savanna Region rank second in milk production per acre and first in corn production per acre. Although much of the land is in agriculture, it is somewhat less intensive than in other parts of the state, including large pastures and idle grasslands.

The Southwest Savanna Ecological Landscape hosts 42 wildlife species identified as 'Species of Greatest Conservation Need' in Wisconsin's recently approved *Wildlife Action Plan* (this plan does not include plant species). Many of these species are dependent on remnant prairie vegetation (i.e., conservation needs for these species wouldn't be met in areas without native prairie). The *Wildlife Action Plan* ranked state habitat types by the number of Species of Greatest Conservation Need that they support. Two habitats that are key features in the "Southwest Savanna Ecological Landscape" made it into the 'Top Ten' list for the state: dry-mesic prairie (#2, with 39 species) and dry prairie (#5, with 31 species). In 2008, the Department developed an Implementation Strategy for the plan for 2008-2015. This implementation plan established a "to-do first" list from the long list of strategies and actions in the *Wildlife Action Plan,* along with a map of the state's areas of greatest ecological significance. The goals of the SWGSCA project are included among Wisconsin's highest priority implementation actions for the Southwest Savanna Ecological Landscape. The three Focus Areas for the SWGSCA are included in this 2008 statewide map of priority "Conservation Opportunity Areas."

Important Wildlife Conservation Needs in the SWGSCA

Birds

The SWGSCA was once alive with the booming of Greater Prairie-chicken, which now is found only in parts of Central Wisconsin. However, the area still has outstanding habitat for most grassland birds, and as a result, has substantial populations of most species. It has the largest populations in the state of Dickcissel, Bell's Vireo, and Western Meadowlark. It is one of the two best areas for both Grasshopper Sparrow & Henslow's Sparrow. It is one of the three best areas of the state for Upland Sandpiper. In addition, the oak savannas of this area support good populations of savanna birds of Greatest Conservation Need such as Red-headed Woodpecker, Brown Thrasher, Field Sparrow, Willow Flycatcher, and modest numbers of Northern Bobwhite.

Terrestrial Insects

The SWGSCA is known to be home to 77 species of rare and uncommon prairie-dependent insects, and another 11 species have a high probability of being present (see Appendix E). The most significant is the state-endangered Regal Fritillary. This large butterfly of the tallgrass prairie region requires large open landscapes with violets (the larval host plant), and has nearly disappeared from the eastern 2/3 of its range. The two largest and most viable concentrations remaining east of the Mississippi River are both in Wisconsin. They are the Buena Vista Prairie Chicken Management Area and a significant portion of the proposed SWGSCA.

Mammals & Reptiles

The SWGSCA has very healthy populations of Badger, and is likely one of the most productive areas of the state for them. The Prairie Vole, an increasingly uncommon species in Wisconsin and throughout the Midwest, is likely present in the SWGSCA, which may prove to be the best region in the state for prairie voles. They are strongly associated with dry prairie sod which is relatively common here compared to elsewhere in the state. Bull Snake, a Species of Greatest Conservation Need, and Fox Snakes are also present in the SWGSCA's grasslands and savannas.

Important Water Quality & Aquatic Resource Conservation Needs in the SWGSCA

Under EPA guidelines, the Department has established a list of "Impaired Waters," that is, streams that are not meeting their potential use. Restoration of these streams through improved land use practices in their watersheds is a top department priority. Dougherty Creek, Dodge Branch, Brewery Creek, Livingston Branch and Pleasant Valley Branch are the listed streams in the project area. All except Brewery Creek are listed because of habitat loss due to stream sedimentation. Syftestad Creek and the West Branch of the Sugar River are examples of streams removed from the Impaired Waters list due to improved agricultural practices and implementation of CRP grasslands in the watershed.

Another management priority will be streams that support game fish, and either support or could support populations of non-game fish species that have been declining. Streams in the project area support or could support rare fish species like the Ozark Minnow, Slender Madtom, and Redside Dace, plus a host of other non-game fish sensitive to stream degradation. See complete list of priority streams for this project on p. 41.

Important Recreation Needs in the SWGSCA

Southwestern Wisconsin contains or is near the population centers of Madison, Dodgeville, Platteville, and Monroe. The unique prairie/savanna landscape makes it an ideal location in which to host a wide variety of recreational activities. But public land acreage in this region is among the lowest in the state, tied with southeastern Wisconsin's more urban counties at just 1% available for public recreation. Of that 1%, most is densely forested and thus provides little or no habitat for grassland and savanna species. Yellowstone Lake State Park and Wildlife Area provides important local, largely water-based recreational opportunities. In contrast to the Southwest Savanna Ecological Landscape, the northern forested areas of the state have significant amounts of public land. For example, in the Northern Highlands Ecological Landscape, the DNR owns 20% of the land already, and the Federal & County governments own an additional 10% for a total of 30% public land.

Other Landscape-scale Grassland Projects in Wisconsin

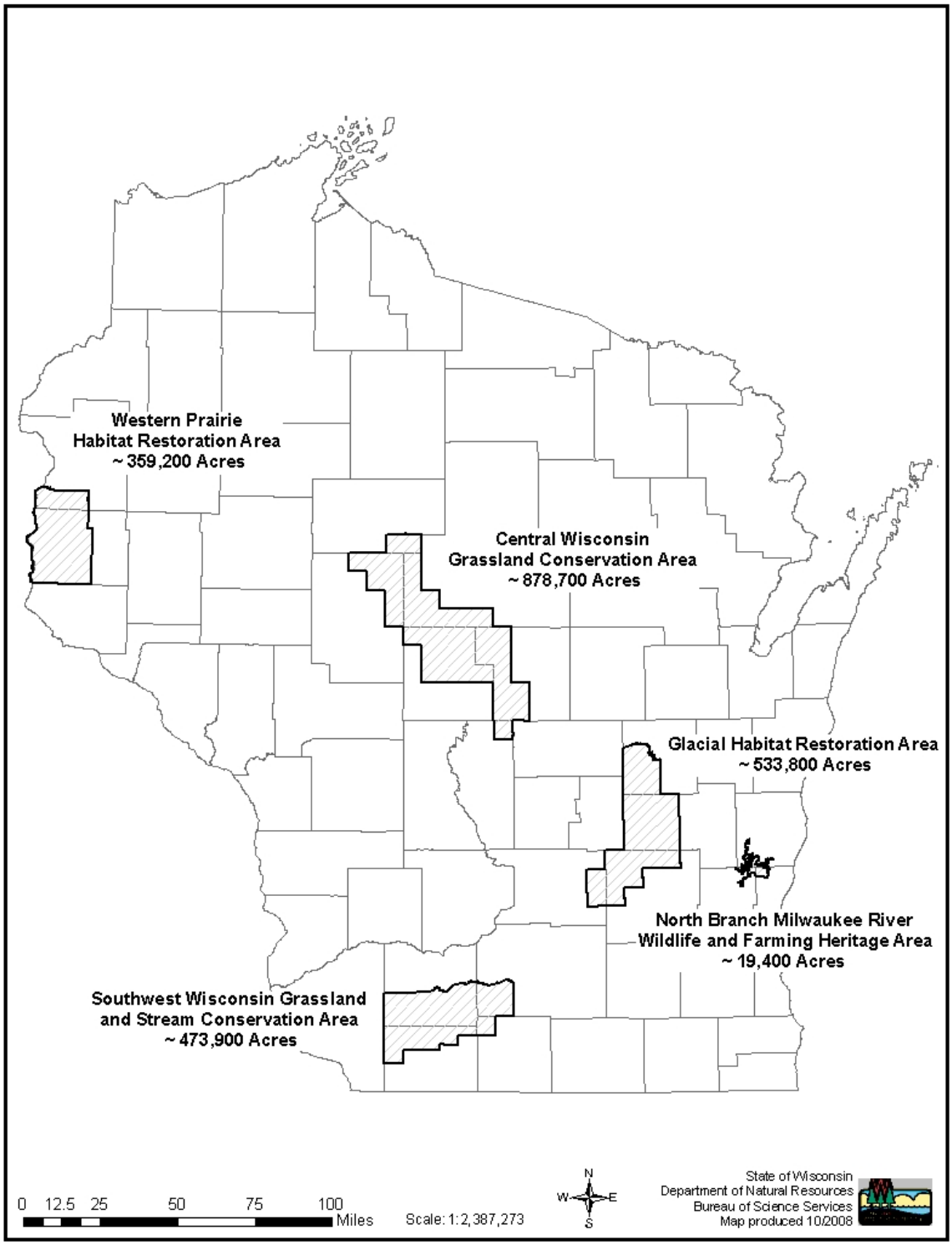
The proposed SWGSCA would be the fifth landscape-scale grassland project for the Department (see Figure 2 showing locations and acreages of all five projects). All these grassland projects are needed to fulfill the varied needs of grassland/prairie ecosystem conservation in Wisconsin.

The proposed SWGSCA is the best place in the state for combining remnant prairie sod, open landscapes and CRP habitat for grassland birds. In fact, SWGSCA has had the highest concentration of CRP enrollment in the state. On the other hand, grassland elements such as Prairie Chickens and prairie pothole wetlands are not found in the proposed SWGSCA, and it has poor representation of other prairie wetland habitats as well.

The SWGSCA offers the following unique opportunities, which are relatively weak in the state's other four projects: original prairie and oak savanna sod, prairie flora (including rare & endangered species), rare prairie-dependent invertebrates, an abundance of spring-fed streams, rare aquatic species, and large areas of open grasslands. These slices of the grassland/stream ecosystem are where the SWGSCA stands out from the rest.

One reason for the SWGSCA's significance for prairie and oak savanna is that native prairie plant species richness increases as one moves south and west of the Tension Zone (a transition zone running from NW to SE Wisconsin). Outside of possibly the Lower Chippewa River region, the SWGSCA has the most acres of original unplowed prairie in the state. However, the Lower Chippewa remnants are embedded in a more wooded landscape than is found in SWGSCA, so there is far less grassland bird habitat potential.

Figure 2*: Statewide distribution and approximate acreage of all grassland projects across Wisconsin*



Vision

To work with diverse partners to conserve and enhance functioning grassland, savanna and stream ecosystems in southwest Wisconsin, set within a rural landscape of working farms, focusing on the area's biological, cultural, economic and recreational values.

Project Goals

Goal 1: Natural resources

Protect, restore and manage priority natural communities and associated rare species.

Wisconsin's recently completed *Wildlife Action Plan* identifies a suite of wildlife species that are in greatest need of conservation. Habitat loss, fragmentation and degradation are the key factors threatening nearly all of these species. To protect rare species we must protect the places where they live. This landscape approach to conservation will benefit the entire suites of species, including both rare and more common animals and plants that depend on native grasslands, savannas, and streams in the project area.

Upland Communities

- Native prairies: Protect, restore, and manage remaining examples of dry, dry-mesic, and mesic prairie habitats that have been degraded.
- Managed grasslands: Maintain or create large blocks of open grasslands set within a mix of lands that remain predominantly treeless (see sidebar).
- Oak Savanna *(oak openings)*

  Restore, protect and manage remaining examples of oak savanna that have been degraded.
- Oak woodlands**:** Where the highest quality management opportunities exist, promote restoration of this rare community type (see inset on next page). This community is unique and rare in the project area. It is a minor subset of the Oak Savanna goal.

Managed grasslands are similar in structure to the former prairies that occurred in Wisconsin, and now represent the vast majority of our grassland habitat. Managed grasslands include agricultural habitats such as hayfields, small grains (oats, wheat, and barley), fallow fields, old fields, pastures, and set-aside fields (e.g., CRP) planted to non-native cool-season grasses (such as smooth brome, timothy, red-top, orchard-grass, bluegrass, and quackgrass) or native warm-season grasses (such as big bluestem, little bluestem, Indiangrass, switchgrass, and sideoats grama). Examples of other managed grasslands include orchards, some parks and airports, and roadsides. Managed grasslands also include other idle grasslands, such as those on public or private lands managed for wildlife. Usually, idle grasslands are composed of non-native grasses and forbs. They also can be plantings of one or several native prairie species, but fall far short of the rich species diversity of the original prairie.

Oak woodlands are an intermediate community between oak savannas and oak forests. They are extremely rare on the landscape today. Oak woodlands were subjected to frequent wildfires of low intensity, lacked the dense woody understory that characterizes most oak forests, and often had lower canopy closure than true forest. Dominant trees included white, bur, and black oaks. The denser growth of trees did not allow for the characteristic wide, spreading crowns of oaks in true savannas. With frequent fires, oak woodlands had a diverse herb layer including grasses, legumes, composites and other forbs, with few shrubs and saplings present. On the surface, it might appear that our goal of promoting restoration of oak woodlands would conflict with the grassland nature of this project. However, this is not the case. Oak woodlands are a fire-dependent community like oak savannas and prairies. Quality restoration opportunities for oak woodlands in the SWGSC are generally on small parcels, few in number, and typically not in locations that would conflict with grassland management.

Aquatic Communities

- Warm-water streams: Protect warm-water streams that have been designated as Outstanding or Exceptional Resource Waters and restore, protect and manage degraded warm-water streams and riparian corridors.
- Cold-water streams: Protect cold-water trout streams, and restore, protect and manage degraded cold-water streams and riparian corridors.

  Although cold-water streams are not designated as a priority community for this area in the *Wildlife Action Plan*, they do host a variety of environmentally sensitive species that are important indicators of watershed health, and provide key trout fishing opportunities.

Rare Species

- Protect viable populations of rare and declining species, including native plants, fish, amphibians and reptiles, grassland birds, and prairie-dependent invertebrates.

Goal 2: Recreation

Provide compatible recreational and educational opportunities such as hunting, bird-watching, trout and bass fishing, nature study, paddling, hiking, trapping and appreciation of the area's cultural history

This corner of Wisconsin offers very little public recreation land. As a result, outdoor recreational opportunities are limited for both rural residents and people living in nearby urban centers. Grassland communities and streams in the region are compatible with many low-impact outdoor activities that could provide important recreational opportunities.

Goal 3: Agriculture

Help sustain the area's rural agricultural landscape

This project cannot be a success unless production agriculture continues to be the mainstay in the project area. We will work with both the farming community and partner organizations involved in farmland and grassland protection to develop conservation strategies that will help maintain working farms while also helping to maintain healthy grasslands, savannas, and streams in Southwest Wisconsin.

Goal 4: Land Use

Encourage ecologically friendly development

Work with local communities to help design and locate development in places that minimize impacts on grassland, savanna and stream ecosystems, while promoting a healthy rural economy.

Counties, townships, cities and villages need healthy economies to support their businesses, schools, fire, police, and other services. Development often is part of a healthy economy. We would like to work with local governments in the project area to help guide development in ways that meet local objectives while minimizing impacts on the rural landscape, water quality, grasslands and other natural resources. In some cases, grassland-based tourism may be a part of this equation as well. ***(See Table 3 on p. 50 for a list of Townships included within the project boundary.)***

Goal 5: Historic resources

Promote appreciation of historical, cultural, and archaeological resources.

Southwest Wisconsin was one of first parts of the state to be settled by European immigrants and is particularly rich in cultural history. The area also features a number of early Native American rock shelters, rock art features and effigy mounds. The protection, public awareness and appreciation of these features will be included when compatible with the project's larger natural resources goals.

Wisconsin Wildlife Action Plan

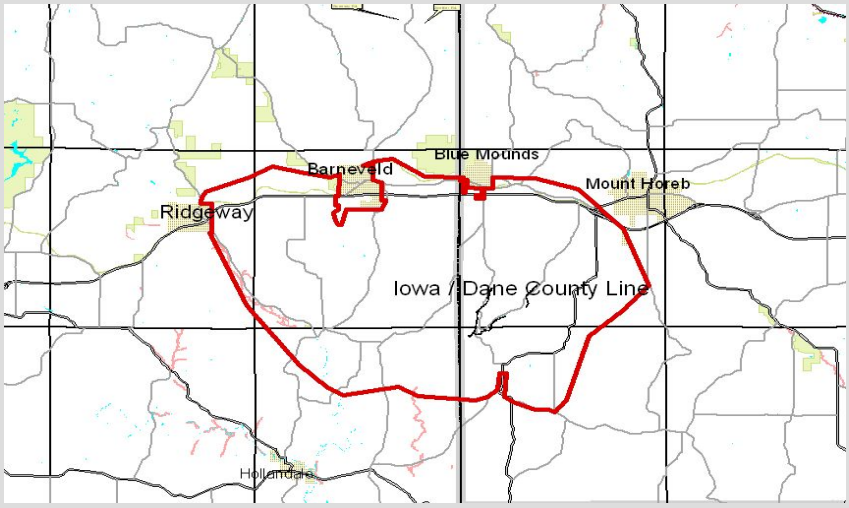
Wisconsin's *Wildlife Action Plan* is the result of a statewide effort to identify which of our native Wisconsin species are of greatest conservation need. The plan outlines actions that Wisconsinites can take to conserve wildlife and natural places before they become more rare and more costly to protect. The Plan also ensures that Wisconsin remains eligible for federal funding from the State Wildlife Grants Program, which funds actions to prevent species from becoming threatened or endangered. The plan sets priorities for allocation of these grants. In addition, the Plan provides guidance and information, including a reference database, for government agencies, tribes, and the full range of public and private partners to use to support their conservation efforts. In 2008, the Department completed an Implementation Strategy, identifying the very highest priority areas and actions for 2008-2015. The Southwest Grasslands area is included in a map of the state's best "Conservation Opportunity Areas." **Explore the Plan at:** ***http://dnr.wi.gov/org/land/er/wwap/***

Current Conservation Efforts within the Area

The Military Ridge Prairie Heritage Area

The Military Ridge Prairie Heritage Area (MRPHA) is a 49,000-acre grassland landscape in Southwest Wisconsin featuring more than 60 prairie remnants, the headwaters of the Pecatonica River, and many high quality trout streams. Escalating residential development, especially on ridge tops, invasion of non-native species, and incompatible land management are all taking their toll on the landscape at Military Ridge. A coalition of partners is working together to help protect remaining prairie and savanna, conserve the open grasslands, and maintain water quality in the streams. Partners include Southwest Badger Resource, Conservation and Development Council; the USDA Natural Resources Conservation Service; The Nature Conservancy; The Prairie Enthusiasts; Driftless Area Land Conservancy; U.S. Fish and Wildlife Service; Pheasants Forever; Blue Mounds Area Project, and Wisconsin DNR. You can read more about this project at *http://www.swbadger.com/mrpha.htm*.

How does the Southwest Wisconsin Grassland & Stream Conservation Project relate to the Military Ridge Prairie Heritage Area?
The MRPHA serves in many ways as a model for the Southwest Wisconsin Grassland & Stream Conservation Project. Working in the northeastern portion of the proposed SWGSCA project area, the MRPHA has conserved approximately 2,850 acres to date. We hope to build on these successes, and expand the project's conservation efforts to the larger Southwest Wisconsin Grassland Conservation Project Area.



IV. PROPOSED PROJECT

Several resource protection and restoration initiatives are proposed within the project boundary area. Some center on the permanent protection or restoration of large grassland habitat areas and small remnant native habitat sites. Others focus on encouraging supportive land and stream management and agricultural practices by rural landowners in key areas within the project boundary. Each of these initiatives is described below.

As a habitat goal, the Department proposes to acquire 12,000 acres in fee-title and conservation easements within a 473,900-acre project boundary. This boundary is a slightly expanded version of the Preferred Boundary known as "Modified CREP" as presented in the July, 2008 draft document. (See ***Appendix A*** for discussion of all Alternative Boundaries considered.) We plan to focus the majority of our conservation efforts where we have the best chances of building Bird Conservation Areas, while simultaneously protecting prairies, priority streams and endangered resources. About 70 percent of our proposed land acquisition (8-9,000 acres) would be targeted to three select portions of the project we call "Focus Areas." Opportunities to meet project goals in addition to the BCAs can be found across the entire project area, therefore 3,000-4,000 acres of this 12,000-acre total will be reserved for priority conservation opportunities we pursue anywhere within the SWGSCA boundary.

We believe that 12,000 acres is a feasible acreage goal over the short-term. At the same time, we acknowledge that this acreage goal may need to be adjusted at a later date, in accordance with the principles of Adaptive Management and Strategic Habitat Conservation, as we implement the project and evaluate the level of success in achieving our long-term population goals. Monitoring of target species and communities will help us assess the progress of the project and revise our habitat objectives accordingly. (See Item C, below, on Population Objectives and Section V(B) for more discussion on monitoring and adaptive management).

A. Area-Focused Conservation Efforts

Focus areas are regions within the larger boundary where favorable land cover coincides with concentrations of key resources and supportive local landowners and governments.

As we begin implementation, our focusing efforts will progress through four levels, stepping down from the larger project boundary to the individual parcel, as shown here:

1. Project Boundary

(473,900-acre area)

↓

2. Focus Areas

(most favorable regions within the boundary)

↓

3. Bird Conservation Areas

(three 10,000-acre areas, each with a 2,000-acre core)

↓

4. Individual Parcels

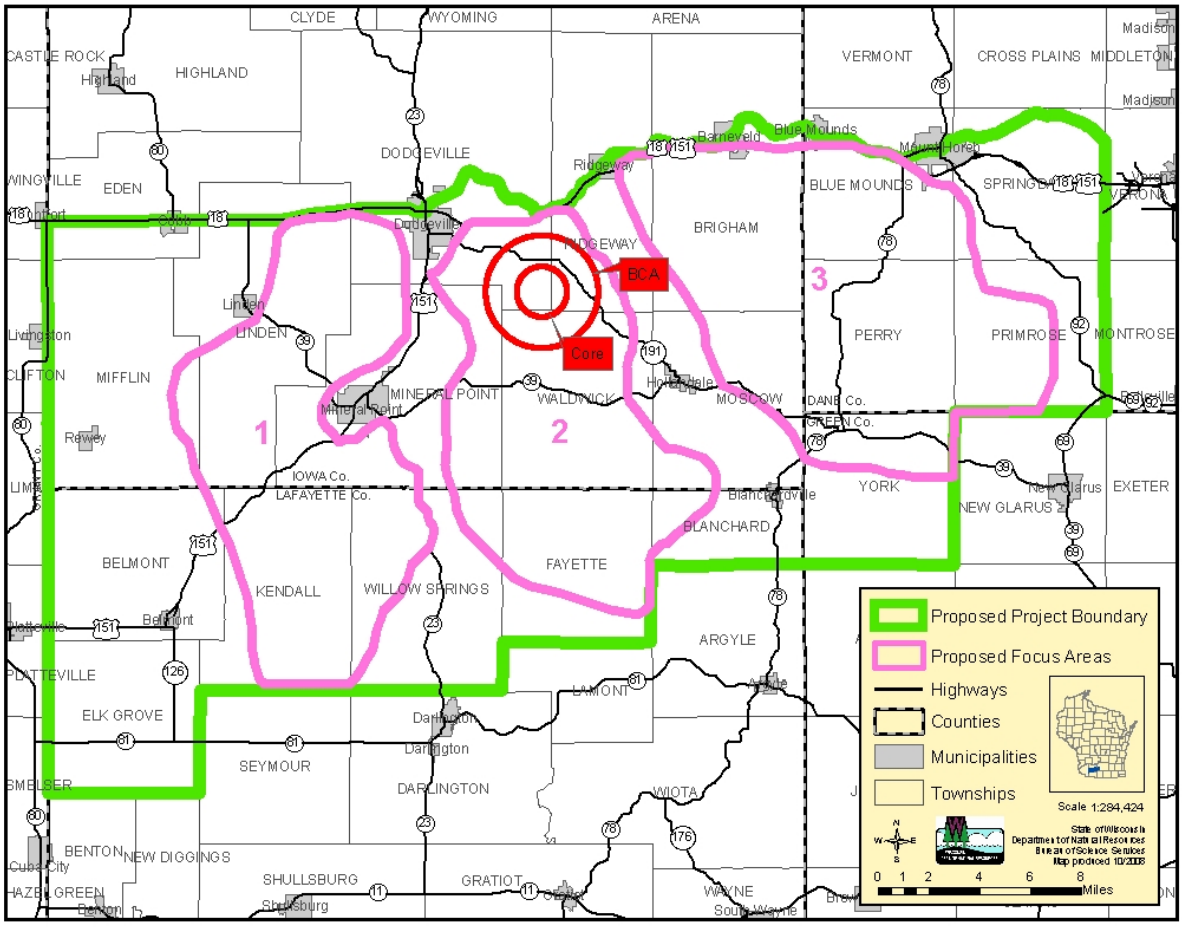
Focus Areas

The Department derived the three Focus Areas shown below by combining aerial photo and land cover maps with overlays of key resources such as priority streams and their watersheds, remnant prairies, endangered resources, and existing conservation lands. Those areas on the landscape where these resource opportunities and needs converge are logical places for the Department and our Partners to begin focusing our conservation work and where we would build BCAs. ***See Appendix B*** for a detailed illustration and discussion of the methodology used to derive the alternative Focus Areas.

Based upon input received during the August 2008 public comment period, minor modifications were made to Focus Area 2, and all three are carried forward as Focus Areas within which BCAs would be sited. These Focus Areas, while developed using best available information combined with field review in 2008, should be regarded as somewhat fluid. As new information continues to become available, and as changes occur across the landscape, further minor modifications may be warranted.

Any changes would be posted on the project's DNR website, along with other regular updates and information notices.

Figure 3: *Project Focus Areas with example of BCA to illustrate scale*

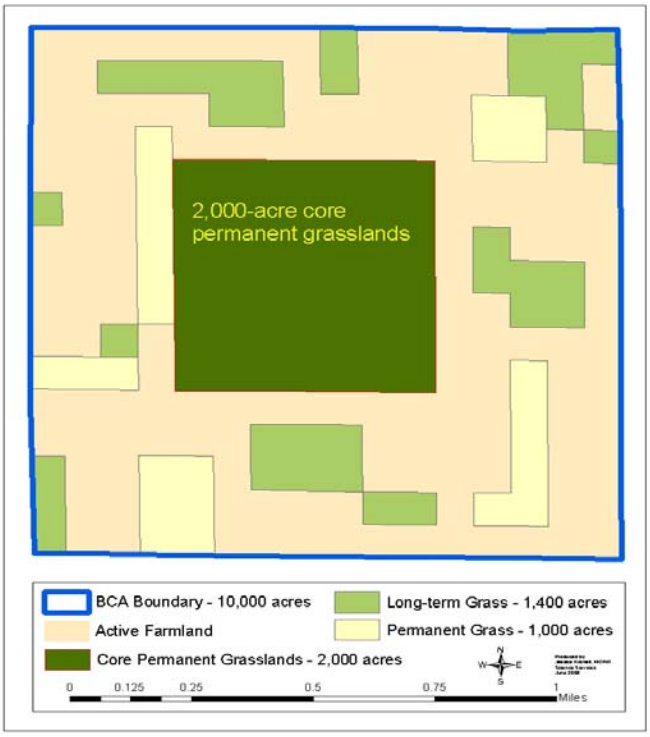


Bird Conservation Areas

Within the Focus Areas, land protection efforts (by acquisition in fee or easement) would further target three 10,000-acre Bird Conservation Areas (BCAs). A number of potential BCA areas exist, however the final BCA sites are yet to be identified. The BCA concept has been recommended as an important conservation strategy for grassland birds in our region by both Partners in Flight (Rich, et al. 2004) and the USFWS Upper Mississippi River and Great Lakes Region Joint Venture (Potter, et al. 2007).

Each BCA will have a core of approximately 2,000 acres of permanent, contiguous grasslands. The core area would be surrounded by a mosaic of mostly private farmland and grasslands, with another 1,000 acres in permanent grass, and 1,000-2,000 acres in long-term grass cover, such as pasture or CRP (see model and sidebar next page). The Department would allocate 8-9,000 acres of its 12,000-acre acquisition authority to the three BCA cores and surrounding permanent grasslands. Partners will help protect acreage in the long-term grasslands as well as portion of these permanent grasslands.

Model of a Bird Conservation Area



What is a Bird Conservation Area?

The Bird Conservation Area (BCA) concept was first proposed by the Midwest Working Group of *Partners in Flight* to maintain populations of breeding grassland birds. The BCA concept is backed by recent research that suggests viable bird populations require conservation efforts at a large, landscape level. The present model grassland BCA model encompasses a block of at least 10,000 acres of public and/or private lands in an open landscape. A large "core" area of protected high-quality habitat, targeted at a minimum of 2,000 acres (20%), serves to anchor each BCA. Around this core is a matrix of primarily private agricultural lands, preferably managed for good bird habitat or at least maintained to be "neutral" in how they affect bird life. The open landscape surrounding the core would also include scattered parcels of permanent grass cover, totaling about 10% of the BCA. Another portion of the landscape outside of the core would be in long-term grass cover (e.g., CRP, SAFE, pasture, old field), totaling 10-20% of the BCA. The balance of the total acreage (50-60%) would remain in privately owned cropland and whatever minimal wooded lands are present. Ideally, all privately owned lands would also be protected from development that would threaten the viability of the BCA.

Landowner assistance programs conducted by Department staff and various cooperating partners will be an essential part of this BCA-building effort. Management agreements (e.g., for haying, grazing), and helping to enroll farmers in appropriate conservation programs such as the new CRP program known as "SAFE" (State Acres For Wildlife Enhancement) would be important conservation tools for these surrounding buffer lands. Proposed criteria for where to site Bird Conservation Areas, and an aerial photo example of a BCA are found in Section V(C) below.

B. Project-wide Conservation Efforts

Beyond these area-focused conservation efforts, the goal is permanent protection of conservation targets that occur in more scattered locations across the project area. These priorities include: native prairie/savanna remnants or pockets of rare species habitat; key streams and grassland buffers, or lands for public fishing access. Up to 4,000 acres (about 30 percent) would be acquired by the Department within the larger project boundary outside the Focus Areas. Additional lands may be protected by other project Partners.

C. Population Objectives

In most cases, our measure of success for target animal populations will be the detection of positive population trends over time as the habitat goals are reached. For steeply declining species, a significant improvement in population trend will be the goal. For groups such as small mammals or invertebrates that have naturally cyclic or fluctuating population levels, trends will need to be assessed over a long time period. The USFWS Upper Mississippi River and Great Lakes Joint Venture (Potter, et al. 2007) has developed population estimates and goals for several grassland birds in Wisconsin. For example, they recommend doubling the Red-headed Woodpecker, Henslow's Sparrow and Eastern Meadowlark populations in Wisconsin, and increasing the Upland Sandpiper population by about one-third above current levels. The Wisconsin Bird Conservation Initiative (WBCI) will use these Joint Venture estimates to develop numerical population objectives for several grassland and savanna birds in Wisconsin, including estimates for the SWGSCA project area; we will adopt those goals when they become available. Ideally, we would like to estimate nesting productivity and other demographic parameters of target grassland birds (and other taxa groups) in BCAs, to determine if we are successful in managing for source, rather than sink, populations.

D. Other Project Purposes and Benefits

In addition to the resource protection and restoration goals, this project would provide significant new recreational opportunities, especially wildlife watching and nature study, hunting, fishing and hiking. It would also contribute to maintaining the area's rural agricultural landscape. When compatible with natural resources priorities, we would promote protection and public awareness of local historic and archaeological features; many can be found throughout this region of the state.

E. Property Designation

The proposed name for the property is the ***Southwest Wisconsin Grassland and Stream Conservation Area (SWGSCA***). Within the DNR this is cooperative, cross-disciplinary project between the Wildlife, Endangered Resources, Watershed and Fisheries programs. Its formal designation will be a State Habitat Area. Authority for this designation and acquisition is provided under Section 23.092, Wis. Stats., which directs that such areas will "enhance wildlife-based recreation in this state, including hunting, fishing, nature appreciation and the viewing of game and non-game species." Further direction for State Habitat Areas is given in Ch. NR 51 (Subchapter V), Wisconsin Administrative Code, which directs the Department to prioritize landscape-scale grassland habitat projects in certain areas of the state, including southwestern Wisconsin, Dane, and Green counties. Within this Habitat Area, it is likely that additional State Natural Areas will be designated, with authority under Section 23.28, Wis. Stats.

V. PROJECT IMPLEMENTATION

Management Tools and Strategies to Meet Project Goals

A. Conservation Tools

There are a variety of tools that we would use to promote conservation on the landscape:

Land Protection Conservation easements provide money to willing landowners in exchange for specific land rights. Purchase of Development Rights (PDR) is a special kind of conservation easement that prevents future land development. Outright purchase of land from willing sellers permanently protects the land and its resources. (See Protection Tools and Tax Impacts section, p. 75.)

Land Management is particularly important in grassland systems. The ecosystem's primary historical driving forces, fire and grazing by roaming herds of elk and bison, are generally absent from today's landscape and must be simulated. Cost-share agreements promote conservation practices that benefit both the landowner and natural resources (see Landowner Assistance section below). Upland habitat management tools include prescribed burns to control weeds and reinvigorate prairies, control of invasive plants, and removal of brush, fence rows, and some woodlots. Habitat restoration can include plantings to restore areas to prairie, restoring previously drained wetlands, and planting riparian buffer strips. Restoring streams by reshaping and re-vegetating stream banks protects water quality and improves fish habitat.

Technical Assistance includes a wide variety of ways that we can help support landowners who are interested in conservation. A few examples would be 1) conducting inventories of native plants and animals found on private property, to provide a foundation for future conservation efforts, 2) providing information to landowners on techniques for restoring and/or managing areas of their property to improve pastures, reduce erosion, improve soil and water quality, and enhance fish and wildlife habitat, or 3) helping farmers to develop managed grazing programs.

Wildlife Friendly Farming Practices emphasize grasses, legumes and small grains. For example, moderate grazing on pastures provides quality forage for livestock, stabilizes eroding areas, filters runoff, and provides habitat for nesting grassland birds. Intensive rotational grazing can promote healthier plant communities, decrease erosion and runoff, improve livestock health, and reduce costs. Planting grass in small, badly eroding areas such as gullies stabilizes them and also provides nesting cover for small animals. Delayed haying allows time for grassland birds to fledge before the grass is removed.

Landowner Assistance Programs are offered by several agencies, and are designed to help farmers keep farming and to farm in ways that are conservation friendly. Several of these programs will continue to be used to help preserve grassland ecosystems and improve water quality in the Southwest Grassland and Stream Conservation Area. Here are some programs that we refer to throughout the document:

USDA Programs: The US Department of Agriculture, Natural Resources Conservation Service, can enroll farmers in seven programs related to grassland conservation in Southwest Wisconsin.

- **Conservation Reserve Program (CRP)** provides annual rental payments and cost-share assistance to farmers to establish long-term, resource-conserving cover on eligible farmland. A new CRP program, called **SAFE (State Acres for Wildlife Enhancement)**, has allotted 4,000 acres to this project area. The SAFE program allows grass and forb mixes only, and may be applied to areas not classified as highly erodible cropland, and in so doing can complement traditional CRP or CREP lands.

- **Conservation Reserve Enhancement Program (CREP**) provides annual rental payments and cost-share assistance to farmers to establish long-term, resource-conserving cover on environmentally sensitive land near rivers and streams in two designated grassland areas of Wisconsin. One of these, the CREP Southern Grassland Area, was the original boundary proposed for this project. The CREP boundary is contained within the larger recommended boundary of the Southwest Grassland and Stream Conservation Area.

- **Environmental Quality Incentives Program (EQIP)** provides financial and technical help to farmers to implement conservation practices on agricultural land

- **Grassland Reserve Program (GRP)** provides financial help to farmers for long-term protection of open grasslands that are threatened by development or conversion to more intense cropping

- **Wildlife Habitat Incentives Program (WHIP)** provides technical assistance and cost sharing to help landowners establish and improve wildlife habitat on their land

- **Farm and Ranch Lands Protection Program (FRPP)** keeps productive farmland in privately owned agricultural by providing up to 50% of the cost of purchasing conservation easements or development rights on productive farmland, and on farms containing significant historical or archaeological resources.

- **Conservation Stewardship Program (CSP)** provides annual payments to producers who practice good stewardship on their agricultural lands. The program is designed to reward the best conservation stewards of the most environmentally sensitive areas in targeted watersheds. This program is implemented on a watershed basis. At this time there are no watersheds within the Southwest Grassland and Stream Conservation Area where CSP is active. Within the next several years, it is likely that additional watersheds will be added to the CSP program, and some of those are likely to encompass part of the proposed project area.

USFWS Programs: The US Fish and Wildlife Service, through their private lands program, also helps farmers to provide habitat for wildlife on their land.

- **Private Stewardship Program** provides cost-sharing to private landowners for conservation efforts that benefit federally listed, proposed, or candidate species, or other at-risk species

- **Partners for Fish and Wildlife Program** offers technical and financial assistance for habitat restoration on private lands.

- **Landowner Incentive Program (LIP)** provides cost-sharing to help private landowners improve and manage habitat for rare (at-risk) species. This program is funded by USFWS and implemented by the Department of Natural Resources. The southern/western prairie and savanna ecological landscapes of Wisconsin are a program priority.

B. Conservation Strategies

Conservation strategies employ the tools discussed above.

Strategies for Goal 1: Protect, restore and manage priority natural communities and associated rare and declining species

1. Establish Outreach and Assistance Programs

The outreach programs are intended to provide a variety of technical assistance programs to project area landowners and local governments. ***Efforts would particularly be focused on the Bird Conservation Areas, priority stream corridors, and areas with quality prairie remnants and rare species***.

The following types of programs or services would be provided:

a. **Landowner Technical Assistance:** The Department together with cooperating partners would provide direct one-to-one technical assistance to area landowners:

- to support landowner's efforts to restore and manage grasslands, oak savannas, high quality oak woodlands, and streams on their properties
- to help landowners learn about and enroll in USDA and USFWS landowner assistance programs
- to encourage alternatives to tree-planting where open landscapes are desired

We have heard from area landowners again and again, that it is critical to have local people on the ground, helping them sort through the conservation programs and options available, and to guide them through the application and enrollment process. One way this could be done is by cooperatively funding two or three landowner contact specialists.

b. **Educational Materials:** The Department will create a series of brochures and educational displays that provide information about the history and importance of grassland, savanna and stream ecosystems in southwest Wisconsin.

c. **Interagency Cooperation:** Share recommended conservation actions and priorities from Wisconsin's *Wildlife Action Plan* with other departments, agencies and organizations. For example, work to incorporate priorities such as creating habitat for fish and wildlife Species of Greatest Conservation Need into agencies' landowner assistance programs.

d. **Invasives Management:** Work with local groups to establish a "Cooperative Weed Management Area" in the project area. This will help bring new partners, local governments, organizations and individuals to the table as well as new sources of funding, to help address the huge threat that invasive plants pose to prairies, savannas and grasslands in the project area.

2. Acquire, Restore, and Manage Large Permanent Grassland Areas and Remnant Habitat Sites

a. **Inventory, protect and manage key lands** to permanently protect and buffer managed grasslands in and surrounding BCA cores, as well as remnant prairies, oak savanna (oak openings), some high-quality oak woodlands, and priority streams that are of particularly high quality, support rare species, or contribute to permanent managed grassland areas. (See the BCA criteria and mapped example, below in Section C.)

About 70 percent of this acquisition effort would be focused within the BCAs, especially to establish the three 2,000-acre core grassland areas. The remainder of the acquisition, in fee purchase or easement, may occur in other locations within the Focus Areas, or across the entire project boundary.

b. **Monitoring:** Monitoring is a critical cog in the wheel of Strategic Habitat Conservation and Adaptive Management (Potter et al. 2007). Without adequate monitoring, the success and efficiency of the project is unknown. The habitat monitoring program will include analyzing land-cover changes by tracking changes

in habitat acreages using databases such as the EPA's National Land Cover Database and the NRCS's Natural Resources Inventory); these data will be useful for coarse-grain analyses. Computerized mapping will be used in conjunction with field cover-mapping to track progress of protection over time in BCA cores as well as in small sites such as high quality prairies, savannas, and stream reaches.

3. Protect rare and declining species, including native plants, fish, grassland birds, mammals, prairie-dependent invertebrates and others

a. Protect habitat: Permanently protect, buffer, manage and restore the native communities and habitats that support those species. Priority conservation actions for protecting individual Species of Greatest Conservation Need and their habitats in this area of Wisconsin are outlined in Wisconsin's *Wildlife Action Plan*, found at***: http://dnr.wi.gov/org/land/er/wwap/***

b. Inventory: Identify additional locations in the project boundary supporting rare species, including those that historically supported rare species but have not been sampled in recent years. Additional surveys are particularly important for rare invertebrates; in many cases we know very little about their distribution, status, and habitat requirements.

c. Monitoring: Develop a comprehensive long-term monitoring program for populations of target species that will allow the Department to evaluate progress toward protecting our priority natural communities and the species that depend on them. The specific details of what species will be monitored and what techniques will be used will be developed upon implementation. For some taxa, an indicator or "umbrella" species may be chosen to reflect a species group. Standard survey techniques will be used for most taxa. For example, landscape responses of bird populations will be monitored by using the USGS Breeding Bird Survey methodology both within (treatment) and outside of (control) the project area. Northern Cricket Frogs can be monitored using the standard Frog and Toad Survey protocol, and Regal Fritillaries can be monitored with a standard protocol developed by The Nature conservancy. For some species such as rare invertebrates, new monitoring methodologies may have to be developed. Monitoring results will then be used in an adaptive management framework to gauge the success of our management activities and then revise project goals and strategies accordingly.

d. Education: Provide information to landowners highlighting specific management actions that would benefit rare species found on or near their land (e.g., optimal mowing times, preferred intensity and duration of grazing, recommended timing or frequency of prescribed fires).

e. Restoration: Consider restoring populations of rare species to locations where they were historically present and where habitat improvements indicate their likely long-term survival. For example, improvements in water quality within the Sugar-Pecatonica Basin may enable restoration of redside dace to cool-water streams where they historically occurred.

4. Protect watersheds of warm-water and cold-water streams that have been designated as Outstanding or Exceptional Resource Waters and restore, protect and manage degraded ("Impaired") streams and riparian corridors

A complete list of these streams is found on p. 41

a. **Update surveys:** The Department will sample warm-water streams that have not been sampled in recent years to identify locations supporting rare aquatic species, including fish, reptiles and amphibians.

b. **Establish and maintain permanent watershed grass cover:** Establish or maintain existing long-term grass cover of 20 percent or more within priority watersheds. A two-pronged approach is recommended:

- The Department and cooperating partners would accomplish this by providing technical or financial assistance for installing or maintaining soil and land conservation practices on their land.
- The Department may acquire key grassland parcels in the watersheds of these priority streams, which are a key element in focusing our conservation efforts. Many of the permanent grass cover areas within the BCAs may substantially contribute to this goal.

c. **Update stream designations:** Department watershed and fisheries biologists will work to identify waters not meeting their designated biological use (for example, streams degraded to the point that they are not meeting their stated fishery and biological community goals) and update the state's list of impaired waters.

d. **Stream restoration:** Once conditions in the watersheds of our priority warm-water streams have improved to the point that water quality concerns have been addressed, the Department will consider projects to restore stream channel morphology (shape, depth, path of channel) in degraded reaches of priority streams. Such projects are generally undertaken in conjunction with a partner organization, and are typically funded through River Management Grants, State Wildlife Grants, or other grant programs.

e. **Monitoring:** Stream response (e.g., water quality, channel morphology, stream Index of Biotic Integrity, fish sampling) to protection and management activities will be monitored in key watersheds.

<u>Strategies for Goal 2</u>: Develop and enhance compatible recreational opportunities such as hunting, bird-watching, trout and bass fishing, trapping, nature study, paddling, hiking, and appreciation of the area's cultural history.

a. **Land Acquisition:** Provide compatible recreational opportunities in the project area on lands acquired in fee, or work to secure public access on lands that are protected by easement. There are limited instances where open public access may not be appropriate, particularly where highly sensitive resources and species are involved. (See Section VII for discussion of Public Access.)

b. **Education:** Enhance recreational experiences by developing educational materials that highlight stream and grassland-related points of interest on or near Department properties. Examples might include installing displays along bike trails highlighting rare plants and butterflies that can be seen on nearby prairies, signs illustrating the life history and importance of native brook trout along trout streams, or kiosks at stream restoration sites that describe the culture and life surrounding historical cheese factory operations in the area.

c. **Streambank Protection:** Continue work through the Streambank Protection Program to increase public access to high quality fishing areas, particularly streams supporting brook trout and smallmouth bass.

d. **Compatible Corridors:** Work with Wisconsin Department of Transportation and utility companies to enhance recreational opportunities and minimize negative aesthetic impacts of roadway and powerline corridors within the project area

e. **Great Birding Trail:** Promote the Southwest Savanna Great Wisconsin Birding and Nature Trail in southwest Wisconsin, highlighting some of the many great birding opportunities in the project area.

f. **Monitoring:** Usership patterns on public lands acquired will be assessed as funding allows, using tools such as onsite surveys, consultation with local units of government, and coordination with the Department of Tourism and other local recreation and sporting groups.

<u>Strategies for Goal 3</u>: Help sustain the area's rural agricultural landscape

a. **Landowner Technical Assistance:** Department and contributing Partners will provide staff to assist farmers and help them enroll in USDA programs that provide financial and technical assistance, such as CSP, and GRP. The Department's specific role will be to help fund 2-3 landowner contact specialists, whose duties will include contacting farmers to promote the project and helping farmers to enroll in NRCS farm programs.

b. **Compatible Land Use:** Protect and manage lands in a manner that is compatible with surrounding agriculture

c. **Conservation Easements:** Help reduce the land investments for some farmers interested in selling or easing valuable conservation lands, while continuing to farm remaining higher production lands, including easements using State Stewardship funds and USDA's Farm & Ranchland Protection Program (FRPP).

d. **Policy Input:** The Department will work to provide input to USDA, DATCP, and our state and national legislators about conservation implications of proposed changes in farm policies and programs, and to recommend actions that would benefit both conservation and local producers.

e. **Agricultural Land Management of Department Land:** The Department will in some cases use land management tools, including management agreements or cropland rental, to continue project-compatible agricultural uses on Department owned land.

f. **Education:** The Department will work with DATCP to create brochures and other educational materials and displays highlighting the history of farming in southwest Wisconsin, and the importance of maintaining grass-based agriculture to provide habitat for fish and wildlife.

g. **Working Lands Initiative:** Promote the establishment of a *Working Lands Initiative* project (a recently proposed program by Wisconsin's Department of Agriculture, Trade and Consumer Protection) in this project area. This program seeks to take advantage of opportunities in agricultural regions such as developing bio-fuels, promoting diverse and value-added agriculture, supporting high-quality urban development, and focusing on the ecological services provided by healthy agriculture.

h. **Value-added agriculture:** Encourage efforts on the part of producers to market agricultural products that are produced in a way that is compatible with grassland conservation. For example, develop an "Eco-label" for milk produced on pastures managed to provide demonstrated benefits to grassland birds

i. **Monitoring**: Partners can help monitor the impacts of the project on agricultural lands and practices in the project area. It will be important to monitor agricultural trends over time so project goals and strategies are adjusted to accommodate changing land use practices.

<u>Strategies for Goal 4</u>: Work with local communities to help design and locate development in places that minimize impacts on grassland, savanna and stream ecosystems, while promoting a healthy rural economy.

a. **Land Use Input:** Work to incorporate consideration of natural resource conservation into local planning and decision-making processes. Provide local communities with technical information on key natural resources within their planning jurisdiction, and become involved in comprehensive planning wherever possible.

b. **Inventory:** Encourage and support local communities in their efforts to survey and assess key resources in areas that are the subject of current or future land-use planning.

c. **Nature-Based Tourism:** Assist with local efforts to promote grassland-based tourism in the project area. An important first step will be to provide information to local leaders and communities about the economic and aesthetic benefits of conserving healthy streams, open space, and wildlife habitat in and around their communities. Tourism and recreational activities such as bird-watching, fly-fishing, and hunting can generate significant income for local communities.

<u>Strategies for Objective 5</u>: Promote appreciation of historical, cultural, and archaeological resources.

a. **Enrich land protection benefits:** When protection is warranted based on natural resources present, work to enrich the inherent value and public benefits of land protection where there is opportunity to encompass archaeological, cultural and historical features either on the site, or within its viewshed.

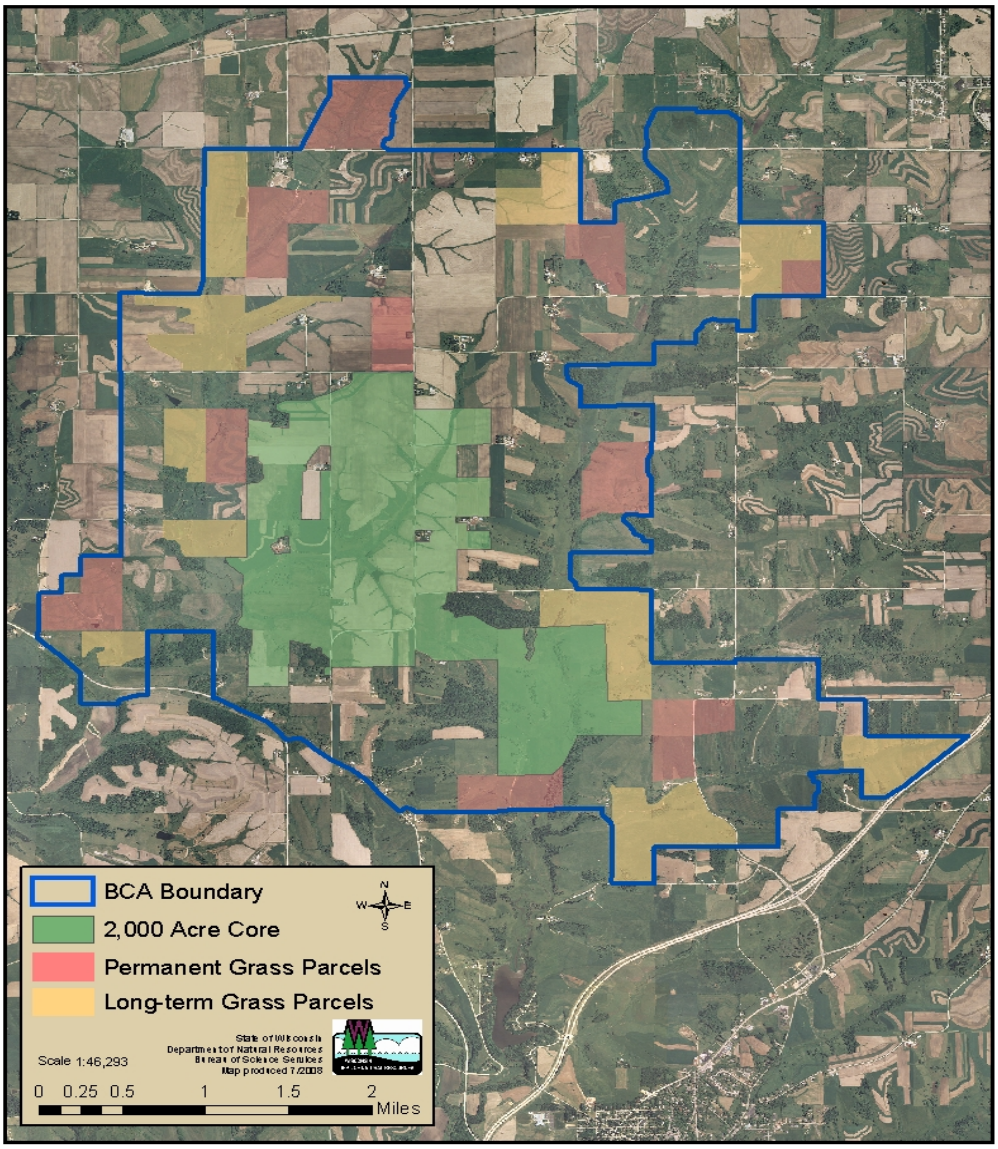
b. **Consider historic data:** Obtain information from the State Historical Society on the locations of such historic and archaeological features and consider this data in land protection planning efforts.

c. **Public Awareness:** Work with state and local historical societies and local governments to create outreach materials describing important cultural, historical, and archaeological sites visible from Department properties.

C. Criteria for Locating Bird Conservation Areas

As previously described, the proposed Bird Conservation Areas (BCAs) are 10,000-acres or more in size, with **a core of contiguous permanent grassland of 2,000 acres or more**, and a goal of having a total of 40-50% of the landscape in the Bird Conservation Area in either permanent or long-term grass cover. Long-term grass cover (e.g., CRP or pasture lands) may shift spatially over time. The example mapped below shows a mock-up of what a BCA might look like on the ground.

Figure 4: *Mock-up aerial photo showing an example of a Bird Conservation Area*



Final locations of BCAs have not yet been proposed. They would be located within the selected final Focus Areas. Intensive coordination with local landowners, local government, and conservation Partners will be needed before settling on final 10,000-acre BCA areas.

The following criteria will be used to guide the establishment of the Bird Conservation Areas:

General or Socio-Political Criteria

- Favorable landowner matrix (patterns of ownership)
- Concentrations of CRP/SAFE, CREP long-term enrollments, WHIP, etc.
- Partner willingness and ability to focus work in given area (includes Counties)
- Concentrations of interested landowners and local governments
- Favorable land use planning and practices
- Relatively low development pressure
- Existing protected lands

Land Cover/Natural Resource Criteria:

- Existing agricultural lands: Areas of > 5,000 acres (preferably ≥10,000 acres) that have a minimum of 50% (preferably 60%) of the land in some form of agriculture.

  Areas dominated by grass-based agriculture (e.g., pasture, grass or grass-alfalfa hay, also small-grains) preferred. Relatively compact areas are also preferred (i.e., low perimeter-to-area ratio).

- Existing grasslands: Areas of > 5,000 acres (preferably ≥10,000 acres) that have a minimum of 15% (preferably 20% or more) in existing grass (e.g., prairie remnants, pasture, grass hay, CRP, CREP, old field).

  Relatively compact (low perimeter **:** area ratio) areas are preferred, as are areas where the connectivity of grassland cover is high. Grasslands located on large, open ridge tops and, secondarily, broad valleys are particularly important for grassland birds

- Minimally wooded areas: The goal is to locate BCAs in landscapes – preferably ≥10,000 acres in size – as open (treeless) as possible.

  In dissected landscapes characterized by ridges and draws, and where woods are generally restricted to those draws, we will seek areas where 25% or less of the landscape is wooded. In flatter landscapes, we will seek areas where woods make up less than 10% of the landscape.

- Minimally developed areas: We will seek areas where 5% or less of the landscape is classified as developed land. We should strive to avoid locating BCAs where land is currently zoned to allow development, or identified for future development in local land use plans.

D. Criteria for Selecting Specific Parcels of Land for Protection

Implementation will be guided by a SWGSCA Land Conservation working group, who will work in an ongoing, coordinated manner (see Section VII, below for more discussion on the project's acquisition approach). This Land Conservation working group would use the **23 criteria listed in Appendix C** to help prioritize acquisition efforts at the local (parcel) scale.

E. How Lands Acquired by the Department would be Managed

Management approaches used on individual parcels will vary based on the management potential and opportunities for the site to contribute to project goals, which in turn are derived from site-based factors such as soils, topography, hydrology, and cover type, parcel size and surrounding land uses. The Department will manage lands it acquires (or assumes management responsibility for) within the project area as follows:

Native prairies and oak savannas

Land management in areas of native prairie and oak savanna will focus on simulating the disturbances (primarily fire) that historically functioned to maintain structure and diversity in these communities in pre-Columbian and pre-settlement times. The following management practices would be applied on these areas:

- Prescribed burning will be used to invigorate native grasses and forbs, suppress encroachment of woody species, and in some cases control non-native invasive plants.
- Cutting, mowing, brushing, and herbiciding will be used to remove invading trees and shrubs and to restore community structure and composition
- Mowing, pulling, and herbiciding will be used to control invasive herbaceous plants. The primary invasive plants of concern within the project area are spotted knapweed, leafy spurge, crown vetch, wild parsnip, sweet clover, honeysuckle, buckthorn, black locust, and a number of cool-season grasses such as smooth brome and reed canary-grass.

Care will be taken not to unduly reduce populations of prairie/savanna-restricted insects that may be sensitive to fire, such as the Regal Fritillary butterfly. Precautions include leaving adequate unburned refugia habitat in any given year, and following the Department's incidental take protocols for grassland management. In addition, care will be taken to leave sufficient and appropriate brush habitat for certain grassland and savanna birds, such as Bell's vireo and willow flycatcher, which require a brush component within an open landscape, for nesting. This will be done without compromising the habitat requirements of the other grassland and savanna species.

Managed grasslands

Managed grasslands purchased by the Department will primarily be managed as permanent grass cover, with some portions rented to local farmers for periodic cropping or grazing, where such activities do not conflict with management goals. Options currently available to managers will be tailored to individual parcels or clusters of parcels and be designed to fit into the local agricultural community. Management practices here include:

- Removal of tree rows (e.g., along fence lines) to open the landscape and remove habitat for grassland bird predators
- Cutting, brushing of woody vegetation
- Planting native prairie grassland species, cool-season grasses or legumes
- Haying or rotational grazing
- Mowing, pulling or herbiciding invasive herbaceous plant species
- Prescribed burning

The management goal will be to maintain a mixed grassland agricultural landscape that minimizes encroachment of woody species, provides diversity in grassland structure (e.g., short to tall grassland), minimizes fragmentation of the landscape by non-grassland features (e.g., tree rows), and serves as a buffer to native prairies and savannas.

Streams and Wetlands

Land management of fisheries easement areas is generally the responsibility of regional fisheries and operations staff. Management of acquired stream corridor lands is prioritized by need and largely driven by time since the last maintenance was conducted. Where possible, the Department strives to have other groups such as Trout Unlimited and Deer Creek Sports Club hold the easements and assume the responsibility for maintenance of the eased lands. Management practices for streams and stream-valley wetlands would include:

- Cutting, brushing, and herbiciding trees and other woody vegetation
- Mowing, pulling or herbiciding invasive herbaceous vegetation such as ragweed, wild parsnip, and reed canary grass
- Restoring riparian corridors and wetlands through removal of sediment deposited in floodplains, grading, and channel re-shaping to restore meanders and reconnect the stream to its historic floodplain
- Planting of stream banks and riparian corridors to native vegetation
- Improving fish habitat, for example, by providing rock and overhead cover

Recreational Developments

Lands acquired through this project will provide opportunities for nature-based recreational activities that are compatible with the larger management and conservation goals. When sufficient land has been acquired to allow site-specific planning to occur, a more comprehensive recreational use and management plan will be developed to guide decisions on locations for parking lots, hiking trails or other developments. Compatible activities include: hiking, bird-watching, fishing, hunting, trapping, and nature study. We do not envision establishment of ATV trails in these conservation areas, as such activity would be incompatible with grassland and prairie restoration, bird nesting, rare species protection, hiking, or nature observation.

The following criteria will be applied when determining what, and where, we will develop recreational opportunities:

1) Activity is compatible with overall natural resource conservation objectives
2) Activity is compatible with management practices in the area, including agricultural practices such as haying or grazing
3) Public safety is not jeopardized
4) Area is accessible from area roads or public lands
5) There is sufficient regional demand or interest in the activity, that is not provided or could not be provided elsewhere

F. Target Species and Management

Each type of native community (e.g. prairie, oak woodlands, warm-water streams) has certain species or groups of characteristic wildlife and plant species. Subsets of these have been identified for each community to help guide management and to monitor success. Target species are important for the following specific reasons:

1) The specific locations of existing populations of some of these species on the landscape may indicate places where conservation actions would be particularly valuable,
2) These species have particular biological or spatial life history needs that may not be met simply by management to maintain the community type. Additional special management actions may be required, and
3) These species may be important as performance measures: monitoring population sizes, distribution, and trends for these species may illustrate how well our actions are translating into conservation success on the

landscape. See monitoring discussion in *Conservation Strategies* section above. Information derived from monitoring will then be plugged into an adaptive management framework.

In many cases, these targets were initially developed by The Nature Conservancy for use in the Military Ridge Prairie Heritage Area.

The target species* by community type that will be used for this project are:

- ***Important Target species for native prairies***: Red-Tailed Leaf hopper and other rare, prairie restricted insects; Regal Fritillary, Prairie Bush Clover, Hill's Thistle, Wild Quinine, Tuberous Indian Plantain, Wooly Milkweed, Wood Lily, Grasshopper Sparrow
- ***Important Target species for managed grasslands*:** area-sensitive grassland birds (including Upland Sandpiper, Northern Harrier, Short-eared Owl, Western Meadowlark), Henslow's Sparrow, Prairie Vole, Franklin's Ground Squirrel, Bullsnake
- ***Important Target species for oak openings***: Red-headed Woodpecker, Bell's Vireo, Brown Thrasher, Northern Bobwhite, Loggerhead Shrike, Field Sparrow
- ***Important Target species for oak woodlands***: Red-headed Woodpecker, Wood Thrush
- ***Important Target species for warm-water streams***: Ozark Minnow, Slender Madtom, Northern cricket frog, smallmouth bass
- ***Important Target species for cold-water streams***: Brook Trout, Mottled Sculpin, American Brook Lamprey, stoneflies (*Plecoptera* sp.)

* Note that with the exception of Smallmouth Bass and the target species for cold-water streams, all target species are either Species of Greatest Conservation Need, listed as Endangered or Threatened, or both.

A. Natural Resources

1. Terrestrial Resources

a. Geology

The proposed Southwest Grassland and Stream Conservation Area is within a larger geological region known as the "Driftless Area"—an area free of any glacial deposits (which once were called "drift"). The largest part of this region is in Wisconsin, including the southwestern and much of western portions of the state. The area's topography is very different from the rest of the state and from much of the Upper Midwest; the continental ice sheets that advanced and retreated for the past 2.4 million years completely surrounded, but never covered, this southwest upland area. The Driftless Area is a plateau that has been deeply carved and dissected by flowing rivers and streams into hills, ridges and valleys.

The predominant underlying bedrock is Platteville-Galena dolomite, which caps most of the area's ridges. Most of the renowned lead and zinc ore deposits of this region were mined from these Ordovician limestones and dolomites. (See the *Cultural Resources* section below for a discussion of the lead mining heritage of the region.) The Platteville-Galena formation is clearly seen in the rock cuts along U.S. Highway 18/151 near Dodgeville. It is extremely rich in fossils, and permeated by numerous sinkholes, fractures and caves; shallow bedrock with these features can easily lead to groundwater contamination.

At the northern edge of the proposed project area, the Military Ridge runs east-west through southwestern Dane County and the middle of Iowa County. This ridge follows a north-facing escarpment formed by erosion of the underlying dolomite. It is a major drainage divide between the north-flowing tributaries to the Wisconsin River, and south-flowing tributaries to the Rock and the Mississippi Rivers. The weaker sandstones north of the ridge are deeply cut into steep slopes and valleys, many unsuitable for agriculture and more heavily forested. The more erosion-resistant dolomites south of the ridge are less deeply dissected, and slope very gradually southward to the state line (about 5-6 feet per mile). Since the major streams here all flow south, the region has a series of very broad and gentle ridges and valleys trending north-south from the main Military Ridge divide.

Because the topography and land cover south of the Military Ridge differ from what is found in unglaciated regions to its north, it is considered to be the northern boundary of Wisconsin's "Southwest Savanna Ecological Landscape."

b. Soils

Many areas within the region are of Capability Class III or below, having severe limitations for cultivation. Soils are predominantly well-drained, with wet soils concentrated in drainage ways, river bottoms, and occasional side-hill seepages. Driftless Area upland soils were formed primarily from wind-blown deposits of silt, called "loess," carried from exposed and dried flats along glacial meltwater rivers. These loess deposits range from 1 to 5 feet in thickness across the region, deeper toward the Grant County line. In Iowa County, 25 percent of the soils are classified as Prime Farmland.

c. Upland Communities, Non-game Species and Endangered Resources

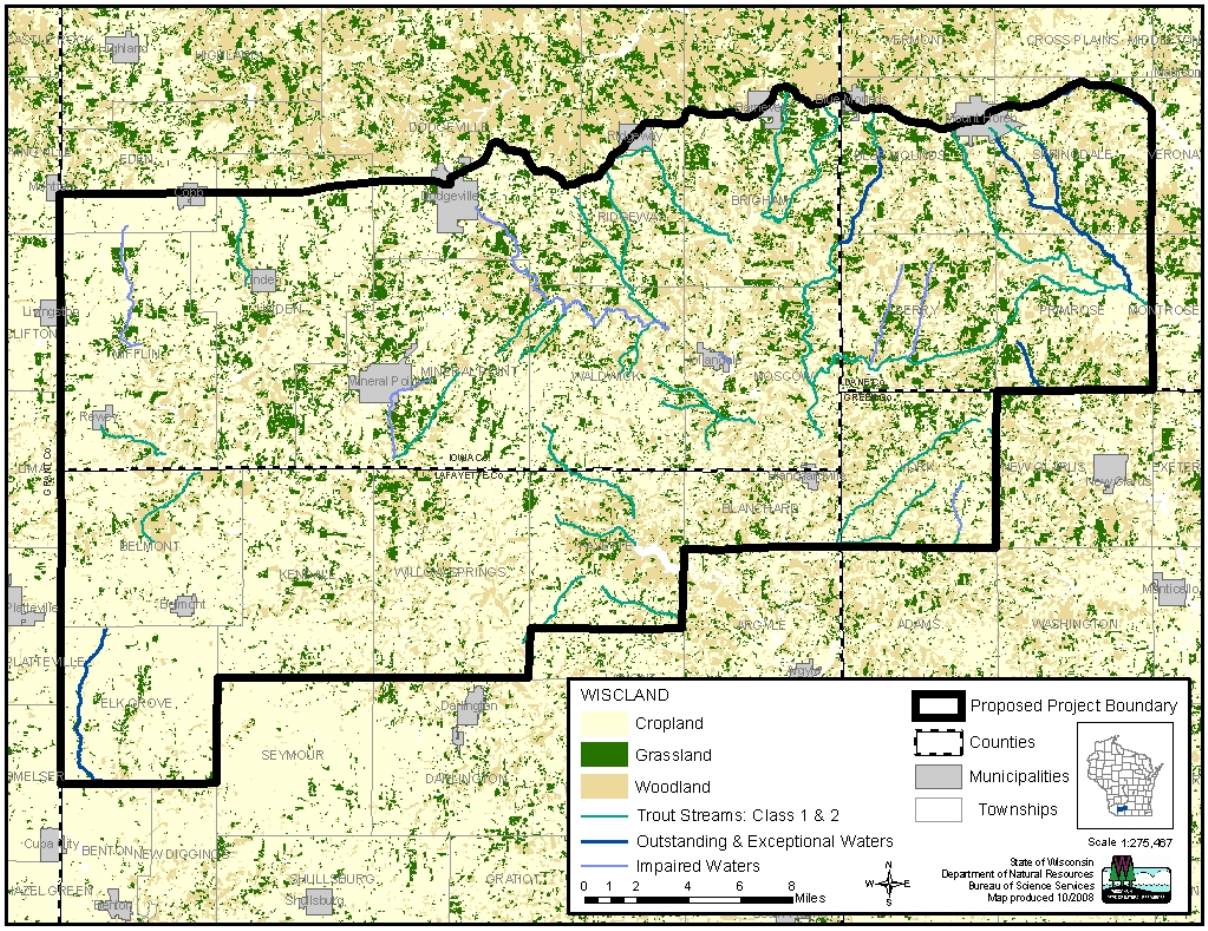
Historically, this landscape was predominately tall grass prairie and oak savanna. Groves of forest occurred on the steep slopes, and the broad valley bottoms often had sedge or marsh vegetation. Today, 64% of the landscape is agricultural crops. The remaining land cover consists of mostly forest (20%) and grassland

(14%), with much of it in pasture. Small patches of wetland (0.8%), barren areas (0.7%), urban areas (0.4%) and open water (0.2%) make up the remaining land cover (see Figure 5, below).

High quality prairie remnants occur on rocky hilltops and slopes that are not farmed. Some prairie pastures and oak savannas still exist. Grassland areas, which occasionally include native prairie, harbor many grassland birds, invertebrates and other grassland species. Relict stands of pine are found on bedrock outcroppings along some streams. Priority natural communities and many of the rare species found within the project area are described below.

Please see ***Appendix D*** for a more detailed description of all of natural communities occurring within the project area. See ***Appendices E, F and G*** for complete lists of rare or uncommon species that are either known to occur, or likely to occur within the project area

Figure 5 : *Grassland and agricultural land cover, with priority streams shown*



Upland Communities:

i. **Native Prairie** – Before European settlement the region was dominated by tallgrass prairie and oak savanna, with wooded valley slopes and river bottoms. Although common historically, these dry, dry-mesic and mesic prairies are extremely rare today. The dominant plant species are native grasses, such as big bluestem and Indian grass, little bluestem, needle grass, side-oats grama, prairie dropseed, and switchgrass. The forbs are extremely diverse with an acre of prairie usually having more than 100 species.

Rare plants that we would expect to find on these native prairies in the proposed project area include: Wooly Milkweed, Marbleseed, Prairie Bush Clover, and Hill's Thistle.

Wildlife Species of Greatest Conservation Need expected to be found in native prairie in the project area include:

Birds: Northern Harrier, Short-eared Owl, Dickcissel, Henslow's Sparrow, Bobolink, Grasshopper Sparrow, Eastern Meadowlark, Western Meadowlark, Willow flycatcher, Field Sparrow, Bell's Vireo, Brown Thrasher, Loggerhead Shrike, Vesper Sparrow

Mammals: Franklin's Ground Squirrel, Prairie Vole

Reptiles and amphibians: Yellow-bellied Racer, Prairie Ringneck Snake, Bullsnake

Invertebrates: Regal Fritillary, Whitney's Underwing Moth, Wild Indigo Dusky Wing, Ottoe Skipper, Byssus Skipper, Velvet-striped Grasshopper, Haldeman's Grasshopper, Handsome Grasshopper, Red-tailed Leafhopper, Prairie Leafhopper, Net-veined Leafhopper

ii. **Oak Savanna** – This is an oak-dominated savanna community in which there is less than 50% tree canopy coverage. Historically, oak savannas were very abundant and occurred on wet-mesic to dry sites. Today very few high quality examples with intact understory vegetation exist. Almost all sites were converted to agriculture, heavily grazed, or invaded by woody species due to fire suppression. Bur and white oaks are dominant in this landscape. Shagbark hickory and American hazelnut are commonly found along with herbs similar to those found in oak forests and prairies.

iii. **Oak Woodland** – The oak woodland community occupies a position between oak savanna and oak forest. This woodland community differs from savanna types in the limb architecture of its trees (which are **not** characterized by wide, spreading crowns over short thick boles) and greater crown closure (with an approximate 50% to as much as 95%). Historically oak woodlands were subjected to frequent (annual) fires of low intensity and lacked a dense woody understory that characterizes most oak forests.

Rare plants that we would expect to find on oak savannas and oak woodlands in the proposed project area include: Yellow Gentian, Purple Milkweed, Upland Boneset, Wild Hyacinth

Wildlife Species of Greatest Conservation Need expected to be found in oak savannas and oak woodlands in the project area include:

Birds: Red-headed Woodpecker, Brown Thrasher, Field Sparrow, Northern Bobwhite, Blue-winged Warbler, Vesper Sparrow, Eastern Meadowlark, Whip-poor-will, Wood Thrush

Reptiles and amphibians: Prairie Ringneck Snake, Bullsnake, and Black Rat Snake

Mammals: Eastern Red Bat, Northern Long-eared Bat, and Woodland Vole

Invertebrates: Scudder's short-winged Grasshopper, Hickory Hairstreak, and Pink Sallow

iv. **Managed grasslands**– Surrogate communities are usually created habitats that may be similar to and partially mimic the structure and function of native habitats. Tallgrass prairie and oak savanna are now the most diminished and threatened plant communities in the Midwest. As a result, an estimated 20% of the state's original grassland flora is now considered rare. Grassland mammals and birds have fared somewhat better, using surrogate prairie grassland such as grass hayfields and pastures for their survival needs. However, declines in the proportion of agriculture devoted to pasture and grass hay has resulted in declines in grassland birds.

Managed grasslands now represent the vast majority of grassland habitat in the state. They are similar in structure to the former prairies that occurred in Wisconsin, but not in composition. Surrogate grasslands with the highest wildlife values include agricultural habitats such as hayfields, small grains, fallow fields, pastures, and set-aside fields (e.g., CRP) planted to cool season grasses (such as smooth brome, timothy, redtop, bluegrass or quackgrass) or warm season grass plantings (such as big bluestem, little bluestem, Indiangrass, and switchgrass). Surrogate grasslands also include other idle grassland, such as those on public or private lands managed for wildlife (especially Ring-necked Pheasant, a non-native but popular game species).

Wildlife Species of Greatest Conservation Need found in managed grasslands and occurring within the proposed project area include the following:

Birds: Northern Harrier, Northern Bobwhite, Upland Sandpiper, Short-eared Owl, Loggerhead Shrike, Dickcissel, Grasshopper Sparrow, Henslow's Sparrow, Bobolink, Eastern Meadowlark, Western Meadowlark, Willow Flycatcher, Brown Thrasher, Bell's Vireo, and Field Sparrow.

Mammals: Franklin's Ground Squirrel, Prairie Vole

d. Game Wildlife

For the last 40 plus years, white-tailed deer have been the most significant game species available for hunting recreation in the proposed project area. This primacy was challenged with the reintroduction of eastern wild turkeys to the area beginning in the late 1970's. Pheasants, traditionally a species more of SE and NW Wisconsin, have been becoming much more common in the southwest with the establishment of significant CRP grassland habitat over the last 20 years. Pheasant and bob-white quail populations have also benefited significantly from recent mild winters.

Ruffed grouse and woodcock populations have declined significantly from historic levels, possibly due to maturing woodland habitat, but the exact reasons are not well understood. Woodland edge species such as rabbits and squirrels, are generally plentiful, and remain a staple of southwest hunters as they have for generations. Their supply usually exceeds hunter demand.

With few deep-water wetlands in the area, waterfowl hunting is generally limited to farm ponds, picked-crop fields, and jump-shooting along the lower reaches of the Pecatonica River and other streams. As elsewhere in Wisconsin, interest in trapping has declined over the past two decades, allowing furbearer populations to sometimes reach nuisance levels. Raccoon, fox, coyote and beaver are most commonly taken, but winter coyote hunting has become popular with a small but dedicated group of hunters.

The most significant parcel available for public hunting within the proposed project area is Yellowstone State Wildlife Area, in northeastern Lafayette County. At just over 4,000 acres, it is a good-sized property for southern Wisconsin, and thus very popular with both resident and non-resident deer and turkey hunters. Nonetheless, most hunting in the area is done on private lands, where hunters must of course obtain landowner permission. Tightening private land access, particularly for deer, turkey and pheasant hunting, due to high demand for recreation and rural residential development, has lead to a growing challenge to find hunting opportunities in the area.

A significant recent issue affecting wildlife in the proposed project area was the discovery of chronic wasting disease (CWD) in the local deer herd in 2002. Since its first appearance outside Mt. Horeb, over 130,000 deer have been sampled statewide, with more than 850 found infected with this fatal disease, for which no cure is known. The goal for CWD management is to reduce/contain the spread of the disease. Reduced deer numbers and deer browse in the region could benefit some sensitive plants and the animals that depend upon them.

2. Water Resources

The grasslands project area encompasses much of the northern and west-central portion of the Sugar-Pecatonica basin and the southeast portion of the Grant-Platte basin. There is a diversity of both cold/cool-water and warm-water streams in this part of the state. These water resources most often coalesce from seeps and small springs that gradually increase in flow and volume going downstream. Many opportunities exist across the project area to restore and improve stream channels, banks, and floodplains to make them more suitable for rare species like the cricket frog, or the redside dace and slender madtom—two rare fish historically found here. Cold/cool-water streams are most prevalent in the northern and eastern portion of the proposed project area. Warm-water streams flow throughout the proposed project area with some containing rare species. The priority streams for this project are listed below, on page 41**.** ***Appendix B*** includes a map of these streams and their watersheds.

a. Surface Water Resources

Surface water quality in the proposed project area generally is considered good. Overall, the basins contain a diversity of healthy and productive cold- and warm-water sport fisheries. Major rivers in the project area are the Pecatonica River, the East Branch Pecatonica River and the Galena (Fever) River; tributaries to the Sugar River occur in the far northeastern portion of the project. Polluted runoff, particularly from agricultural operations, and hydrologic modifications of the streams such as damming and straightening, cause the primary water quality problems in the basin.

Other threats to water quality and aquatic life in the basin come from development, including stormwater runoff from urban areas and construction sites, point source discharges that exceed permit limits and toxins, or residual contaminants from historic mining sites.

i. Streams

There are over 1000 miles of streams within the project boundary**.** Stream gradients range from low in some headwater areas and near mouths of larger streams, to higher gradients in middle-upper and middle stream reaches. Because of the gradients and local topographic relief, streams in the basin tend to be very "flashy". That means water levels increase rapidly after major rainfall or snowmelt events, then fall back to more normal flow levels rapidly. It also means that the streams in the basin are very susceptible to polluted runoff problems.

A number of streams in this area have been impacted by habitat loss due to sedimentation, fish kills, and nutrient loading. The south central part of the project area contains streams that historically held good numbers of catfish and smallmouth bass. Recent sampling has shown a decrease or absence of such game fish from these streams, with the reasons not entirely known. Manure management and changes in land use practices are suspected to be a part of the problem.

ii. Lakes and Impoundments

While the area contains few natural lakes, there is one major impoundment, the 455-acre Yellowstone Lake in Lafayette County. Despite the inherent problems with impoundments, Yellowstone Lake is important to the history of the community and provides residents and visitors with opportunities for water-related recreation, waterfowl viewing and some fishing.

iii. Outstanding and Exceptional Resource Waters

Exceptional Resource Waters (ERW) and Outstanding Resource Waters (ORW) (see inset below), are water classifications identifying high quality streams and lakes around the state that are considered of good quality and support valuable fisheries, unique hydrologic or geologic features, outstanding rec-

reational opportunities or have pristine environmental settings. Therefore, these water bodies are afforded special protection from degradation.

The grasslands project area contains six streams listed as being Exceptional Resource Waters (ERW) and a four mile reach of one stream classified as an Outstanding Resource Water (ORW). A segment of Mount Vernon Creek is the only ORW in the project boundary. ERWs in project boundary are Deer Creek, Fryes Feeder, a segment of Mount Vernon Creek, Gordon Creek, Little Sugar River, Schlapbach Creek, Upper Sugar River, and the Galena (Fever) River. All but one of these (the Galena River) are located in southwest Dane County. These five Dane County streams are on the ERW/ORW list because they represent some of the best cold-water fisheries the area. The Galena (Fever) River is on the list because it contains a tremendous diversity of fish species and is one of the best smallmouth bass streams in southern Wisconsin.

iv. Impaired Waters

In addition to the previously described high quality streams, there are other streams that have less than desirable water quality (see inset).

Currently, five streams in the proposed project area are listed as Impaired Waters on the 303(d) list (see box below). Most of these streams were listed because of habitat impairments due to sedimentation caused by polluted runoff. Runoff from fields, particularly those in row crops, and bank erosion due to overgrazing are the main causes of this degradation. Runoff from handling and spreading manure is another important pollution source.

Outstanding Resources Waters (ORWs) have the highest value as a resource, excellent water quality and high quality fisheries. They do not receive wastewater discharges and point source discharges will not be allowed in the future unless the quality of such a discharge meets or exceeds the quality in the receiving water. The classification includes national and state wild and scenic rivers and the highest quality Class I trout streams in the state.

Exceptional Resource Waters (ERWs) have excellent water quality and valued fisheries but already receive wastewater discharges or may receive future discharges if necessary to correct environmental or public health problems. This classification includes Class I trout streams as identified in the 1980 Wisconsin Trout Streams book.

Impaired (303d) Waters

Water bodies are designated as impaired if they are not meeting designated water quality standards or their designated biological use.

Priority Streams for the SWGSCA Project:

Outstanding/Exceptional Resource Waters

Deer Creek
Frye Feeder
Big Spring (Gordon) Creek
Galena River
Little Sugar River
Schlapbach Creek
Mount Vernon Creek
(Upper) Sugar River

Impaired Waters

Brewery Creek
Dodge Branch
Dougherty Creek
German Valley Creek
Livingston Branch
Pleasant Valley Branch

Smallmouth Bass Streams

Dodge Branch
Galena River
Mineral Point Branch
Otter Creek
E Br Pecatonica River
Yellowstone River

Trout Streams

Big Spring Creek
Canon Creek
Conley-Lewis Creek
Deer Creek
Dodge Branch
Erickson Creek
Frye Feeder
German Valley Creek
Gordon Creek
Gravel Run Creek
Gribble Branch
Hefty Creek
Hutchinson Creek
Jones Branch
Kittleson Valley Creek
Ley Creek
Lynch Branch
Mount Vernon Creek
Mud Branch
Olson Creek
E Br Pecatonica River
Primrose Branch
Regan Creek
Rock Branch
Sawmill Creek
Schmidt Creek
Smith-Conley Creek
Steiner Branch
Sudan Branch
(Upper) Sugar River
West Branch Sugar River
Whitford Creek
Williams-Barneveld Creek
Williams-Rewey Creek

b. Groundwater

Groundwater is plentiful and is the sole source of drinking water across the project area. Groundwater also is essential in providing base flow to area streams, especially during periods of low rainfall. Area trout streams in particular depend on groundwater discharge to keep water temperatures cool and sustain aquatic life.

Uplands and hill slopes are the primary areas of groundwater recharge, where rainfall infiltrates the soils and eventually replenishes deeper dolomite and sandstone aquifers. The potential for groundwater contamination by pollutants such as fertilizers, pesticides, manure, septic systems, etc, depends upon several factors. Shallow soil layers, high bedrock, limestone fractures, and poor ground cover all increase the risk of groundwater contamination. A number of groundwater quality problems have been documented in this area.

The most common groundwater problem is the level of nitrate in shallower wells; a number of wells tested in Iowa County exceed the federal and state standards for drinking water. Of 837 wells tested in the Sugar-Pecatonica River Basin, for example, 20 percent exceeded the federal/state standard of 10 parts per million—an enforceable level. Pesticides also are a major groundwater concern: they were detected in all of the 639 wells tested in the Sugar-Pecatonica Basin. This historic mining region is full of old zinc, lead and copper mines; thousands of drill holes and airshafts that have not been properly sealed can act as routes for pollutants to enter the aquifers.

A major groundwater study is currently underway in Iowa County. With funding provided by the County, hydro-geologists from the Wisconsin Geological and Natural History Survey first will map bedrock types, thicknesses and elevations throughout the county. Then, with additional topographic information, well-log and water-level data, the researchers will produce maps of significant groundwater aquifers and models of the regional groundwater flow system. Among other things, this will provide information on locations of groundwater recharge areas, and high-vulnerability areas for contamination. This information is expected to be available sometime in 2009, and will be evaluated as part of our focusing efforts for grassland conservation.

c. Fisheries

i. Game Fish

The primary water-based recreation in the area is fishing. Warm-water sport fish waters contain smallmouth bass, catfish, and northern pike. The south central part of the project area contains streams that historically held good numbers of catfish and smallmouth bass. Recent sampling has shown a decrease or absence of such game fish from these streams although the reasons are not entirely known. Manure management and changes in land use practices are suspected to be a part of the problem. Despite this decline, the region is still considered among the best smallmouth bass fisheries in the Upper Midwest. These small streams continue to offer anglers the opportunity to catch trophy sized smallmouth bass. Walleye are stocked in the main rivers and provide a limited, but good fishery.

A number of streams in the area provide good trout fishing experiences. These streams typically support brown trout, although several in the area provide native brook trout. In Dane County, Mt. Vernon Creek and Deer Creek support naturally reproducing populations of native brook trout as well as brown trout. In southeastern Iowa County, Gordon Creek supports one of the better brown trout fisheries in the area, with just over four miles of public fishing easement. The DNR estimated 1800 brown trout per mile based on 2005 surveys. With brown trout more than 20 inches in size, Gordon Creek offers anglers the chance to catch trophy size fish as well.

Conley-Lewis and Ley creeks, located between Dodgeville and Hollandale along Highway 191, harbor a mixed population of brown trout and brook trout. Both streams have public fishing easements. The DNR currently is working on trout habitat restoration projects on both streams.

Other trout streams in the project area with public fishing easements include the Smith-Conley south of Ridgeway, and the Steiner Branch, on public land above Yellowstone Lake. The Steiner Branch offers a rare opportunity to catch native brook trout in Lafayette County.

ii. Nongame Fish

In the northeastern portion of the project area where increased grassland cover has improved the quality and lowered the temperature of cold-water streams, native species like the American brook lamprey and mottled sculpin have benefitted along with native brook trout.

Further south and west, streams are naturally warmer and therefore support higher biodiversity. Rare species like the Ozark minnow, slender madtom and gravel chub occur in a few of the higher quality streams along with a number of species intolerant of degraded conditions such as brook stickleback; banded, Iowa and rainbow darter, and rosyface shiner.

d. Wetlands

This is not a region with extensive wetland complexes, compared with the glaciated regions of south-central and southeastern Wisconsin. Wetlands comprise about 2.5% of the total land cover of the area. Significant and regionally important wetland complexes do occur along the major rivers and lower stream segments. Many of these riparian wetlands filled with deposits of sediment and silt from historical land use practices. Restoration requires the excavation of layers of floodplain deposits to uncover wetland soils so the areas can support wetland vegetation and function hydrologically. Conservation Partners have restored two floodplain segments on the East Branch of the Pecatonica River south of Barneveld.

e. Endangered Aquatic Resources

Wildlife Species of Greatest Conservation Need expected to occur in the area's rivers, streams, ephemeral ponds or wetlands include:

Fish: Ozark Minnow

Reptiles and Amphibians: Northern Cricket Frog, Pickerel Frog, Blanding's Turtle, Mudpuppy

Invertebrates: Based upon statewide mussel surveys conducted during the 1970s, the smaller rivers of southwestern Wisconsin's Driftless Region have very low numbers of freshwater mussels. This is likely due to poor mussel habitat, given the flashy nature of water levels in these streams. The Pecatonica River did, however, support populations of several common species such as Fat Mucket, Floater, Pocketbook and Pimple Back.

See ***Appendix G*** for list of rare species documented to occur within the project area.

f. Threats to water resources in the proposed project area

Due to the high percentage of land in the area being used for agricultural purposes, much of the non-point source pollution comes from cropland erosion and nutrient loading from barnyards. Other examples of rural non-point source pollution are stream bank erosion and over-grazing of streambanks.

Pollution from these sources affects instream habitat, water temperature, and fish spawning and has other adverse effects on stream ecosystem and biological uses. Runoff from rural and agricultural lands has in-

creased in the basin over the last 180 years as a result of conversion of the original land cover to agricultural land. The increased runoff and flood frequency also increased sediment load that in turn resulted in shallower and wider streams, particularly in the upper reaches.

A more recent issue is large-scale animal operations, part of the trend toward fewer, but larger farms. Proper manure storage and handling, land-spreading, and feedlot locations are critical to protecting both surface water and groundwater that may be impacted by these operations.

A U.S. Geological Survey study demonstrated that the unit-area loads of sediment and phosphorus from rural watersheds in the Driftless Area of the state are significantly greater than elsewhere in the state (Corsi et al.1997). The loss or alteration of instream habitat due to sediment affects the fisheries of southwestern Wisconsin, particularly the smallmouth bass fishery. In addition to the sediment load, runoff from agricultural areas can also contain bacteria from manure, pesticides, and nutrients. Runoff carrying animal wastes from barnyards is believed to be the primary cause of occasional fish kills in some streams in the basin. The nutrients found in non-point source pollution can increase plant and algae growth. Chemicals and other toxins can create an unhealthy aquatic environment for plants and animals.

Runoff of stormwater from urban areas can affect the headwater streams along the entire northern edge of the grasslands project boundary. Significant urban growth is expected to occur along the State Highway 18/151 corridor over the next 20 years. This will not only increase the volume of water during runoff events, but could also affect the groundwater recharge of these same areas and lower the base flows of many of the headwaters streams which originate along this corridor.

B. Agricultural Resources

The dominant land use of the area is agriculture -- primarily dairy farming -- with cropland comprising between 65% and 85% of the land cover in most all of the civil towns in the project area. Land use data from the Wisconsin Department of Revenue (DOR) was recently compiled for this study by staff from UW-Madison's Program on Agricultural Technology Studies (PATS) for all townships entirely or partially within the project boundary. As of 2006, 76% of all land (78% of all private land) within the region was assessed as agricultural. This is far higher than the state average of 37% (46% of private land) assessed in agricultural use.

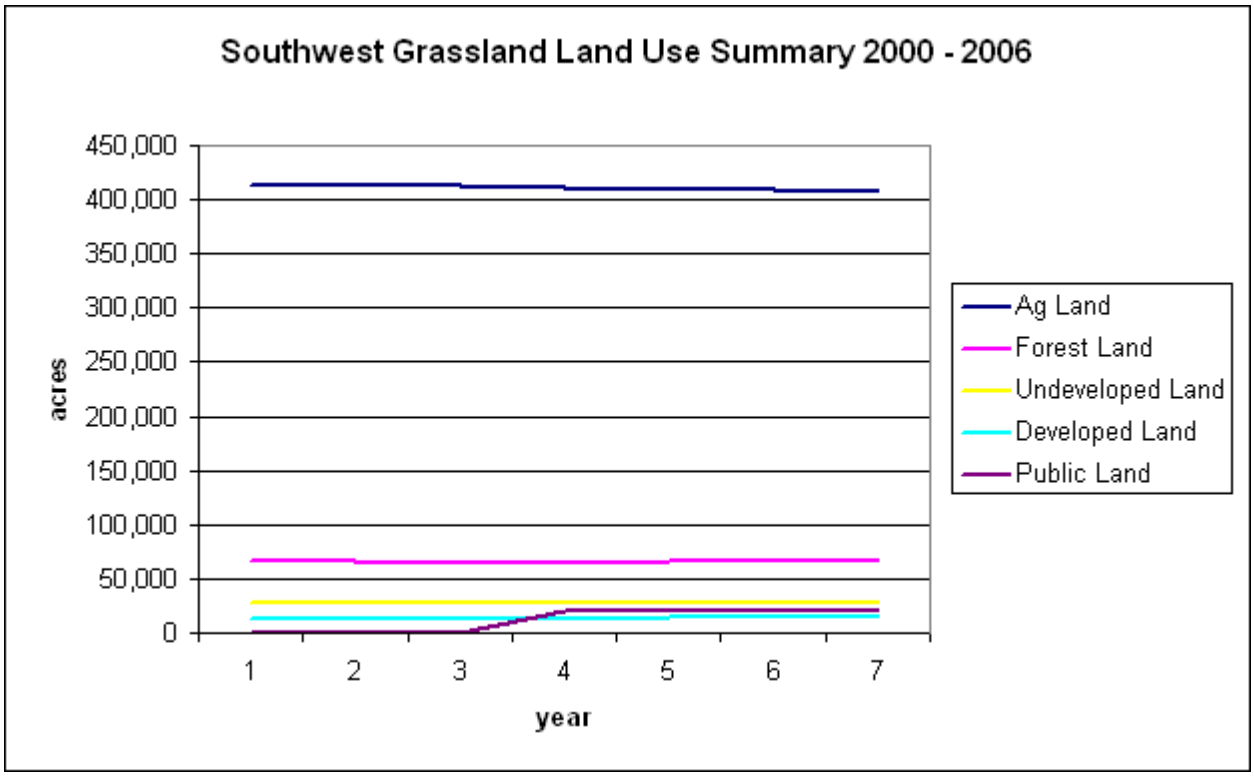
Area farms are typically a diverse mix of corn, soybeans, hay, small grains, pasture, and woodlots. Due to the sharp topography, some slopes are too steep to plow and are either pastured or covered with woods. Areas of thin soil also avoided the plow. Throughout the project area, more moderate slopes are commonly farmed using contour strips designed to reduce erosion. Topography and soils have resulted in the SWGSCA having some of the highest acreages of pasture and fields enrolled in CRP compared to other regions of the state; this has also meant that the region is less dominated by large fields of row crops than glaciated parts of southern Wisconsin. Row crops typically average less than a third of the land cover in most all townships in the project area; and there is usually more land devoted to forage crops (hay, pasture) than to row crops. (See Figure 6, p. 72 for a map showing agricultural soils across the area.)

While the SW Grasslands area remains largely agricultural, it nevertheless has experienced a nearly 20% rate of farmland conversion to developed land (mostly residential) from 2000-2005, higher than the state average (13%). See the summary of land use changes within the project area in the Table and chart below, provided by the PATS program. Dane County is undergoing the highest rates of farmland conversion, with 92% of that loss going to new development (Foltz and Turnquist, PATS Report No. 18, 2006). Residential development is pushing westward from the Madison urban area into southwest Dane and eastern Iowa Counties.

Table 2
Southwest Grasslands Project Land Use Summary 2000 – 2006

year	ag land	forest land[1]	undeveloped	developed[2]	public land[3]
2000	412,792	65,915	27,580	12,409	0
2001	413,315	65,600	27,457	12,755	0
2002	412,395	63,849	27,818	13,257	0
2003	410,709	64,415	27,860	13,639	20,208
2004	409,235	65,663	27,232	14,491	20,227
2005	408,555	65,615	27,487	14,918	21,574
2006	408,184	65,680	27,823	14,841	20,412
Change (00-06)	-4,608	-235	243	2,432	n/a
Percent Change (00-06)	-1.1%	-0.4%	0.9%	19.6%	n/a

1) forest land includes all private forest land, including land enrolled in all DNR administered forest management programs
2) Developed land includes all land falling under WisDOR's residential, commercial, and manufacturing categories
3) **Public land acreage not available until 2003 on WisDOR database**



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Overall, southwest Wisconsin supports a healthy agricultural economy in a very beautiful and desirable landscape. This scenic landscape, however, can be a mixed blessing, as it attracts competition for land resources from rural homeowners, recreational landowners, and even non-farm businesses looking to escape the tight confines and high rents of urbanized areas and provide a more pastoral environment for their employees. To a greater or lesser degree, all counties within the proposed project area are experiencing agricultural land conversion. While rising land prices can be a comfort to farmers with flat incomes and increasing debt and expenses, it is also a challenge to continuation of the long and stable land tenure by local farm families that the area has traditionally enjoyed.

Current Trends in agriculture:

The following data is from Wisconsin's Program on Agricultural and Technology Studies (PATS), housed at UW-Madison's College of Agricultural and Life Sciences and linked with UW-Extension, the Wisconsin Agricultural Statistics Service, and the Wisconsin Farm Bureau. We are seeing the following trends in the region of this proposed project:

- **Farming remains dominant.** The counties in the region continue to rank second in the state in milk production per acre, and first in corn per acre. While there are now 5 times more people than cows in Dane County, there are still more cattle than people in Green, Iowa and Lafayette Counties.
- **Farming is important to local economies.** For example, the Iowa County dairy industry contributes $99 million to the county's economy, through $73.6 million in on-farm production and $30 million in processing.
- **Farming remains an important employer.** The Iowa County dairy industry provides 811 jobs, out of 3055 total agricultural jobs in the county. This represents 18% of the county's workforce.
- **Farmland values continue to appreciate.** For example, between 1995 and 2005, the average sale price of land in Iowa County continuing in agriculture increased from $848 to $2427 per acre (+186%). DNR real estate has found farm land values in the area mostly unaffected by the recent housing market slowdown.
- **Farm acreage changes vary across counties.** While farmland acreage in Dane County decreased by 4.5% between 2000 and 2005, it actually increased modestly in Iowa and Lafayette counties over the same time period.
- **Development pressure continues.** As a startling measure of development pressure over 10 years (1995-2005), the average price of land *diverted* from agriculture in Dane County increased from $2679 to $23,284 per acre (+769%).
- **CRP Acres declining:** Wisconsin lost one-third of its CRP lands statewide between 2006-2008, with an estimated 49,880 additional acres expiring in 2009-2010 in Dane, Iowa, Lafayette and Green counties. This is an area equal to the existing Military Ridge Prairie Heritage Area.

Grassland-based agriculture: A growing trend in southwest Wisconsin is a return to grassland-based agriculture, where for much of the year livestock are housed and fed in a grassland or pastoral system, as opposed to being confined in a structural facility and fed harvested grain or forage. Advocates argue that grassland-based systems are more humane and natural for livestock, and result in leaner, better tasting and healthier meat products, while requiring less capital investment and energy for production. They also claim that grassland agriculture is better suited to the rugged southwestern Wisconsin landscape, and that it produces fewer concentrated pollution sources and more associated wildlife benefits. As with all farming, proper management is necessary to realize full benefits, and this may be particularly true of management-intensive grassland agriculture, but there is considerable potential for the proposed grassland project to complement and encourage this traditional and re-emerging form of Wisconsin agriculture.

Bio-fuels/Bio-energy: Statewide, corn acreage increased 10% from 2006 to 2007; much of this change was due to ethanol-driven corn prices. Current reports indicate ethanol supply has exceeded current demand and corn prices are expected to taper off sometime in the future. While currently there are no ethanol plants in the SWGSCA, the proposed Belmont Ethanol Plant, if built, would require about 15 million bushels of corn annually; this translates into roughly 109,000 acres of corn at average yields of 136 bushels/acre. By comparison, 117,000 acres of corn were planted in all of Lafayette County in 2006 (USDA, National Agricultural Statistical Service).

While growing demand for corn and high corn prices may strengthen the local farm economy, and thereby slow conversion of land to non-farm uses, it also raises concern about loss of grasslands and forage crops to row crop production, with potential for associated declines in water quality and wildlife benefits. Statewide, Wisconsin is losing acreage of CRP grasslands as high corn prices have discouraged some landowners from re-enrolling in the program.

Although corn is currently the primary source of ethanol production, many other biomass sources, and the technologies for their conversion to ethanol, are now being explored. Switchgrass has been identified as a viable source of cellulosic ethanol, and University of Minnesota researchers have found that diverse mixtures of native prairie grasses and forbs yield more energy than either corn ethanol or bio-diesel fuel from soybeans. Such grass-based bio-energy systems have great potential to complement a grassland conservation area project such as the SWGSCA. There is potential for this project to partner with DATCP's Working Lands Initiative, which promotes the development of a healthy bio-economy, including the development of cellulosic ethanol.

C. Cultural Resources

1. Archaeological

The river valleys and bluffs of Southwestern Wisconsin have been home to various cultures for thousands of years; some have left their marks in the caves and rock shelters of the Driftless Area. A number of Archaic-era sites are found in this region, including rock shelters, pictographs and petroglyphs. There are many examples of native rock art in Iowa County alone. These art works consist of geometric shapes, animal and plant forms, and hunting scenes found in more than half of the overhanging stone shelters and fissure caves that housed prehistoric Wisconsin natives.

WOODLAND period inhabitants (ca. 500 BC to 1700 AD) began to develop agriculture, but intensive gathering provided the bulk of subsistence needs. An especially significant technological innovation of the Woodland peoples is the development of pottery. Earthwork (mound) construction, frequently associated with burial, also developed at this time, although earlier peoples buried their dead as well. The region evidences numerous mounds, including many animal-shaped or "effigy" mounds. Because of the dense concentration of effigy mounds in the state, including many found in the SWGSCA, Wisconsin is considered the center of what is referred to as "effigy mound culture".

From the more recent MISSISSIPPIAN/ONEOTA occupation (ca. 900 AD to historic contact), the largest identified sites are located along the margins of major river valleys or their tributaries. These native peoples appear to have developed a blended subsistence strategy based on simple agriculture (including corn, beans, and squash), gathering and bison hunting. People had by now developed extensive trade networks. A relatively small number of such sites are reported for this region, including several villages. It is very possible that more sites exist in the project area but are yet undiscovered.

2. Historical and Cultural

Early in the HISTORIC period (ca. 1650 to present), much of the SWGSCA was occupied first by the Sauk and subsequently by the Ho-Chunk, Potawatomi, and related peoples who descended from earlier Indian occupants of the region including the Oneota. French fur traders had moved into the region by the late 1600s, to be succeeded, in turn, by English and American traders. As EuroAmerican settlement of the area accelerated in the early 1800s, Indian Nations like the Ho-Chunk were displaced from ancestral lands, often forced to move to unfamiliar locales, far from home. These removal attempts often proved ineffective as many families returned to Wisconsin to rebuild their communities.

Southwestern Wisconsin was one of the first regions of the state to be settled--the other being the southeast. The earliest European settlers in the SWGSCA were from the British Isles, particularly miners from Cornwall. This immigration began in the mid- to late-1820s, with the lead mining rush following the discovery of

lead deposits in the region. This early mining rush was speculative in nature; true settlement and the rapid development of a mix of agriculture and mining did not commence until the 1830s. Other early settlement in the area was from Scandinavia, Switzerland, and Germany, as well as from American states to the east and south. These early miners who worked through the winter found that the most useful shelters were their excavations, so came to be called "badgers." This nickname, born in these southwestern hills of Wisconsin, has since been extended to the entire "Badger State."

The majority of the land in the SWGSCA lies in the historic lead mining district. As such, the area has many significant historical and cultural features that dot the landscape and that are older than most others in Wisconsin, such as houses and commercial buildings, churches, cemeteries, school houses, and lead furnaces. The State Historical site at Pendarvis in Mineral Point is a regionally significant example of an early 1800s Cornish village. In fact, many of the historical buildings and cemeteries throughout the area are still in use today.

The lead mining era came to an end in the late 1840s, and the region became primarily agricultural – first with wheat farming, then dairying. While towns and small cities have grown in the area since then, the Southwest Grassland and Stream Conservation Area remains primarily rural and agricultural. And, while agriculture has modernized, many old barns, sheds, out-buildings, cheese factories, and farmhouses still remain in the area.

D. People and Land Use

1. Demographics

Population Trends: Dane County has undergone by far the highest rate of population growth among the project area's four counties: a 60 % increase in population from 1970 – 2006. The county is projected to grow another 36 % by the year 2030, which would make it the 3rd fastest growing county in the state. However, if one looks at the four southwestern Dane County townships in the project area, there is dramatic contrast between the 50% increase in the Town of Springdale (which includes much of the growth around the Village of Mt. Horeb), and the modest growth experienced in Perry or Primrose Townships.

York Township in Green County has grown 44% since 1970—higher than the Green County overall rate of 35%. In Iowa County, the overall rate of increase has been 24% but again, one sees marked contrast between townships, with several experiencing declining populations over the past several decades.

Lafayette County has experienced a decreasing population which is quite significant in some of its townships; it is projected to be the 9th-slowest growing county in the state between 2000 and 2030.

Percent Rural, Farm Rural by County: As of April 1, 2000, Dane County's population was predominantly living inside urban areas or "urban clusters," while Lafayette's population was categorized as entirely rural. ***("Rural"*** includes small villages and hamlets of less than 2,500 people, according to the U.S. Census.) Iowa County also had a very high rural population. However, a small percentage of these rural dwellers occupy rural farms.

Percent Population Rural based on 2000 U.S. Census

County	Percent Rural, 2000	Percent Farm Rural, 2000
Dane	15 %	1%
Green	57%	9%
Iowa	83%	13%
Lafayette	100%	16%

Source: Wis. Dept. Administration

Increases in Housing Units: As expected, Dane County also has seen the highest rate of increases in housing units, at 40 % between 1990 and 2006. Both Iowa and Green Counties have undergone a 28% increase in housing units during that time period. Lafayette County has experienced an 11% housing unit increase. Within the project area, the rate of new housing has varied greatly by township, just as we see with population:

Highest rates of increased housing	Lowest rates of increased housing
Blue Mounds (Dane)	Fayette (Lafayette)
Brigham (Iowa)	Kendall (Lafayette)
Dodgeville (Iowa)	Linden (Iowa)
Springdale (Dane)	Waldwick (Iowa)
York (Green)	

Commuting to Dane/Madison: Work-trip commuting to Dane County from surrounding counties has grown monumentally: As one would expect, the closer one gets to Madison, the higher the commuting rate.

Commuting between 1990 and 2000:	
Green:	**54 % increase**
Iowa:	**45 % increase**
Lafayette:	**60 % increase**

Source: Madison Area Metropolitan Planning Organization (MPO))

Table 3: *Population Changes in Project Area by Township*

County *Township*	1970	1990	2000	2006	Percent Change 1970-2006	2030 Projected County Population
Dane Co.	**290,272**	**367,085**	**426,526**	**464,513**	**60 %**	579,976 *(36% increase from 2000)*
Blue Mounds	*675*	*667*	*842*	*880*	*30 %*	
Perry	*664*	*646*	*670*	*690*	*4 %*	
Primrose	*664*	*595*	*682*	*722*	*9 %*	
Springdale	*1,132*	*1,258*	*1,530*	*1,703*	*50 %*	
Green Co.	**26,714**	**30,339**	**33,647**	**36,054**	**35 %**	40,505 *(20% increase from 2000)*
York	*527*	*509*	*605*	*759*	*44 %*	
Iowa Co.	**19,306**	**20,150**	**22,780**	**23,964**	**24 %**	27,350 *(20% increase from 2000)*
Brigham	*844*	*692*	*908*	*962*	*14 %*	
Dodgeville	*1,164*	*1,172*	*1,407*	*1,642*	*41 %*	
Eden	*503*	*381*	*397*	*405*	*-19%*	
Linden	*961*	*773*	*873*	*874*	*- 9 %*	
Mifflin	*664*	*564*	*617*	*638*	*- 4 %*	
Mineral Point	*770*	*851*	*867*	*926*	*20 %*	
Moscow	*548*	*528*	*594*	*627*	*14 %*	
Ridgeway	*521*	*557*	*581*	*633*	*21 %*	
Waldwick	*598*	*487*	*500*	*505*	*- 15 %*	
Lafayette Co.	**17,456**	**16,074**	**16,137**	**16,311**	**- 6 %**	16,874 *(5% increase from 2000)*
Belmont	*626*	*737*	*676*	*732*	*17 %*	
Blanchard	*233*	*220*	*261*	*277*	*19 %*	
Elk Grove	*613*	*476*	*463*	*477*	*- 22 %*	
Fayette	*444*	*390*	*366*	*371*	*- 16 %*	
Kendall	*435*	*363*	*320*	*322*	*- 26 %*	
Willow Springs	*658*	*656*	*632*	*689*	*5 %*	

Source: Wisconsin Dept. of Administration, Demographic Services Center

2. Economics

Tourism

The Southwest Wisconsin Grassland & Stream Conservation Area encompasses parts of Dane, Green, Iowa and Lafayette Counties.

Dane County ranks 2nd (of 72 counties total) in the state for traveler spending, contributing 8.8 percent of all traveler expenditures in Wisconsin. Travelers spent an estimated $1 billion in Dane County in 2003. Over the past decade, traveler spending has increased in Dane County by 137 percent.

Green County is located in Wisconsin's Southwestern Rural Region, as defined by the state Department of Tourism. Green County ranks 57th in the state for traveler expenses. Travelers spent an estimated $40 million in Green County in 2003. Over the past decade, traveler spending has increased in Green County by 63 percent.

Iowa County, also within Wisconsin's Southwestern Rural Region, ranks 50th in the state for traveler spending. Travelers spent an estimated $55 million in Iowa County in 2003. Over the past decade, traveler spending has increased in Iowa County by 127 percent.

Lafayette County, within Wisconsin's Southwestern Rural Region, ranks 69th in the state for traveler spending. Travelers spent an estimated $15 million in Lafayette County in 2003. Over the past decade, traveler spending has increased in Lafayette County by 69 percent.

In the following section on land use planning, we see that many communities in the area have demonstrated through their comprehensive planning goals an interest in capitalizing on their natural resources. Their plans or draft plans frequently include goals and policies related to promoting greater tourism and outdoor recreation opportunities.

3. Comprehensive Land-Use Planning

According to Wisconsin's 2000 "Smart Growth" Legislation, all counties, towns, villages and cities in Wisconsin are required to complete a Comprehensive Plan by the year 2010. Plans are to include nine required "Elements," to involve public participation, to be adopted by resolution and enacted by local ordinance. Most jurisdictions within the SWGSCA project area have opted to participate in their county-wide planning processes. Beginning on January 1, 2010, any local government action that affects land use must be consistent with its adopted plan, therefore, the goals and policies of these plans should shape future development and land use within this project boundary. Department staff has provided natural resources information to Dane County, Iowa County, and the Southwest Regional Planning Commission for their use in comprehensive planning and implementation.

Dane County

The Townships of Perry and Springdale participated in Dane County's multi-jurisdictional comprehensive plan, approved in October 2007. The Townships of Blue Mounds and Primrose currently are drafting their individual plans. In 2005, the Town of Primrose submitted to the Department a resolution requesting to be included in the project boundary. The Town of Springdale passed a similar resolution supporting its inclusion in the project on December 12, 2005; its comprehensive plan, adopted in April 2006, includes objectives to protect grasslands, prairies, savannas, endangered/threatened species and exceptional resource waters. Finally, Perry Township has adopted a plan that includes a policy to protect prairie and wildlife habitats, and to work with the Department to designate the town as part of the SWGSCA.

The new 2006-2011 Dane County Parks and Open Space Plan, which guides acquisition and protection efforts made possible by the County's Conservation Fund, has been updated to include this project area as a **"Regional Resource Protection Initiative."** This opens up new partnership opportunities for grassland and prairie protection in southwestern Dane County.

The following Agriculture and Natural Resource Goals, as stated in Dane County's 2007 Comprehensive Plan, are especially relevant to this SWGSCA project:

Agricultural Resources

- ✓ Maintain Dane County as one of the nation's most productive and economically viable agricultural areas.
- ✓ Maintain Dane County's rural character and preserve the distinct character and physical separation of Dane County communities

Land Resources

- ✓ Develop and promote a county-wide system of open space corridors as a framework to protect and where possible, restore the natural environment and scenic values, provide outdoor recreation opportunities and preserve for posterity the nature and diversity of our natural heritage
- ✓ Preserve, restore and sustain Dane County natural communities and resources, including grasslands, wetlands, woodlands and soils
- ✓ Promote a holistic, ecosystem-based approach to natural resource protection

Water Resources

- ✓ Protect and rehabilitate the water quality and clarity of the surface water resources of Dane County
- ✓ Protect, improve and rehabilitate the quality and quantity of groundwater in Dane County
- ✓ Enhance recreational opportunities associated with water resources

Wildlife Resources

- ✓ Preserve for posterity the nature and biodiversity of Dane County's natural heritage by protecting and enhancing in-stream, riparian, wetland and upland habitat…and diverse, high quality biological communities that occurred naturally in southern Wisconsin (woods, savannas, prairies, wetlands).
- ✓ Provide for sustainable, diverse hunting, fishing, wildlife observation and appreciation opportunities

Green County (York Township)

The Town of York participated in the countywide plan coordinated by the Southwest Wisconsin Regional Planning Commission, and adopted by ordinance in April 2006.

The "Agricultural, Natural and Cultural Resources Element" of the Town's plan includes specific policies to guide its implementation:

Most Relevant Agricultural and Natural Resource Policies:

- ✓ Encourage programs that educate residents about the importance of natural resources
- ✓ *Encourage prairie and savanna restoration
- ✓ Encourage preservation and maintenance of rural views and vistas

- ✓ Where appropriate, utilize state and federal programs to conserve, maintain and protect agricultural, natural and cultural resources
- ✓ Maintain the rural and agricultural character of the community
- ✓ Encourage the use of conservation easements and deed restrictions by private landowners to keep prime agricultural land from being developed

* York Twp was one of only three townships in the county including the policy on prairie and savanna restoration

Source: Southwest Wisconsin Regional Planning Commission, Green County Comprehensive Plan, April 18, 2006

Iowa County

All planning jurisdictions except the Villages of Barneveld, Livingston and Rewey and Brigham Township participated in the countywide plan coordinated by the Southwest Wisconsin Regional Planning Commission, and adopted by ordinance in April 2005.

The Town of Brigham, which contains a large share of the Military Ridge Prairie Heritage Area and many remnant prairies and prairie pastures, adopted its new comprehensive plan in May 2008. Brigham's plan includes the recommendation to protect natural character and ecological functions by preventing fragmentation of ridge tops, woodlands, white oak groves, savannas and prairies, streams and other features. It also recommends identification and preservation of environmentally sensitive areas including groundwater recharge areas, and voluntary protection of prehistoric and historic features

In the Iowa County Comphrensive Plan, the "Agricultural, Natural and Cultural Resources Element" outlines specific policies, and lists which townships included the policy in their individual plans.

Most Relevant Agricultural and Natural Resources Policies:

Included by all jurisdictions:

- ✓ Routinely remind residents of the importance of their agricultural, natural and cultural resources and the need to continue protection of local open spaces to provide recreational opportunities.
- ✓ Build partnerships with local clubs and organizations in order to protect important natural areas
- ✓ Utilize state and federal programs to conserve, maintain and protect agricultural, natural and cultural resources
- ✓ Promote tourism opportunities and pursue efforts to capitalize on local resources in conjunction with walking tour programs, the Wisconsin Historical Markers Program, distributing ATV or bike trail maps, maintaining trails, and preserving the natural beauty of the area.
- ✓ ***Included by some:***
- ✓ Encourage prairie and savanna restoration *(Dodgeville, Ridgeway townships)*

Source: Southwest Wisconsin Regional Planning Commission, Iowa County Comprehensive Plan, April 2005

Lafayette County

Lafayette County adopted its countywide plan in November 2007. The plan's "Agricultural, Natural and Cultural Resources Element" outlines specific policies, and lists which townships included the policy in their individual plans (*only townships falling within the proposed SWGSCA boundary are included here; Willow Springs Township was not included in the countywide plan, however is now beginning its town-level plan).*

Most Relevant Agricultural and Natural Resources Policies:

Included by all jurisdictions in project area:

- ✓ Utilize county, state, and federal programs or grants to conserve, maintain and protect natural resources, where and when appropriate

Included by some:

- ✓ Encourage prairie and savanna restoration *(Fayette, Kendall townships)*
- ✓ Explore opportunities to capitalize on local natural resources in conjunction with tourism *(Fayette township)*
- ✓ Encourage the preservation and maintenance of rural views and vistas (*Belmont, Blanchard, Kendall townships)*
- ✓ Encourage the preservation of scenic, historic, and scientific areas for the benefit of present and future generations (*Belmont, Blanchard, Fayette, Kendall townships)*
- ✓ Encourage the education of local residents about the importance of natural resources

Source: Southwest Wisconsion Regional Planning Commission, Lafayette County Comprehensive Plan

VII. ACREAGE GOALS, APPROACH AND COSTS

A. Acreage Goals

The Department's goal, and its responsibility within the larger SWGSCA Partnership, is to **permanently protect 12,000 acres** within the project area using a combination of fee title acquisition and conservation easements.

Permanent habitat protection is a primary strategy in this project for a variety of reasons including:

- protecting habitat for rare species and high-quality prairies and savannas,
- protecting key grasslands as habitat for grassland birds and for stream water quality
- providing recreational opportunities, and
- buffering key grassland and prairie parcels to ensure that habitat quality and recreational opportunities on Department properties are protected into the future.

Within the project area, large blocks of contiguous grassland habitat are critical to many of the target species. As a result, we propose as a ***guideline* that 2/3 of the 12,000-acre goal** will be directed toward building Bird Conservation Areas (BCAs), as follows:

- **8,000 – 9,000 acres** for protection of permanent grasslands within the final selected Focus Areas (specifically, in the three Bird Conservation Areas)

The remainder of the 12,000-acre goal will be directed as follows:

- **3,000 - 4,000 acres** for protection of high quality prairies, savannas, oak woodlands, or key grasslands within priority stream watersheds, scattered across the larger project area

B. Partnering Approach

1. SWGSCA Partnership

The Department's responsibility within the larger SWGSCA Partnership will be to permanently protect 12,000 acres, with the majority of that goal accomplished through fee-title acquisition. While the Department's permanent land protection goals will play a large part in the project's success, the role of the SWGSCA Partnership also will be critical. Partners bring to the project a variety of additional conservation tools for working with landowners, as described earlier in the document under *Project Implementation.* Within a large landscape-scale project such as this, each Partner has a slightly different but essential role to play in implementation.

One example of the vital functions Partners provide is the demonstrated ability of our non-governmental partners to work with landowners who prefer working with private organizations, rather than government programs, when considering their land protection options. These private conservation Partners will be needed not only to continue protecting prairies and watersheds within the SWGSCA, but also to help build the Bird Conservation Areas. Other Partners from government agencies will also help build BCAs and protect watersheds through their ability to enroll landowners in CRP programs including SAFE and CREP; in habitat assistance programs such as the USFWS Partners for Fish and Wildlife Program, or through agricultural preservation programs such as the USDA's Farm and Ranchland Protection Program and potentially DATCP's Working Lands Initiative.

Nested within the SWGSCA is the **Military Ridge Prairie Heritage Area**, a well-established project whose members have led the way in a Partnership-based approach to land conservation. MRPHA Partners such as The Nature Conservancy, The Prairie Enthusiasts, and the Driftless Area Land Conservancy have already protected nearly 2,800 acres of high quality prairie, grassland and open farmland in the MRPHA,

and will continue their work as SWGSCA Partners on this landscape. Upon project approval, the Department would continue to work with the MRPHA Partnership and build upon its accomplishments, and very likely would establish at least one Bird Conservation Area within the MRPHA boundary. Although the MRPHA has its own set of conservation objectives, which in some areas exceed those of the Department, overall the MRPHA and SWGSCA have very complementary protection goals. The scale of the MRPHA project is substantially smaller than that of the SWGSCA, however, the MRPHA Partnership plans to expand its boundary to coincide with the boundary of the SWGSCA's easternmost Focus Area.

2. Implementation: Land Conservation Coordination

Upon project approval, the Department will assemble a conservation working group to include staff from DNR's natural resources and grants programs, and representatives of the full Partnership. This group will primarily focus on communication and coordination among the Partners, will assist in developing and implementing protection strategies for building BCAs, and will then work in concert to build them. The working group will regularly review updated information from across the project area, and coordinate where and how to pursue protection of prairies, streams, and endangered resources. Because of the strong Partnership nature of this program, a high priority will be given to ongoing coordination and communication.

C. Protection Strategy

The Department's two major projection goals for the SWGSCA are:

1. Protect and conserve natural resources, especially the three Bird Conservation Areas, remnant prairie and savanna habitats, and grasslands in key watersheds
2. Provide more opportunities for public recreation in southwest Wisconsin.

Both of these goals provide important public benefits, and each supports the other: Conservation benefits the public by protecting the region's biodiversity and ecological functions, helping to sustain healthy plant and animal populations, and helping to recover endangered species. Nature-based outdoor recreation benefits the public by enabling citizens to directly experience and enjoy the state's natural landscapes, streams, and wild animals and plants. As citizens become more familiar with the natural resources throughout the project area as a result of the recreational opportunities provided, their commitment to the long-term protection of those resources is likely to increase. These benefits will be important to future generations in ways that we cannot now imagine.

The Department will focus the majority of its protection efforts on those parcels that simultaneously provide both conservation and direct recreation benefits. While the majority of the Department's purchases will achieve both of these objectives, some situations may exist where conservation of the resource will not directly enhance recreation, and vice-versa. For example, the Department and the Partnership recognize that permanently protected grasslands are vitally necessary to produce sustainable grassland bird populations into the future; this resource protection in turn helps ensure that tomorrow's bird-watchers, hikers and hunters will have the opportunity to observe and enjoy them. In other situations, the reverse may be true, and a parcel's recreational value may be greater than its ecological value. An example would be when land is needed for public access to a prairie or to connect segments of a hiking trail.

At the fundamental heart of this project is the need to protect and enhance this exceptional concentration of tall grass prairie remnants, while also providing the large blocks of habitat needed by grassland-obligate species, especially our rapidly plummeting populations of grassland birds. In order to achieve this, the Department's acquisition efforts will be concentrated in the Bird Conservation Areas (BCA), and on scattered prairie remnants and high quality stream resources beyond the boundaries of the BCAs.

1. Bird Conservation Areas

The primary strategy for establishing the BCAs will be to pursue fee acquisition in the three 2,000-acre cores, plus the 1,000-acres of scattered permanent grasslands surrounding those cores, according to the BCA model (see model and BCA description on pp. 22). The Department will focus its acquisition efforts and acres on building these BCAs, with cooperation from Partners where needed to complete the contiguous habitat blocks in the cores. Some Department fee and easement protection may also be used to help conserve the additional 1,000-2,000 acres of long-term grassland cover surrounding the cores. Additional protection of these long-term grasslands will be coordinated primarily through the Partners' help enrolling lands in programs like CREP and SAFE. Grassland bird conservation is the overall goal for these BCAs, however other animals and plants will benefit as well. The public recreation goals of the project will receive particular emphasis on these large, contiguous 2,000-acre BCA cores.

2. Larger Project Area Beyond BCAs

Parcels targeted for protection outside of BCAs will focus on remnant prairie, savanna, rare species habitat, streams and critical watershed areas. In most of these cases, the primary objective will be to protect critical conservation targets, with recreational use subject to compatibility with resource conservation and landowner preferences. Protection here will involve a combination of fee and easement by DNR and Partners.

D. Public Access

Fee

The use of fee-title acquisition to protect and enhance habitat acquired through the SWGSCA will occur within the BCAs as well as throughout the larger project area by both the Wisconsin DNR and the Partners involved in the project area. It is the intent of this project that the large majority of parcels acquired through fee-title acquisition utilizing state Stewardship dollars will be open to all nature-based outdoor recreation activities as defined under State Stewardship Law *(Section 23.0916, Wis. Stats.)*: hunting, fishing, trapping, hiking, and cross-country skiing. When evaluating values and usership patterns on these properties, it is the intention of all parties involved to focus on managing recreational activities through separating them by location or timing rather than completely prohibiting particular activities. Acquired parcels that meet State Natural Area designation will continue to follow the policy and procedures identified in state statutes (*ss. 23.28(3) and 23.29(11), Wis. Stats.)*

Easements

The use of conservation easements will occur throughout the project area by both the Department and its land protection Partners, however, the primary use of this tool for habitat protection will occur on parcels outside of the BCA cores. Easements are a very important tool for land conservation and in some cases they represent the only available option for protecting critical habitat. In some cases, resource protection goals can be adequately met through conservation easements at lower public costs than purchasing properties in full fee title.

Current State Stewardship Law does not require public access for conservation easements, however, the Department and the Partners will work to secure public access for nature-based recreation on easements whenever it is appropriate for the site and the landowner will sell the access rights. When evaluating the values and usership patterns on these properties, it is the intention of all parties involved to focus on managing access and restricting specific activities by time, space or location rather than a complete prohibition of a particular activity. Additional parcels that are acquired which meet state Natural Area designation will continue to follow the policy and procedures identified in state statutes (*ss. 23.28(3) and 23.29(11), Wis. Stats.).*

For easement acquisitions, standard practice will be to pursue a Right-of-First-Refusal (commonly written so that it is superseded by a landowner's desire to transfer to family members or descendants first). As a

component of any conservation easement, if infrastructure exists on the eased properties, such as houses, sheds, or other outbuildings, a building envelope should be developed along with specific criteria established to restrict the level of development and expansion of the existing footprint.

A set of criteria or conditions for purchasing easements without public access using State Stewardship funds will apply to the Department and Partners working within this project boundary. These eight criteria are listed and discussed below, and are intended and designed to apply specifically to the goals and management strategies for the SWGSCA project and its particular Partners. Criteria 1-5 would apply to both the Department and Partners; Criteria 6-8 were developed specifically for Partners using the Stewardship Grants Program

For Easements Acquired Specifically by the Department: The Department expects that approximately 10-15% of its total 12,000-acre protection goal will be in easements without full public access, once its final overall acreage protection and conservation goals are achieved. The percentage of easements without access is expected to rise and fall over time as the project progresses, especially as some easements are eventually acquired in fee with full public access.

For Partners Acquiring Easements Using Stewardship Grants: When Partners acquire easements using State Stewardship grants, public access for nature-based outdoor recreation will be sought whenever appropriate and when landowners are willing to sell access rights.

If any one of the eight criteria below applies to a given parcel, public access will not be required:

Criteria for Purchasing Easements without Public Access in the SWGSCA

1. **Unique plant and animal communities**
   This category of property would include exceptional natural communities such as prairies, oak savannas, oak woodlands, unique springs, wetlands and other habitats that support rare or unique species, where resource protection is imperative. These properties will often support intact communities of animals and plants within their native habitats, and some public activities may be harmful to these unique resources. In certain cases, the easement may restrict access only during critical parts of the year, for example during the breeding season of rare grassland birds such as Henslow's sparrow and Northern Harrier, or during periods of the growing season when invasive plants could easily take hold in an area (via seeds or other propagules).

2. **Public safety**
   In situations where public health and safety are of concern such as when a quarry or vacant mineshaft exists on a property, a portion or all of the property will have restricted public access.

3. **Incompatible management**
   The Department or its partners may enter into agreements with local farmers to maintain open grass cover through practices such as rotational grazing. Although there will be limited situations where incompatible management is occurring for an extended period of time, one example would include rotational grazing activities when the cattle are present on the property.

4. **Small, isolated parcels**
   Small remnant grassland parcels, typically 40 acres or less in size, which are isolated from other protected properties and often do not have a good public access point, may be protected in a more cost-efficient manner through easements that do not include public access. The Department will insure that such purchases are strategically selected to continue to provide significant conservation benefits into the future. In some cases, small parcels do provide a valuable service to the public by improving water quality and providing habitat for migratory songbirds and other species, but are likely to have limited value for recreational uses because of their small size and isolated nature. Examples include small areas of degraded prairie sod that have a significant population of one or

two rare plant or invertebrate species that require protection. Another example would be a small, degraded oak savanna that harbors an especially large hibernaculum of a rare snake.

5. **Buffering and connecting key parcels**
Throughout the SWGSCA project area, it is important to protect the land-based investments on behalf of current and future citizens of Wisconsin by buffering and connecting properties that we acquire for recreational and conservation purposes. Portions of the project area, particularly western Dane County and eastern Iowa County, are under increasing pressure for residential development and other intensive land uses. Throughout Wisconsin, habitat quality on some properties open to the public is being degraded and recreational opportunities are being limited by land use on adjoining properties.

Maintaining a landscape relatively absent of man-made structures and incompatible landscape components such as tree plantations and rural subdivisions will be critical to attracting and maintaining viable populations of nesting grassland songbirds. For example, if a new subdivision is built adjacent to a protected grassland property, the parcel's value as grassland bird habitat will be degraded (by the structures themselves, as grassland birds avoid areas around tall structures and their associated horticultural plantings, as well as by the increased predation by pets such as house cats, which significantly reduces nest success). This is especially important in the BCA cores. In addition, the parcel's value as recreational hunting land will be reduced because of restrictions on the discharge of firearms within 300 feet of residences. As a result, maintaining a buffer can be critical to preserving the conservation and recreational value of protected properties, especially within the BCA cores.

In many of these situations, conservation easements are the best option when the goal is to buffer a conservation area with working farmland. When development or other incompatible land uses threaten to undermine the conservation investments already made on surrounding lands, an easement may be the only tool available to preserve that area's viability into the future. This could be especially important in building BCA core areas and will be a critical role that Partners working in the project area can provide. When easements are purchased for agricultural land, emphasis will be on seeking other non-Stewardship funding sources to the extent possible (e.g., Farm and Ranchland Protection funds, DATCP Working Lands Initiative funds if the new program is available here). Any Stewardship funds pursued for agricultural buffer lands would likely be through Partners eligible for the Stewardship Grants Program, who likely would apply for the portion of those funds allotted to the Acquisition of Development Rights (ADR) subprogram, which under NR 51 is authorized to protect lands in agriculture for buffering and connecting protected parcels.

Another conservation tool that the Department could use to maintain the integrity of the BCA cores is to purchase a critical piece of farmland and then sell or lease back the right to continue farming the parcel for an extended time period.

Conditions 6-8 apply to Partners using the Stewardship Grant Program*

Stewardship grants cover up to 50% of eligible costs (the "state share"). The sponsor provides the remainder (the "sponsor match"), which can be in several forms including the value of property donated to the sponsor if the property is eligible for the same Stewardship program as the grant.

6. **Funding Source Predominantly Non-Stewardship**
In some situations a majority of the easement value for the acquired rights will come from a non-Stewardship source (e.g., private foundation, federal source, or a bargain sale). When a conservation partner donates or secures another funding source to cover the larger share (e.g., 60-70%) of the cost of the easement, significant public benefits are gained with respect to the smaller share of Stewardship money invested. Conservation easements cost substantially less than outright fee purchase. Coupled with the reduced Stewardship investment (e.g., 30-40% of the easement value), resource protection comes at a substantial bargain to the state.

7. **Donated Parcels**
When donated easements are used as match for Stewardship Grant funds and then used to protect high priority properties within the project area, public access would not be required on the donated parcel. However, the donated parcel must meet the Stewardship Grant Program policies and rating criteria for natural resources value to qualify as match.

8. **Direct Referral**
If the Department formally refers a landowner to a Partner through the Department Land Division Administrator and requests that the Partner purchase an easement, full public access would be pursued, but would not be required.

***Note:** All Stewardship Grants receive many levels of review, from the Regional Staff to Division Administration. Public access is part of this review. If the Grant is at or over $250,000, additional review and approval by the Governor's Review Committee is required, and starting July 1, 2010: if the Grant is $750,000 or more, it must be reviewed and approved by the Legislature's Joint Finance Committee (in addition to the Governor's Committee Review)

The Department will monitor the application of these criteria, and if upon implementation, it becomes apparent that revisions to the public access policies for easements are necessary, amendments to the plan will be proposed, subject to Natural Resources Board approval.

E. Costs

1. Land Protection

Land values vary within the project area. As a general range, land parcels between 40 and 200 acres currently sell for $3,000 to $5,000/acre. Larger parcels tend to be less expensive on a per-acre basis. If the Department were to achieve its goal of acquiring 12,000 acres over the next 15 years, these costs are estimated to be:

$40 to $48 million ($2.7 – $3.2 million per year).

Although 12,000 acres is a modest goal for such a large, landscape-scale project, we believe that it can meet the specific objectives outlined in this study over the next 15 years. First, we are benefiting from the largely agricultural nature of the landscape that already exists. Second, we are benefiting from the conservation actions currently being taken by many of our partners. The project will use adaptive management to assess and re-direct goals and strategies over the life of the project. Unforeseeable changes in land use patterns or other variables are always a possibility. Depending on our short-term success in meeting project goals over the next 15 years, we may need to seek additional protected acreage over the long-term (beyond the next 15 years).

Our goal is to acquire in fee the vast majority of the 12,000 acres. Department fee acquisition efforts will target strategic, high quality parcels (e.g., remnant prairies, cores of Bird Conservation Areas), as well as parcels able to provide the best recreational opportunities in addition to their conservation values. The Department will purchase conservation easements in certain circumstances. Conservation easements are an ideal tool to protect some types of grassland parcels, such as lightly grazed pastures and late-mowed hay, which provide water quality benefits, or buffer quality grassland bird habitat, while still serving other agricultural purposes for the landowner

2. Landowner Contact Staff

Our partners and the public have told us repeatedly that it is critical for project success to have people on the ground promoting conservation. On a landscape which is 99%+ privately owned, this is the only way to effect real conservation. Funds to support landowner contact specialists and land managers will be critical to project success. These people might be Department employees, or might be employed by another organization, but funded in whole or in part by the Department. Costs will depend upon arrangements with our part-

ners. For just education and outreach, costs are estimated at **$2,500 per year. Cost for on-the-ground specialists: unknown at this time.**

3. Land Management Costs

Based on current costs, the Department estimates that if all 12,000 acres of the proposed project are acquired, management costs (including LTE staff, equipment and materials) will be approximately **$120,000/year**.

The Department hopes to enter into agreements with local farmers to periodically crop, hay, and/or graze some lands the Department may own or rent out in the future. The Department hopes this approach will help local farmers and will minimize the Department's cost of land management. The Department also will minimize management costs by clustering, within focus areas, permanent grassland parcels for which it assumes management responsibility.

4. Recreation Costs

Currently, proposed recreation activities are generally low-intensity, and as such are likely to require only modest staff time and money to develop and maintain. Nonetheless, the Department will need to find and allocate sufficient resources to design, install and maintain educational displays and signs as well as create pamphlets and other educational materials that highlight the important species, communities and other resources found in this landscape. We hope that this work can be done primarily by existing staff, but we will need additional funds for the production of written materials and displays and possibly some contract work in the event that DNR communication staff do not have time for these projects. It is estimated that approximately **$5,000/year** will be needed over the next ten years.

Summary of Estimated Costs per Year:

Acquisition and Easement Costs:	$ 2.7 – 3.2 million per year
Land Management	$ 120,000 per year
Education/Outreach costs	$ 2,500 per year
Recreation/Displays:	$ 5,000 per year

Total Cost (excluding landowner contact staff): $ 2.8 – 3.3 million per year

F. Funding Sources

We anticipate that land acquisition and easement costs will come primarily from Knowles-Nelson Stewardship funds. Land management, recreation, staffing and other costs will come primarily from Conservation Segregated Accounts (e.g., license fees), Pittman-Robertson and Dingell-Johnson/Wallop-Breaux Fund accounts, as appropriate. **A multi-disciplinary approach within the Department will be necessary to fund and staff this project.** No single DNR program will be able to take primary responsibility for project acquisition and management without significant additional resources.

A host of federal and state granting programs can be sources of funding for many of the activities proposed in the project. For example, the Conservation Reserve Program and Conservation Reserve Enhancement Program provide significant funds for planting permanent grass cover on highly erodible farmlands. USDA programs such as EQIP and WHIP can be sources of funding for installing measures to control runoff and improve habitat. Targeted Runoff Management Grants can be a source of funding for addressing instream, riparian corridor and animal waste management problem areas and restoring degraded reaches of priority streams.

VIII. PUBLIC INVOLVEMENT

A. Project Scoping

During January through March, 2005, an external mailing list was assembled identifying persons, mainly in the Conservation Reserve Enhancement Program (CREP) boundary, who should be informed about the project. This list included Farm Bureau representatives, conservation organizations, government representatives, county extension agents, county and regional planning personnel, and interested landowners. In June 2005, DNR provided all persons and groups on this list with a letter explaining the feasibility study, and a copy of the project scoping document. DNR staff also personally contacted local government officials to inform them of the feasibility study and volunteered to meet with them or the local governing body (town or county board) to talk more about the proposed project.

An External Partner group was formed in January 2005, and has advised the Department's internal working group throughout the planning process (see pp. 3-4 for a list of Partners). Six joint DNR internal/external working group meetings were held from January, 2005 to April, 2008.

Members of the external group worked closely with the internal team in planning and helping to staff four public scoping meetings held during July, 2005. The four open House/public informational scoping meetings were held at Mt. Horeb (two sessions), Hollandale and Mineral Point. Notices of the meetings were sent via direct mailings to those on the external list, a press release sent to local newspaper and radio, the Wisconsin State Journal, and the DNR News. A total of 100 persons attended.

Table topics at the Open House included *Agriculture, Natural Resources, Conservation Tools, Recreation, History & Culture, and Rural Economies.* A questionnaire was given to each attendee to help gather and record input beyond oral comments and questions.

Initial Comments Heard at 2005 Initial Public Scoping Meetings:

Verbal Comments Received

The comment heard most frequently was that the Department should provide a point person to be out on the landscape working with landowners, helping them sort through the various options. Several people also recommended devoting a portion of funding toward education and outreach, including a project website.

A number of people expressed a desire to see the proposed boundary expanded: some felt Grant County should be included; some wanted expansion in Lafayette County, and some felt the Town of Dodgeville should be included.

Several people believed the Department does not pay property taxes. Staff provided information on the Department's payment-in-lieu-of-taxes (PILT) program, and will continue to actively address that concern.

See *Appendix H* for a written summary of verbal comments received at the public meetings.

Questionnaire Results

Nearly all attendees returned the questionnaires (93%). Highlights include:

- Natural Beauty, Peace & Quiet, and a Rural Landscape were very important to 85% or more of respondents living in the area
- Groundwater quality was the top natural resource concern, however, 74% or more also cited streams/wetlands, wildlife habitat, prairie/savanna, open rural landscape as very important to them

- The top three recreational interests in the area were observing wildlife, hiking or walking, and birdwatching
- The majority of respondents felt that permanent land protection and a healthy agricultural economy were most helpful in keeping open space on the landscape
- The majority felt that this project might support rural economies by helping to maintain viable agriculture, and providing healthy game and fishery populations

After the public scoping meetings, it was decided that the Department would prepare an Environmental Impact Statement (EIS) in conjunction with the final Southwest Wisconsin Grassland Feasibility Study. A news release was sent out along with a public notice in the DNR News & Outdoor Report.

B. Department Response to Public Scoping Comments

The vast majority of public comments were in favor of the project. The Department proceeded to develop the Draft Feasibility Study and Start-up Master Plan from 2005-2007. The proposed project boundary was expanded from the original CREP grassland boundary, in response to public comments, and in recognition that certain significant areas had not been covered by that CREP boundary. The Department added all or part of seven townships to the original 13 townships. The new boundary was called "Modified CREP." (See a complete list of townships in Table 3, p. 50.) The town chairs in the seven townships were personally notified of their addition to the feasibility study boundary and also were mailed a letter, fact sheet and project boundary map.

C. Public Review of the 2008 Draft Feasibility Study and Master Plan

The Draft Feasiblity Study was combined with a start-up Master Plan. Four alternative boundaries were developed, with the new expanded or "Modified CREP" selected as the Preferred Boundary. Three proposed Focus Areas were developed and presented with the intention to select final Focus Areas (two or three) within which the Bird Conservation Areas would be established only following public input. The proposal was approved by the External Partnership following a Partner meeting held in April 2008.

In August 2008, the Draft Feasibility Study/Master Plan and Preliminary Environmental Assessment was mailed to all persons and groups on the mailing list, and posted on a new DNR web page. News releases were issued to newspapers, radio and television across the project area.

A series of public open house meetings were held the week of August 25 across the project area as follows:

Monday Aug 25	Belmont
Tuesday Aug 26	Mineral Point
Wednesday Aug 27	Hollandale
Thursday Aug 28	Mount Horeb

Each meeting was scheduled from 7-9 p.m. and included a 30-45 minute presentation. Approximately 100 people attended (78 signed in), and comments were provided either verbally, via a comment sheet provided at the meetings, or via e-mails, letters or phone calls to project coordinators. The comment sheet specifically asked for input on the proposed boundary and the proposed Focus Areas.

Summary of Public Comments on 2008 Draft Study

Overall public support for the project was very high. Approximately 95% of the written and verbal comments received were in favor of the project.

1. <u>Project Boundary</u>

   Those who commented on the proposed boundary either asked it be expanded (16 total) or agreed with the preferred boundary, "Modified CREP" (14 total).

2. Alternative Focus Areas

Among those who commented on the alternative Focus Areas, 6 asked to expand or connect the areas, and 11 preferred to keep all three as proposed.

3. Public Access

A number of comments from landowners and Partners were related to public access requirements associated with Stewardship Funds. Most of these comments reflect concerns about the ability of DNR and Partners to secure conservation easements if public access is required. Additional concerns included spreading of invasives, and public safety and ecological concerns with hunting and trapping.

4. Agriculture

A number of landowners expressed interest in being included in one or more of the programs offered through the Partnership. Some owners of large grazing lands, who are not eligible for CRP programs, expressed interest in learning more about how actively grazed lands might be included. Agricultural producers supported compatible farm practices and land use. Some expressed concern about conversion of CRP to corn, and its impacts on project goals, as seen in parts of the project area during the exceptionally high corn prices of 2008.

Several partners support coordination with DATCP and its proposed Working Lands Initiative, and suggest more cooperative work in developing compatible agricultural markets and grass-based biofuels.

The Iowa County Farm Bureau passed a resolution supporting the project, with the condition that landowners reserve the right to prohibit public access with easements.

A representative from the State Farm Bureau questioned the agricultural impacts of the project, expressing concerns about taking more land out of production

5. Recreation/Tourism

Suggestions included:

- Including horse trails
- Working with Department of Tourism to help enhance tourism potential of project
- Including promotion of paddle sports in recreation goals

6. Implementation

A number of people advised the Department not to protect more than it could manage, and to focus its efforts accordingly. Many landowners reiterated the recommendations heard in the project 2005 scoping meetings that sufficient on-the-ground landowner specialists be available.

7. Miscellaneous

A number of landowners specifically requested that their property be included. Some expressed concern about tree-planting in CREP and CRP lands, and about current acreages of cropland at Yellowstone Lake Wildlife Area. Local government representatives of the Town of Fayette in Lafayette County did not support the project in their township. No similar comments were received from known residents of that township, however.

Some interest was expressed in working cooperatively with DNR on featuring cultural/historic resources of the region, including comments from a representative of the Town of Mineral Point. A representative of the Wisconsin Humanities Council offered to work with the Department in helping to connect people to the land through the arts and humanities.

D. Department Responses to 2008 Public Comments on Draft Feasibility Study and Master Plan

Boundary: The Department has expanded the final proposed project boundary to the north so that the north boundary follows the Military Ridge Trail from Dodgeville through the Town of Springdale. (U.S. Highway 18/151 constituted the former boundary here.) This is in keeping with several comments from the Dodgeville and Upper Sugar River watershed area, and also better integrates the trail and the associated recreational and tourism opportunities into the project. The Town of Springdale has passed a resolution supporting the project. This expansion increases the area within the boundary from approximately 460,000 acres to approximately 474,000 acres. Project staff contacted the affected villages to notify them of this change

The Department recognizes that there are many additional grassland landscape opportunities across Southwest Wisconsin. However, in keeping with comments heard regarding the Department's need to set realistic goals and stay within its capacity to implement this large-scale project, the remainder of the boundary will not be expanded. Requests for boundary expansion into certain specific areas were field reviewed, and were not determined by Department biologists to provide significant areas suitable for large-scale grassland bird conservation. After 10-15 years, if the Department finds it is unable to meet project goals within the existing boundary, it may consider proposing a boundary expansion.

Focus Areas: The Department has slightly modified Focus Area 2 to include suitable grasslands that were excluded from the earlier version, in response to public comments and field-review. All three Focus Areas will be carried forward. The precise boundaries of these Focus Areas may need to change somewhat over time, as land use changes occur.

Public Access: Extensive coordination with project Partners was conducted to develop an agreed-upon set of conditions for allowing restrictions to public access on easements funded with Stewardship, as presented in Section VII of this document.

In response to concerns from some Partners regarding potential impacts of trapping, the Department held a workshop and listening session with Partners to review trapping practices and regulations, and to present a preliminary review of scientific literature on ecological impacts of predator removal, specifically focused on grassland bird nest predators on the SWGSCA landscape. The group of meeting participants agreed upon conclusion of this discussion that on the issue of trapping on parcels acquired in fee with Stewardship funds for the SWGSCA: research data are not conclusive, however based on the variability and complexity of these predator/prey systems, recreational levels of trapping are unlikely to result in significant, predictable, and consistent impacts on nesting grassland birds. The group also agreed that data on incidental captures and trapping-related injuries to humans or other animals do not merit a prohibition of trapping based on safety concerns, and that if significant user conflicts present themselves following an acquisition, steps should be taken to manage the conflicting activities by time, space or trap type on the properties acquired. More education on modern trapping regulations and practices is needed for many of the users and stewards of these lands.

Agriculture: In December 2008, DNR Secretary Matt Frank met with State Farm Bureau representatives to listen to their concerns and shared information on the anticipated impacts to agriculture, as found in this document in the *Effects on Agriculture Resources* section. The Department does not anticipate this project having a significant adverse impact on agriculture, and in fact a major goal of this project is to help support continued viable agriculture. One of the Agricultural Strategies includes monitoring the effects of the project on agriculture in the region. See the Agriculture sections of this report beginning on pp. 44 and 71for more detailed explanation.

Recreation/Tourism: The list of recreational opportunities is expanded to include paddling. Bridle trails may be considered during implementation, if suitable areas can be found where such use would not compromise the natural resources goals of the project. The Department will work with the Department of Tourism through implementation.

Miscellaneous:

- Tree-planting concerns: The SWGSCA implementation and partner team will include representation from DNR forestry program and representatives of the Farm Services Agency and NRCS. The team will work to encourage planting of grasslands as an alternative to tree-planting on open ridgetops, on prairie sod, and within lands targeted for BCAs.
- Yellowstone Lake Wildlife Area crop lands: Existing crop lands on this DNR property were enrolled in the federal EQIP program by sharecroppers in 1999, which allowed 38 erosion control structures to be built on the property to reduce silt loads in Yellowstone Lake and the Steiner Branch. These 10-year EQIP contracts expire at the end of 2009, when we will begin converting the cropland to permanent grass cover. Late-summer haying will likely continue to control brush.
- Town of Fayette: Township remains in the project boundary as it includes Yellowstone Wildlife Area and large areas of pasture with some prairie pasture. The Department will work only with willing and interested landowners.
- Historic/Cultural Goals: The Department has reinstated the goal of promoting appreciation of the area's historic resources where compatible with natural resources goals, as Goal 5 of the project.

This section provides an environmental impact analysis of the proposed project, including the proposed final boundary and three Focus Areas.

A. Effects on Natural Resources

1. Effects on Terrestrial Resources

a. Geology

No adverse impacts to geological formations are expected. Some grassland areas that would be protected may also have geologically significant formations such as caves, stone pillars, outcroppings, etc., or sinkholes and limestone fractures that could cause groundwater problems if the land were to be developed or used more intensively.

b. Soils

Increased grassland protection and management will improve soil conservation, particularly where soils are thin and poorly suited to cultivation. Often, these are the very areas where prairie remnants still remain. Increased outreach and enrollment in federal programs such as CRP, CREP, WHIP and EQIP also help area landowners improve soil conservation practices.

c. Air Quality

Air quality is high and meets all regulatory standards in this rural agricultural region. Increased permanent or long-term grassland cover at the scale proposed may help in a small way to increase carbon sequestration and reduce some fossil fuel use, as an incremental benefit. At this time, the future viability of biofuel and ethanol production from tall grasses like switchgrass and other native prairie grasses is uncertain. There is potential for this technology to emerge as a driving force for greater grassland biofuel production. If implemented appropriately, the biofuel industry could complement or even enhance the outcomes of this grassland conservation project.

d. Upland Communities, Non-game Species and Endangered Resources

This project should have a noted positive impact on upland communities, non-game species and endangered resources in the geographic area of the SWGSCA. High quality prairie, oak savanna and oak woodland communities should benefit from habitat protection and appropriate management as a result of project implementation. Populations of those Species of Greatest Conservation Need and rare plants listed above in Section VI(A), which require prairie, savanna and managed grasslands, are expected to improve. Results for individual species will depend on acreage, locations and habitat types protected, and how these areas are managed. Grassland bird nesting success, for example, requires avoidance of mowing/haying during the nest season.

Rare plants and terrestrial invertebrates are usually restricted to native prairie/savanna habitat; the degree to which their populations improve will correlate with acreages of native habitat we are able to protect, and how we manage them. Management of these habitats for rare terrestrial insects, in particular, must be done in a manner that considers life history needs and short-term population recovery (e.g., recolonization of recently burned areas).

To the extent that management for open grasslands involves the removal of wooded vegetation (e.g., tree-lines), some forest-edge-dependent species may lose habitat.

As is the case for all conservation targets in the SWGSCA, it will be critical to establish a monitoring and adaptive management program across priority landscapes and remnants; monitoring would likely be focused on the target species as described earlier in the document. We would collaborate with our partners working on the project landscape so our monitoring is compatible with (and comparable to) any monitoring efforts they are conducting.

e. Game Wildlife

The successful acquisition of 12,000 acres proposed under authority of this project would certainly affect populations of game species, although not all game species would be affected equally. Species that respond directly to the availability of idle grassland nest cover (such as pheasants, waterfowl, and to a lesser extent rabbits and quail) should increase with acquisition and management of these additional grassland acres.

Species that are more flexible and adaptable in their habitat needs (such as deer, turkeys, and many furbearers), which use woodland, grassland and cropland largely in proportion to their availability, would not be expected to show significant population change in response to the proposed land acquisition. Overall, it is safe to assume that game populations will modestly benefit from the proposed acquisitions, although local population response will vary depending on the species of interest and applied habitat management practices.

Irrespective of game population response, achievement of the proposed acquisition goals would have its greatest effect on providing and protecting a land base for public hunting.

2. Effects on Water Resources

a. Surface Water

Although numerous factors affect water quality, recent research shows that we see water quality benefits when *long-term* grassland cover in a watershed reaches approximately 20% (Marshall, D.W. et al., 2008). Other equally important influences are cropping acreage and practices, manure management, amount of urbanized area and amount of forest cover. While the project goal of 12,000 acres of protected land amounts to 2.5 percent of the project area, we can expect to see measurable gains in water quality if the protected acreage is concentrated in targeted watersheds. Reductions in sediment, phosphorus, nitrates and pesticides can be expected.

Studies conducted by Wisconsin DNR on trout streams in the northeast portion of the project area reflect significant landowner participation in the Conservation Reserve Program (CRP), with highly erodible row crop fields being planted in cool and warm season grasses and forbs. Based on phosphorus export coefficients derived from similar watersheds, phosphorus loading was reduced by approximately 84% as croplands were converted to CRP grasslands (Marshall and Lyons, 2008). Grasslands improved infiltration, and models predicted approximately 38% surface runoff reduction. Grasslands absorb more water that migrates as lateral underground flow to local streams, ultimately increasing low flow in the streams, while reducing damaging peak flows from surface runoff. The increased groundwater flows to the streams improved both water quality and cold-water temperatures. Similar improvements have not occurred in Grant County streams beyond the grassland project area.

Flow regimes of surface waters also are impacted by land use. Higher base flows and reduced flooding have resulted from improved farming practices over the past 70 years (Potter 1991, Gebert and Krug 1996). This

trend is expected to continue if the acreage of protected land in the project is increased and land management practices remain constant.

Even though water quality trends in the region remain positive, we are not always seeing improvements in stream conditions. Years of accumulated sediment resulting from upland erosion has changed the shape of stream valleys to the point where human intervention is necessary to improve habitat conditions. Much of this phenomenon is due to the lag time between changes in land use and the in-stream response, where the damage has been caused in the past 150 years, while the time scale of recovery is likely measured in centuries.

Better water quality resulting from improved watershed conditions will make investment into stream corridor improvement projects more worthwhile. Some of the streamside management efforts that will be implemented include tree clearing, channel re-shaping, fish habitat improvements such as rock and overhead cover, streambank stabilization and floodplain sediment removal, and creating shallow water habitats.

b. Groundwater

The project should have a positive impact on groundwater quality by increasing the amount of uplands in long-term or permanent grassland cover.

A 1995 groundwater study of an agricultural watershed elsewhere in southwestern Wisconsin's Driftless Area found the following (Potter, K. *et al.,* and Bradbury, 1995):

- Farmed uplands and wooded hill slopes provided most of the groundwater recharge; cumulative effects of losses of these vegetated uplands and slopes will be reduced stream flows during low flow conditions and reduced groundwater supply.

- While measures to protect groundwater-fed trout streams have focused on the stream corridors (e.g., planting buffer strips), greater attention must be given to the upland recharge areas.

In addition, water supply wells located in areas of predominantly grass or forest cover are much less likely to produce water that is high in nitrates or pesticides, especially atrazine (atrazine is prohibited in just a small portion of the project area).

Pastures, hayfield, and long-term grasslands would be expected in many cases to provide even greater groundwater protection than traditional row crops, since this cover promotes infiltration, and pesticides and fertilizers are not required.

We will obtain and evaluate the results of Iowa County's current groundwater study when they become available in 2008. We may, for example, be able to help protect some of Iowa County's key recharge areas or areas of vulnerability by making them a priority for long-term or permanent grassland cover.

c. Fisheries

The continued preservation of agricultural land use in combination with extensive grassland management and livestock reductions has benefited the cold-water fish communities within the existing Military Ridge Prairie Heritage Area, according to a DNR study (Waller and Rooney, 2008). Streams that had warmed and filled with sediment in the past have become cold-water streams again, charged primarily by groundwater, seeps and springs, rather than sediment-laden, warmer surface water runoff.

i. Game Fishery

The primary threats to game fish populations in the project area are manure runoff and sedimentation. While the acute effects of manure pollution are easily recognizable, it is likely that streams that exhibit low game fish populations are suffering chronic effects of manure pollution. While the protection efforts contemplated in this plan will not directly improve manure management, a heightened awareness of land and water stewardship in the region will presumably result.

Improved grassland cover and farming practices will have a long-term positive impact on fish populations, and a resulting increase in angling opportunities for trout, smallmouth and rock bass.

ii. Nongame Fishery

Expanding grassland management across the southern and western regions of the project where warm-water streams and rivers predominate, would improve habitat for a number of non-game fish. Rare fish such as the Ozark Minnow, Slender Madtom, and others (see below) all would likely benefit. Other non-game fish that are sensitive to environmental pollution would also be expected to improve, including banded darters, Iowa darters, rainbow darters, northern hogsucker and rosyface shiner.

d. Wetlands

Just as increased grassland cover is expected to benefit the area's streams, so is it expected to benefit the area's wetlands. Reduced sediment deposition improves wetland water quality, and also vegetation: areas of sediment typically fill with invasive plants like reed canary grass or narrow-leaved cattail. These species choke out the native plants, and have poor ability to support most wetland-dependent wildlife species. In addition, many wetlands are fed by groundwater, which would be maintained through higher rates of infiltration on surrounding grasslands. Those wetlands that are buffered by surrounding grassy uplands would be expected to benefit hydrologically and vegetatively, and offer greater wildlife habitat potential.

e. Endangered Aquatic Resources

The Endangered, Threatened and Special Concern Species of fish expected to benefit from improved water quality are the State-Threatened Ozark Minnow, and perhaps with recolonization, the State-Endangered Slender Madtom, State-Endangered Gravel Chub, State-Threatened Black Buffalo and Special Concern Redside Dace.

Improved water quality also would be expected to benefit the State-Endangered Northern Cricket Frog and the Pickerel Frog (Special Concern), which both require cool, higher quality waters and wetlands. Upland nesting habitat for the State-Threatened Blanding's Turtle also may be improved, if within nesting range of current populations.

Many of the state's rare aquatic invertebrates are sensitive to sedimentation, chemical runoff and thermal impacts. Populations of a number of rare stoneflies, mayflies, caddis flies, riffle beetles and other insects and invertebrates, could be improved with greater grassland cover. For example, Gordon Creek, which flows through high concentrations of CRP and managed grasslands, supports high stonefly numbers, which indicates very good water quality.

B. Effects on Agricultural Resources

The project, if approved, could modestly support and complement the efforts of the agricultural community (including landowners, non-profit organizations, agricultural agencies, and local government) where they are united in their desire to preserve agriculture as part of a local area economy. Whether agriculturalists seek to maximize production, practice low-input or sustainable grass-based agriculture, or pursue value-added organic products, the potential common benefit of this project is that it may provide opportunities to reduce a farmer's investment in the land base necessary for production.

Only a portion of the acquisition budget will be directed at production agricultural lands as opposed to remnant prairies, savannas, and grasslands. The DNR obtains its general statewide authority to purchase land from Chapter 23.09(d) – Conservation, *Lands, acquisition* of the Wisconsin statutes. While this section allows DNR to acquire and manage lands for the conservation of all manner of natural resources, including forests, parks, fish hatcheries, water resources, wildlife habitat and public recreation, there is no explicit authority from the Legislature to obtain lands for the purpose of agriculture. As such, the Department is limited to protecting agricultural land where such efforts will help protect natural resources clearly within our authority.

Nonetheless, there is hope that expanded DNR authority to purchase land rights in the proposed project area can support agriculture and contribute to its future viability in southwest Wisconsin through a simple expedient—preserving areas of active and sustainable agriculture by helping farmers maintain their historic ability to afford a land base on which to conduct business.

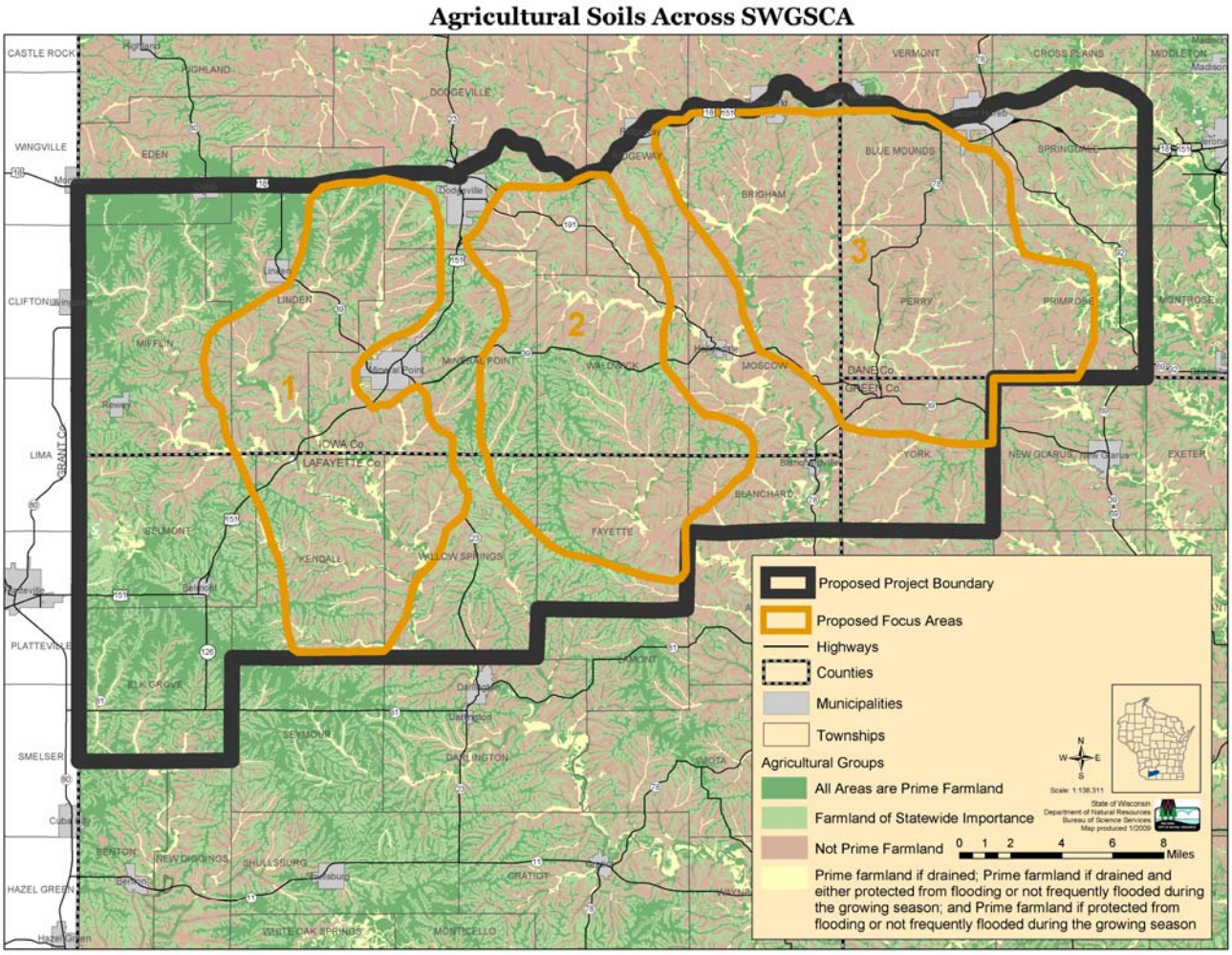
What could be accomplished

- Buffer agricultural lands with conservation lands – The advantage to agriculture of adjacent conservation land buffers is to protect producers' ability to conduct normal agricultural practices, free from encroachment by rural residences or other non-compatible land uses.
- Renting lands to farmers while protecting habitat values – This practice generally includes concessions for wildlife habitat (e.g., delayed haying) in exchange for reduced rental rates
- Ease development or habitat management rights – Easements can be used for virtually any purpose, from securing development or public access rights, to providing for habitat restoration outright.
- Encourage wildlife compatible farming practices – Finding economic and acceptable ways to provide for grassland wildlife through agriculture is never easy, but new developments in rotational grazing, grass-based and organic agriculture, green marketing and bio-fuels show promise. Success generally depends on helping farmers and farming first, while hoping for marginal improvements for wildlife as a result.

The project area would be an ideal location to pilot the Working Lands Initiative recently proposed by Wisconsin's Department of Agriculture, Trade and Consumer Protection. Several provisions could be implemented in the project area, including 1) Creating a Working Lands Enterprise Area, where active farms are clustered to slow farmland conversion; 2) Piloting a Purchase of Development Rights program to permanently preserve active farmland; 3) Promoting opportunities to increase non-agricultural development density and thus reducing demand for working farmland conversion, and 4) Promoting agricultural entrepreneurship and regional initiatives for farmers. This agricultural initiative seeks to take advantages of opportunities such as developing bio-fuels, promoting diverse and value-added agriculture, supporting high-quality urban development, and focusing on the ecological services provided by healthy agriculture (e.g., wildlife habitat, stream bank protection, flood control, groundwater recharge, carbon sequestration, and scenic vistas). The SWGSCA is well-suited for such an effort.

Effects on Prime Agricultural Lands: Lands targeted for grassland and prairie conservation will generally have more extensive areas of CRP and pasture, and include greater areas of marginal soils not conducive to row-crop production. (See land cover criteria for establishing Bird Conservation Areas, p. 31.) The Department will avoid conversion of highly productive agricultural lands. In selecting the final Focus Areas for this project, the Department considered agricultural soils and generally has avoided regions of the project with the highest percentages of prime agricultural soils, as shown here:

Figure 6: *Final Focus Areas over Agricultural Soils across Project Area*



As discussed in the earlier section describing the area's agricultural resources (see p. 44), the major force driving farmland conversion in this region is development, especially in the easternmost areas closer to Madison. Some areas within the project boundary are under high development pressure, especially Dane and eastern Iowa counties. Counties and townships typically discourage the conversion of prime farmland to new housing, so where such development occurs, it often is on the same marginal soils that would be targeted for grassland conservation (e.g., ridgetops, unplowed prairie sod). Grassland cover is compatible with agriculture, and is not an irreversible conversion of farmland, in contrast with development.

The SWGSCA Partnership is committed to working together with area agriculture and biofuel industries to help achieve common interests. The Partnership will work closely with Wisconsin DATCP over the coming years as its proposed Working Lands Initiative is carried forward.

C. Effects on Cultural Resources

1. Effects on Archaeological Resources

Concentrations of significant archaeological features will be one of the considerations used to establish focus areas and target specific parcels, when compatible with natural resource priorities. Therefore, any impacts to such resources should be positive. No negative impacts on archaeological resources are anticipated as a result of implementing the SWGSCA project. Standard techniques for vegetation management and restoration of prairie, oak savanna, and oak woodland communities (burning, brush cutting, grazing) should not result in the accidental destruction of any archaeological or historical features or resources that are present but undiscovered in the project area. Discoveries of new archaeological or historical sites would be reported to the State Historical Society to ensure that the historical significance of the area would be taken into consideration as plans for land protection and management are developed. If any sites of archaeological or historical significance could be affected by project activities, such as land excavation for a display, the Department would comply with Section 106 of the National Historic Preservation Act by submitting specific site information and any relevant management plans to the State Historical Society.

2. Effects on Historical and Cultural Resources

As with archaeological features, significant historic or cultural features also will be among our considerations when deciding where to target conservation efforts, when compatible with natural resource priorities. Any impacts should be positive. In addition, the project provides greater opportunities to augment public awareness and appreciation of the region's historic features, such as Pendarvis in Mineral Point, The Old Hauge Log Church in Perry Township, the First Capitol near Belmont, the historic site of Fort Blue Mounds, or the Thomas stone barn near Barneveld—recently placed on the National Historic Register. The project should have the effect of helping to preserve the overall rural and agricultural nature of the landscape. Finally, by preserving and restoring the prairies and savannas that once covered this region, we provide both residents and visitors with an opportunity to experience a significant piece of our historic landscape.

D. Effects on People and Land Use

1. Effects on Public Recreation and Nature-Based Tourism

The Southwest Wisconsin Grassland & Stream Conservation Area is located in the state's Southern Gateways Region, according to the Wisconsin Statewide Comprehensive Outdoor Recreation Plan 2005-2010 (SCORP). It is a region expected to experience higher population growth than more rural regions. As the demographic data presented in Section VI(D) of this document show, while some of the rural townships farthest from Dane County have declined in population, the majority have grown in recent decades and are projected to see a continued population rise--some a dramatic rise. As populations continue to grow, the recreational profile is expected to change. With larger populations comes the demand for a greater and more diverse supply of recreational opportunities.

Many communities in the area have demonstrated through their comprehensive planning an interest in capitalizing on their natural resources. Their plans or draft plans frequently include goals and policies related to promoting greater tourism and outdoor recreation opportunities.

The Outdoor Recreation Economy

Mining, logging and agriculture are the traditional backbone of many rural economies, with agriculture being the dominant land use in southwest Wisconsin. Today, the active outdoor recreation economy has joined that list as communities seek to create a balanced and stable base for long-term economic and community development.

Scenic resources underpin the tourist industry in southwest Wisconsin and much of this is tied to the outdoor recreation economy. Non-local trout anglers spend nearly $500,000 per year in the communities surrounding the West Fork of the Kickapoo River, for example. But recreational opportunities are currently very limited in this region. Public land ownership throughout the entire SW Savanna Ecological Landscape is only 1%. Seeking to acquire lands (whether by fee or easement) that are open to the public for recreation, will be particularly important near existing preserves, Department properties or trails. Wisconsin's recently published Southern Savanna edition of the *Great Birding and Nature Trail*, includes some destination "waypoints" within the SWGSCA, which hopefully will bring additional visitors to the area.

See this website for more information: http://dnr.wi.gov/org/land/er/birds/trail.htm

We envision limited instances where open public access may not be appropriate to ensure long-term protection of sensitive resources and species. Even then, however, educational materials and displays on unique features of an area, like endangered plants and butterflies, Native American rock art, or smaller remnants of unplowed prairie, can help enrich the experiences of those who visit and recreate in that landscape.

The SCORP document states that three outdoor recreational pursuits compatible with the Southwest Wisconsin Grassland & Stream Conservation Area are ranked in the top seven in the Wisconsin Outdoor Recreation Participation by Activity (Age 16+) category. They are "Walk for pleasure" which ranks number one, "View/photograph natural scenery" which ranks number three, and "View/photograph other wildlife" which ranks number seven.

Increasing nature-based recreational opportunities in this region is an important goal of this project. It will provide people with greater opportunity to experience and enjoy some of the grassland and prairie landscape that once characterized most of Southwestern Wisconsin.

2. Effects on Renewable Energy Opportunities in the Region

a. Biomass

The SWGSCA occurs in a part of the state with some of the highest potential for growing herbaceous crops for biomass energy. The recent conversion of grassland to corn for ethanol production has likely had negative impacts on water quality and wildlife habitat. However, the production of native, perennial grasses and forbs for biofuel has the potential to benefit both energy production and grassland wildlife, while improving water quality and aquatic life at the same time. A number of target grassland bird species could benefit from such perennial crops of grasses and forbs, as will native invertebrates and mammal species. Research into the impacts of biomass crops on wildlife in southern Wisconsin is ongoing. The Department will work cooperatively with Partners and local governments to promote biomass energy cropping systems that complement the goals of the SWGSCA.

b. Wind Energy

There is potential for the development of wind energy in the SWGSCA; there are already plans underway for a project adjacent to the SWGSCA boundary. Recent research has demonstrated some mortality of both bird and bat species due to collision with wind tower blades. Some research indicates that bat mortality may be caused by sudden air pressure changes (called "barotrauma") caused by the turbine blades. A recent study in Alberta, Canada found through necropsies of dead bats below wind turbines that internal hemorrhaging occurred in 90 percent of the bats examined, attributed to rapidly expanding air in the lungs caused by the sudden drop in pressure. Birds are not susceptible to this effect, which may partly explain why bat mortality at wind projects has been higher than bird mortality by as much as an order of magnitude. Moreover, we have very little information about bat migration, when mortality rates also exceed those of birds.

For birds, the risk of collision is higher during migration periods, and under certain weather conditions. Displacement of breeding birds is another possible impact of wind towers; at least one study in the Great Plains has reported prairie chickens avoiding nesting near wind towers. Grassland birds are adapted to open, treeless landscapes largely devoid of tall structures. Currently, we lack adequate scientific knowledge of the potential impacts of wind farm development on grassland birds and bats in the SWGSCA.

With careful attention to the siting of wind farms away from migratory pathways and key habitats, as well as adoption of techniques such as shutting down wind towers at night during migrations, we potentially minimize negative impacts. Because grassland birds and other prairie species like the Regal Fritillary butterfly require relatively open, treeless horizons, we would work to direct wind turbines away from areas proposed as BCA cores, sensitive habitats, or adjoining habitat for sensitive prairie species. Given the abundance of open ridgetops across this very large project area, there should be many alternatives for wind turbine placement.

The Department is developing Guidance for Wind Farm developers on appropriate siting and review procedures. Project staff will work with this DNR wind guidance team to include screening measures that ensure developers are aware of the new SWGSCA project and consult with the Department when working within its boundary. Together with review staff from the DNR's Office of Energy, we also will coordinate with the four County Zoning departments, often among the first contacts made by prospective developers.

3. Protection Tools and Tax Impacts (an overview)

The following tools exist for permanent land protection:

Fee Acquisition: Outright purchase of land, including complete transfer of title and all rights and responsibilities of ownership (excepting any restrictions that may have been placed on the title).

Purchase of Development Rights (PDRs) and Conservation Easements are very similar. Both are based on a legal agreement between a landowner and another party (government agency, land trust, or other private organization) that limits specified uses of the land in order to protect its conservation or agricultural values. This is a voluntary, highly flexible tool, and each easement's conditions are decided together by the landowner and the recipient. The landowner retains the title and all other rights and responsibilities of ownership, including payment of property taxes (see below), the right to sell it, or the right to pass it on to heirs.

A PDR easement limits the subdivision of the property and further residential or non-farm and non-forestry uses. A conservation easement usually does the same, plus provides some additional land protections.

See http://town.dunn.wi.us/PurchaseofDevelopmentRights.aspx for information on the PDR program in the Town of Dunn, Dane County.

Community Tax Base Considerations

DNR Land: When the DNR outright purchases land, it pays the community what is called "aids-in-lieu of taxes." Since 1992, these payments are essentially equal to or greater than the tax that would have been paid under private ownership. If the land was taxed under use-value assessment, then the amount paid by DNR will be considerably higher. **(See inset below, "Impacts on Property Taxes.")**

When conservation or development rights easements are conveyed, tax base may change, depending on local assessment practices. Generally speaking, in rural areas under use value assessment, there is no change in assessments because the assessment is already below market value. If tax base does decrease because of DNR land purchase, then school equalization aids usually increase to help compensate.

Landowner Considerations

While most people who sell conservation easements are motivated by many factors, there can be additional tax incentives. Landowners should consult their tax advisors. Because of the changing nature of tax law and differing situations from one landowner to the next, professional counsel can recommend the best course of action. Here are a few general considerations:

Income Tax: Many property owners donate land or permanent conservation easements, or sell to a qualified conservation organization for less than full market value (a "bargain sale") because of the tax benefit such a charitable donation provides to them. The landowner then usually qualifies for federal and state income tax deductions.

If a landowner sells the property, or an easement on the property, he or she may be subject to capital gains tax.

Estate/Gift Taxes: Recent tax law changes providing federal estate tax relief may or may not remain in place over time. Selling or donating a perpetual conservation easement can help ensure a reduced estate tax for heirs because it permanently reduces a property's fair market value.

Property Tax: Under Wisconsin law, local property tax assessors are required to consider the effect of a conservation easement on the land's taxable value. Since the easement typically reduces development possibilities and property value, property taxes may be reduced. Landowners should consult their local tax assessor to determine how an easement's particular restrictions may affect them. Generally speaking, in rural areas, properties under use value assessment experience no change because the assessment is already below market value.

For more information, see the Gathering Waters Conservancy Web Site:
http://www.gatheringwaters.org/landprotection_options.

Impacts on Property Taxes

Since 1992, the Department of Natural Resources pays aids in lieu of taxes ***equal*** *to property taxes that would have been paid had the land remained in private ownership.* According to the new law (State Statute 70.11 (1)), property acquired by DNR comes off the tax roll and in place of the loss of tax base, each taxing jurisdiction receives an aid payment equivalent to property taxes.

The only difference between the way that DNR makes its payments in lieu of taxes and what a private landowner would pay in property taxes relates to the way in which assessed value is determined. In almost all cases the DNR can only purchase property for its appraised fair market value, as determined by two independent appraisals. This insures that landowners are offered a fair and competitive price and that taxpayers (as the ultimate buyers) pay only what a property is worth.

To avoid the need for local assessors to continually assess DNR property and for the DNR to review and possibly appeal assessments, the law states that initial assessed value is set at the DNR purchase price of the property. Subsequently, this value is adjusted to reflect the change in the assessed value of land in the taxation district. For example, if the assessed value of land in a Township increases by 5%, then the assessed value of DNR land in the Township is automatically increased 5% and the payment in lieu of taxes also increases 5%. All other aspects of the way DNR makes its payment in lieu of tax under this new program are the same as those for a local taxpayer.

Prior to 1992, the state made payments to local governments where the Department owned land based on a rather complicated formula. Due to the confusion surrounding these payments, the Legislature created a new law in 1992 that simplified the payment process.

E. DNR Evaluation of Project Significance

1. Environmental Effects and Their Significance

a. Discuss which of the primary and secondary environmental effects listed in the supporting documents are long-term or short-term.

The majority of the environmental effects described above will have long-term benefits to natural resources and nature-based recreation. Some areas heavily infested with invasive plant species or in non-native grass cover where native grasses or prairie planting is desired may be converted to row crops in the short-term to prepare for seeding. Such site preparation benefits agricultural production in the short-term, but at the same time may remove some benefits for wildlife.

Standard management practices used to maintain open habitat such as prescribed burning, mowing and brushing can have short-term impacts on resident wildlife species. For example, prescribed burning can temporarily reduce insect populations residing in the specific area that is burned. However, in keeping with the Department's rare species management protocols, established for grassland management and incidental take authorization, management will be conducted in a manner that minimizes species mortality while promoting habitat and healthy populations in the long-term.

b. Discuss which of the primary and secondary environmental effects listed in the supporting documents are effects on geographically scarce resources (e.g. historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered resources, or ecologically sensitive areas).

Positive effects on these scarce natural, recreational and cultural resources are major goals of project. As discussed in the previous section, prime agricultural soils will be avoided, although there may be some local conversion of farmland to conservation grasslands. In many of these cases, we expect to rent grasslands to local farmers for compatible haying or grazing.

c. Discuss the extent to which the primary and secondary environmental effects listed in the supporting documents are reversible.

Nearly all of the proposed grassland and watershed protection and management actions proposed are reversible, except removal of buildings when properties are purchased, stream channel alterations and floodplain restorations through removal of silt deposits. Permanent and long-term grasslands could be put into various forms of agricultural production at some point in the future if required. Commercial and residential development is much more permanent.

2. Significance of Cumulative Effects

Discuss the significance of reasonably anticipated cumulative effects on the environment (and energy usage, if applicable). Consider cumulative effects from repeated projects of the same type. Would the cumulative effects be more severe or substantially change the quality of the environment? Include other activities planned or proposed in the area that would compound effects on the environment.

Additional conservation projects in this region would have positive impacts on natural resources. Partners are expected to pursue additional land protection above and beyond the Department's 12,000 acres. It is possible that if significant increases in land protection were to occur in the more distant future, re-

gional agricultural production could be adversely impacted. The factors contributing to the viability of the agricultural economy are many and complex, however, and future opportunities in such sectors as biofuels and grassland-based agriculture show promise for the region. If significant increases in acres of land protection were to take place at some point in the distant future, it could cause some changes in agricultural practices. No such significant increases are planned at this time.

There is potential for increased conservation and public recreation opportunities in this region to bring new tourism and nature-based revenue opportunities to the area.

3. Significance of Risk

a. Explain the significance of any unknowns that create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analysis would eliminate or reduce these unknowns?

The population responses of target species to the establishment of BCAs and protection of prairies, savannas and stream watersheds are expected to be positive based on best available science. The degree to which populations will respond, and be maintained at viable levels, is unknown. Habitat and population targets will be set for key species, and monitoring will be necessary. Once sufficient land is protected, a monitoring and adaptive management program will be implemented. If populations of grassland birds, other target species and water quality of priority streams are not responding as hoped, further studies may be needed to determine why, and it is possible that protection goals and approaches would need to be revisited and adjusted accordingly.

Establishment of Bird Conservation Areas, especially large contiguous cores, will require considerable Partner, local government and landowner coordination before we begin fee or easement acquisition. Careful and comprehensive local planning will be needed to minimize the risk of incompatible land use occurring within a targeted BCA core, especially once substantial progress in land protection has already been achieved.

There are a number of unknowns with respect to future land use in the area that could affect the success of this project, including the future of grass-based biofuels, corn-based ethanol, corn and soybean prices, and other renewable energy industries such as wind energy and expected wind farm siting in the region. Project staff will work closely with local governments and planning agencies as well as the DNR Office of Energy to ensure early coordination for projects having potential to affect the goals of the SWGSCA.

b. Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.

There is a very small risk of prescribed fires escaping from the managed zones, however to minimize this risk, only trained personnel are allowed to assist on Department prescribed burns, local fire safety personnel are notified the day of the burn, and appropriate equipment is on-site to deal with any fire that escapes the burn boundary.

4. Significance of Precedent

Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Describe any conflicts the proposal has with plans or policy of local, state or federal agencies. Explain the significance of each.

The SWGSCA is not the first large-scale grassland project in Wisconsin (see Figure 2). However, it will be the first landscape-scale habitat project of the Wisconsin DNR designed to create functioning grassland Bird Conservation Areas (BCAs). Few other states in the Midwest have attempted to implement grassland BCAs; Iowa DNR was the first, beginning in 2001. Iowa now has 12 BCAs in varying stages of development, most of which are centered on large public ownerships. However, at least one, the Broken Kettle BCA in the grasslands of western Iowa, is centered on privately-owned land, with 6,000 acres of grassland permanently protected so far. Most of the Iowa BCA project areas are well over 10,000 acres in size. At least 4 of the 12 BCAs are primarily grassland landscapes.

See http://www.iowadnr.gov/wildlife/files/BCA_index.html for more information on Iowa's BCAs.

Unique to this project among the other Wisconsin grassland projects is its integration of upland and lowland/water resources including the goal of protecting uplands for groundwater infiltration and recharge. Also unique to this project is the fact that it encompasses and builds upon the well-established Military Ridge Prairie Heritage Area Partnership, which has led the way for grassland, stream and prairie protection and awareness in the eastern areas of the project.

5. Significance of Controversy over Environmental Effects

Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to be) highly controversial, and summarize the controversy.

Very few negative comments have been received throughout the planning process; 95% of the public comments were positive. In fact, the major issue for landowners has been to ask why we didn't include certain areas in our boundary, and asking that we expand it to include their properties.

Questions regarding impacts on community tax base and on area agriculture have been addressed. Concerns from some Partners and members of the public regarding public access requirements for Stewardship-funded purchases, especially easements, have been addressed by working with Partners to develop agreed-upon project criteria for exempting the public access requirements where appropriate. For fee purchases using Stewardship funds, the Administrative Rule under development will apply to this project

BEFORE THE
DEPARTMENT OF NATURAL RESOURCES

DECISION ON
WISCONSIN ENVIRONMENTAL POLICY ACT COMPLIANCE

For

Feasibility Study, Master Plan and Environmental Impact Statement for the **Southwest Wisconsin Grassland & Stream Conservation Area (SWGSCA)**

INTRODUCTION

The Wisconsin Environmental Policy Act (WEPA), s. 1.11, Stats., requires state agencies to fully consider and disclose the environmental impacts of agency actions. Chapter NR 150, Wis. Adm. Code, outlines policy and procedures for implementing WEPA for the Department of Natural Resources (DNR). Section NR 150.24, Wis. Adm. Code, requires a final written decision regarding WEPA compliance.

The Wisconsin Department of Natural Resources is initiating the SWGSCA. The vision for the SWGSCA is to work with a diverse group of partners to conserve and enhance functioning grassland, savanna and stream ecosystems in Southwest Wisconsin, set within a rural landscape of working farms. Southwestern Wisconsin has been recognized for many years as one of the best grassland conservation opportunities in the Upper Midwest. The area stands out for its distinct combination of resources: exceptional populations of grassland birds; a high number of prairie remnants; concentrations of rare plants and animals, and spring-fed streams, all set within this expansive rural farming region of open fields, croplands, oak groves and pastures.

The numerous prairie remnants in southwest Wisconsin are the remains of the original tallgrass prairie and oak savanna that once covered this region and harbored abundant populations of grassland animals including Greater Prairie-chickens and Sharp-tailed Grouse. These prairie remnants are still surrounded by a rural, relatively treeless landscape supporting rare species that, like grassland birds, are adapted to an open landscape.

The rivers and streams that drain the area's ridgetops vary in quality and condition. Increased grassland cover, improved agricultural practices and streambank management have demonstrably improved water quality in many area streams. Others still suffer from poor water quality and sedimentation. These "Impaired" streams, as well as the area's Outstanding/Exceptional Resource Waters, are project priorities.

1. FINDINGS OF FACT

The Department of Natural Resources finds that:

1. Section NR 150.03, Wis. Adm. Code, establishes a "Type List" for all DNR actions, setting minimum procedural requirements for WEPA compliance. Pursuant to s. NR 150.03 (5)(a)1.a, Wis. Adm. Code, the SWGSCA project makes this a Type 1 action, requiring the Environmental Impact Statement (EIS) process as outlined under s. NR 150.20 (1) (d), Wis. Adm. Code.

2. On March 3, 2009, the Department of Natural Resources completed an EIS and received public comments through April 17, 2009.

3. On October 26, 2005, pursuant to ss. NR 150.21, Wis. Adm. Code, the Department notified the

public of its determination to pursue the full EIS process, in order to complete its compliance with the Wisconsin Environmental Policy Act (WEPA), under s. 1.11 Stats., as it relates to the proposed SWGSCA project.

4. In July 2005, pursuant to s. NR 150.21 (3), Wis. Adm. Code, the Department held scoping meetings with the general public and interested parties concerning the proposed study. Open house scoping meetings were held in Mount Horeb, Hollandale and Mineral Point.

5. In August 2008, the Department held public meetings to gather comments on a Draft Feasibility Study/Master Plan/Preliminary Environmental Assessment, in Mount Horeb, Hollandale, Mineral Point and Belmont.

6. On March 3, 2009, the Department of Natural Resources announced the availability of the Environmental Impact Statement (EIS) for public comment and announced a public information hearing for April 2, 2009, at the DNR service Center in Dodgeville to receive comments on the EIS. Such notice was provided via letter to all interested parties, local governmental officials, the Governor's office, other state and federal agencies, and to local libraries. Copies of the EIS were made available through the Department's worldwide web site, in hard copy, at local libraries, and in the form of compact diskettes.

7. On March 3, 2009, at least 25 days prior to the hearing, a class 1 notice, as defined by ch. 985, Stats., was published in the The Dodgeville Chronicle/Democratic Tribune (Mineral Point), 106 W. Merrimac St., P.O. Box 96, Dodgeville, WI 53533; Darlington Republican-Journal, 316 Main St., P.O. Box 20, Darlington, WI 53530; and the Wisconsin State Journal, 1901 Fish Hatchery Road, Madison, WI 53713.

8. The Department held a public informational hearing on April 2, 2009, at 5:30 to 7:30pm at the DNR service Center, 1500 N Johns St, Dodgeville, WI 53533. An informational open house was held for the SWGSCA from 5:30pm to 6:00pm when the hearing commenced at the same location. Additional informational interaction occurred from 6:30pm to 7:30pm. The open house format also allowed for a question and answer session with Department experts prior to and after the formal hearing proceedings.

9. Verbal comments on the EIS were received at the April 2 hearing, and written comments were accepted in letter or electronic mail formats through April 17, 2009.

10. Pursuant to s. NR 150.22 (3)(e), Wis. Adm. Code, the Department prepared a summary of the comments received in writing during the comment period and comments received at the public hearing regarding the EIS. The Department has made clarifications and minor revisions to pages 57-61 of the document in response to these final comments, and responded to the commenting parties in an electronic e-mail document dated May 21, 2009.

11. DNR fully considered all comments on the EIS in making this decision pertaining to compliance with WEPA. Any substantive project changes that significantly affect its environmental impact may require additional analysis.

CONCLUSIONS OF LAW

The Department concludes that:

1. The Department of Natural Resources, under s. 1.11, Stats., and Ch. NR 150, Wis. Adm. Code, has the responsibility to comply with WEPA, and the authority to determine its compliance with that Act.

2. The procedure and analysis identified in the Findings of Fact complies with the requirements of s. 1.11, Stats., and ch. NR 150, Wis. Adm. Code.

DECISION

The DNR has complied with the requirements of WEPA, s. 1.11, Stats. and Ch. NR 150, Wis. Adm. Code, for the proposed Rosendale Dairy project. This Decision applies to all subsequent DNR actions on the project, the impacts of which are considered in the EIS.

Dated at Fitchburg, Wisconsin, this 20th day of April, 2009

STATE OF WISCONSIN
Department of Natural Resources
For the Secretary

By: _____

Russ Anderson, Supervisor of the Environmental Analysis and Review program, South Central Region

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes, administrative codes, and case law establish time periods and requirements for reviewing Department decisions. To seek judicial review of the Department's decision, ss. 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. Such a petition shall be filed with the appropriate circuit court and shall be served on the Department. The petition shall name the Department of Natural Resources as the respondent.

XI. PROJECT FEASIBILITY DETERMINATION

The information and evaluation presented in this study, and supported by input received through our public involvement process, have produced the following conclusion:

The proposed 473,900-acre Southwest Wisconsin Grassland and Stream Conservation Area is feasible from the standpoint of legal authority, ecological soundness, public support, and availability of funding.

Approved:

_____ _____

Mark Aquino, Land Leader — Date

South Central Region

_____ _____

Thomas Hauge, Director — Date

Bureau of Wildlife Management

_____ _____

Signe Holtz, Director — Date

Bureau of Endangered Resources

_____ _____

Russell Rasmussen, Director — Date

Bureau of Watershed

CITATIONS

Corsi, Steven R.; Graczyk, David J.; Owens, David W.; Bannerman, Roger T. 1997 *Unit-Area Loads of Suspended Sediment, Suspended Solids and Total Phosphorus From Small Watersheds in Wisconsin.* US Geological Survey Fact Sheet 195-97.

Foltz, J. D. and Turnquist, A. 2006. *The Status of Working Lands in Wisconsin: Current Trends and Future Policies.* Program on Agricultural Technology Studies, UW-Madison, Research Report No. 18.

Marshall, D.W. and Lyons, J., Ch. 13 in Waller and Rooney (eds.), *The Vanishing Present*: *Wisconsin's Changing Lands, Waters and Wildlife* (2008 – The University of Chicago Press).

Krause, J. and Henderson, R., 1995. *Identification of Landscape Management Opportunities and Needs in Wisconsin*, Wisconsin Department of Natural Resources Research Report, Study No. 331.

Marshall, D.W., et al., *Positive effects of agricultural land use changes on cold water fish communities in southwest Wisconsin streams,* North American Journal of Fisheries Management 28:944-953.

The Nature Conservancy, Wisconsin Chapter. 2001. *Military Ridge Prairie Heritage Area Site Conservation Plan.* The Nature Conservancy, Madison, WI.

Pohlman, J.D., G.A. Bartelt, A.C. Hanson III, P.H. Scott, and C.D. Thompson (eds.). 2006. *Wisconsin Land Legacy Report: an Inventory of Places to meet Wisconsin's future conservation and recreation needs*. Wisconsin Department of Natural Resources, Madison, WI.

Potter, B. A., G.J. Soulliere, D.N. Ewert, M.G. Knutson, W.E. Thogmartin, J.S. Castrale, and M.J. Roell. 2007. *Upper Mississippi River and Great Lakes Region Joint Venture Landbird Habitat Conservation Strategy.* U.S. Fish and Wildlife Service, Fort Snelling, MN. 124 pp.

Potter, K. et al., and Bradbury, K., *Groundwater Hydrology of an Agricultural Watershed*: Completion Report for Wisconsin Dept of Agriculture, Trade and Consumer Protection and Wisconsin Dept of Natural Resources, Oct. 1995.

Potter, K., 1991. *Hydrological Impacts of Changing Land Management Practices in a Moderate-Sized Agricultural Catchment.* Water Resources Research 27:845-855

Rich, T.D., C.J. Beardmore, H. Berlanga, P.J. Blancher, M.S.W. Bradstreet, G.S. Butcher, D.W. Demarest, E.H. Dunn, W.C. Hunter, E.E. Inigo-Elias, J.A. Kennedy, A.M. Martell, A.O. Panjabi, D.N. Pashley, K.V. Rosenberg, C.M. Rustay, J.S. Wendt, and T.C. Will. 2004. *Partners in Flight North American Landbird Conservation Plan*. Cornell Lab of Ornithology. Ithaca, NY. 85 pp.

Sample, D.W. and M.J. Mossman. 1997. *Managing habitat for grassland birds: A guide for Wisconsin.* Wisconsin Department of Natural Resources, Publication SS-925-97, Madison.

APPENDICES

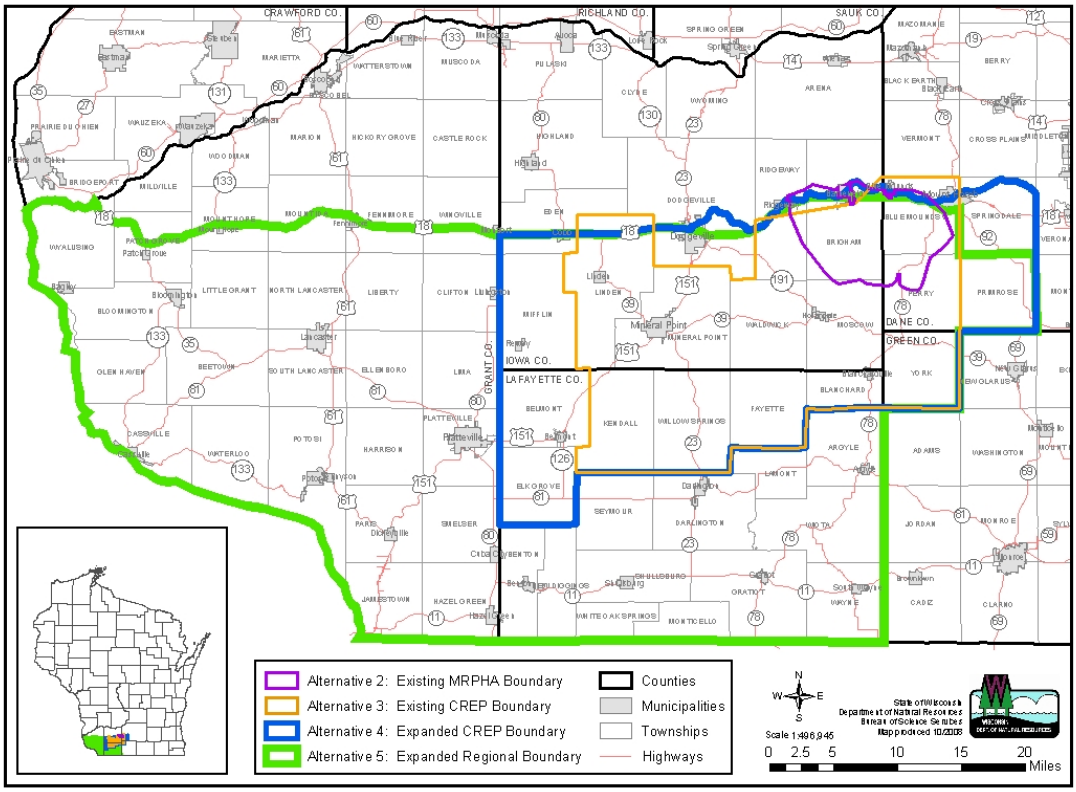
APPENDIX A: PROJECT BOUNDARY ALTERNATIVES

The primary factors considered in evaluating alternative boundaries were:

- Does the boundary encompass appropriate areas and habitat for meeting the natural resources project objectives?
- Is the scale of the area appropriate for the project objectives?
- Is the boundary easily identifiable?
- How well does the boundary incorporate results of past planning efforts (*Wildlife Action Plan*, Land Legacy Report, Grassland Bird Handbook)?
- Are other agencies and conservation organizations active within the area being considered? Which boundary do our conservation partners support as being the best fit for this project?
- Does the boundary reflect public input, particularly comments received at our project open house meetings in July 2005?

Below we describe the four alternative boundaries which the Department considered (see Figure A-1 below), including Alternative 4, the recommended project boundary taken to the public in July 2008. The final boundary is Alternative 4, but with the northern boundary line expanded from Dodgeville through Springdale Township to coincide with the Military Ridge State Trail (rather than Highway 18/151). See final boundary as shown in Figure 1 on p. 9 of main document.

Figure A-1: *Alternative boundaries considered for the Southwest Grassland and Stream Conservation Project. Alternative 4, shown as the darkest heavy blue line, was the recommended project boundary in the July 2008 Draft. The first alternative considered was 'No Action.'*



Alternative 1: No Action

Alternative 1 would mean that the DNR would not pursue a new large-scale project in southwestern Wisconsin. DNR acquisition authority currently exists for the Streambank Conservation program, the State Natural Areas program (acquisition of <500 acres only) and other unique sites on a very limited basis. Other conservation partners (e.g., The Nature Conservancy, The Prairie Enthusiasts, NRCS, USFWS, County Land Conservation Departments, Pheasants Forever, Driftless Area Land Conservancy, the Blue Mounds Area Project) are currently active in southwestern Wisconsin, and their activities are expected to continue. Some existing conservation programs that involve the largest grassland acreages, however, do not usually provide permanent land protection (e.g., CRP).

Pursuing Alternative 1 would mean that there would be no significant expansion of DNR's land- protection efforts for rare upland resources in southwestern Wisconsin. Accordingly, additional DNR staff time and funds for the project would not be needed. There would be a greater risk of continued declines in the broad suite of native plant and animal species associated with grassland ecosystems, such as area-sensitive grassland birds, and fewer water quality improvements would be expected. In addition, substantially fewer DNR funds would be available to contribute toward ongoing protection activities of other conservation partners working in the area. Those funds that are available would require match from partners, a known limiting factor to acquisition efforts by smaller organizations and land trusts.

Very few public comments received to date call for no action.

Alternative 2: Existing Military Ridge Prairie Heritage Area Boundary

Alternative 2 would mean that the DNR would pursue a new project in southwestern Wisconsin, using the existing Military Ridge Prairie Heritage Area (MRPHA) boundary. The MRPHA boundary encompasses 48,970 acres in southeastern Iowa and southwestern Dane counties, and is a more manageable size than Alternatives 3-5. Positive aspects of Alternative 2 include a boundary that coincides with that of an established project with many active cooperators and a full-time (grant funded) project coordinator. Pursuing Alternative 2 would focus DNR efforts and funds in an area with a high concentration of important grassland resources (e.g., prairie remnants and associated rare species). There are conservation programs and practices in place throughout the MRPHA boundary, and some conservation groups are only active within this boundary (i.e., The Nature Conservancy). In-depth resource evaluation efforts of partners working within this area have already led to designation of core and buffer areas, largely precluding the need for additional efforts to develop specific focus criteria for DNR activities.

There are questions about whether the area within the MRPHA boundary can provide sufficient opportunities for protection of large contiguous grasslands within an open landscape matrix, which are required by some area-sensitive species such as northern harriers and upland sandpipers. There are also higher development pressures and higher land costs in this area versus some other areas within boundary Alternatives 3-5 which are farther away from urban centers. The smaller area and existing land use pressures within this boundary versus Alternatives 3-5 provide less flexibility and more limited opportunities for conservation. This boundary also excludes several key grassland areas present in Alternatives 3-5. This boundary encompasses some important cold-water stream systems, including Gordon Creek (designated an Exceptional Resource Water by the DNR), but excludes important warm-water streams that support high biodiversity and rare species.

Additional DNR staff and funds would be needed to augment and assist existing partner conservation efforts within this boundary. This boundary includes part of the Blue Mounds to Blanchardville area identified in the DNR Land Legacy report. This and other 'Legacy Areas' are considered to be the most important areas for meeting Wisconsin's conservation and recreation needs over the next 50 years.

The majority of public comments received to date encourage the Department to pursue a boundary larger than Alternative 2.

Alternative 3: Existing Conservation Reserve Enhancement Program Boundary

Alternative 3 would mean that the DNR would pursue a new project in southwestern Wisconsin, with the boundary being the existing Southern Grassland Conservation Reserve Enhancement Program (CREP) boundary. This is an established, state and federally approved boundary which encompasses all or most of 13 townships and approximately 330,240 acres in southern Iowa, southwestern Dane, northwestern Green and northern Lafayette counties. The CREP boundary is a more manageable size than Alternatives 4 or 5. Existing federal conservation programs (e.g., USDA's CREP, CRP) are focused within this boundary, as well as conservation efforts of other groups. This larger boundary would encompass more grassland-dependent species, provide opportunities for conservation of large (5,000 to 10,000 acre) blocks of grassland that would support more area-sensitive grassland birds, and provide more flexibility and opportunities for conservation than Alternative 2. This larger boundary (along with Alternatives 4 and 5) includes a broader range of recreational opportunities, which likely serve a larger segment of the public and could be enhanced through project activities. Because land in parts of the CREP boundary is farther away from urban centers, development pressure and land costs are, on average, lower.

The Wisconsin Natural Resources Board authorized this feasibility study with the understanding that Department staff would investigate this draft working boundary and alternatives. This boundary was the proposed working boundary that we presented for comment at public open house meetings in July 2005. With a larger boundary such as this one, strategies for focusing DNR efforts within the boundary would be critical to success. Even this boundary does not encompass the full range of resource opportunities in the area, and misses some key grassland landscapes (eg., southern Dodgeville, eastern Mifflin, Belmont, Elk Grove, and Primrose Townships). Staffing for conservation efforts within this boundary is uncertain. This boundary includes most of three 'Legacy Areas' identified in the DNR Land Legacy report: the Blue Mounds to Blanchardville area, Yellowstone Lake, and much of Pecatonica River and Grasslands.

Comments at our original series of public informational meetings favored a boundary larger than Alternative 3.

Recommended Boundary: Alternative 4: Expanded CREP Boundary

Alternative 4 would mean that the DNR would pursue a new project in southwestern Wisconsin, with the boundary being similar to, but somewhat larger than the existing Southern Grassland Conservation Reserve Enhancement Program (CREP) boundary. This boundary would encompass **459,926 acres** in southern Iowa, southwestern Dane, northwestern Green and northern Lafayette counties. The northern boundary of Alternative 4 is defined by US Highway 18/151, an easily identifiable landmark that follows the Military Ridge. The Alternative 4 boundary is a more manageable size than Alternative 5. It incorporates most of the large areas of idle grasslands and pasture in southwestern Wisconsin. Compared to Alternative 3, this larger boundary would encompass additional townships with key grassland resources (e.g., large grassland and savanna areas in Mifflin township and important prairie remnants and open grassland landscapes in Primrose township), important areas of aquatic biodiversity, and communities with a strong interest in conservation. It would provide even more flexibility and opportunities for conservation work with willing landowners, and more opportunities for conservation of the large (5,000 to 10,000 acre) blocks of grassland necessary for some area- sensitive grassland species. Similar to Alternative 3, land in parts of this boundary is farther away from urban centers, so development pressure and land costs are, on average, lower. The alternative 4 boundary would include important warm-water streams such as Pats Creek, which supports Ozark minnow (state threatened) populations.

However, even this larger boundary does not encompass the full range of resource opportunities in the region, missing some very large open landscapes to the west and the option to build upon existing projects of partner groups (e.g., The Prairie Enthusiasts). Staffing for conservation efforts within this boundary is uncertain, and strategies for focusing DNR efforts within this larger boundary would be critical to project success. All four counties with land within this boundary have already been contacted about the project. This boundary includes the same three 'Legacy Places' as Alternative 3, plus part of the Fever (Galena) River 'Legacy Area' as well as Belmont and Ipswich Prairie State Natural Areas. State Natural Areas represent our highest quality, most intact examples of natural communities remaining in Wisconsin.

This boundary includes most grassland resources that the public requested be included within the project boundary at the July 2005 Open Houses.

Alternative 5: Expanded Regional Boundary

Alternative 5 would mean that the DNR would pursue a new project in southwestern Wisconsin, with the boundary including nearly all of the state's Southwest Savanna region. The boundary would encompass approximately 1,254,380 acres in southern Iowa, southwestern Dane, northwestern Green, all of Lafayette County and all of Grant County. The Alternative 5 boundary is easy to understand, running largely along US Highway 18/151 to the north, and the state line to the west and south. This boundary best accommodates our uncertainty regarding the exact locations and quality of key natural resources in the region.

Compared to Alternatives 3 and 4, this larger boundary includes all of Grant and Lafayette Counties, and additional townships in other counties with key grassland resources and aquatic biodiversity. By reaching to the state line, this alternative would open up the potential for multi-state partnerships to conserve grassland resources. This boundary also offers the greatest flexibility and opportunities for conservation work with willing landowners, particularly for the restoration of 5,000 to 10,000 acre blocks considered necessary to protect the full range of grassland biodiversity. It includes large areas with low development pressure and lower land costs, although some areas along the new four-lane U.S. Highway 151 in Grant County do have higher land costs. The Alternative 5 boundary would include many more important warm-water streams with high biodiversity and rare fish species (including the state threatened Ozark minnow), and an additional 20 streams that support trout populations in Grant County. This boundary includes six 'Legacy Places' identified in the DNR Land Legacy report for the SW Savanna Ecological Landscape (it adds in all of the Grant/Rattlesnake Rivers, and Platte River areas in Grant County), and includes additional State Natural Areas.

Alternative 5 would involve work with an entire additional county and many additional townships that have not yet been contacted about the project. Staffing and funding for conservation efforts within such a larger area would be very difficult, but could be managed with strict adherence to habitat suitability or other focusing models.

This boundary includes very close to all of the grassland areas requested by any member of the public at the July 2005 open houses.

APPENDIX B: METHODOLOGY FOR DEVELOPING THE FOCUS AREAS

Focus Areas are concentrations of opportunities where we can maximize our conservation benefits. We look for areas that currently offer the best combined potential to meet our project's natural resource, recreation, and agricultural goals. We anticipate that at least 2/3 of the acres for which we seek permanent protection (8,000 acres) would be within these Focus Areas. The remaining acreage would be reserved to protect outlying properties of outstanding conservation value (e.g., high quality prairie remnants) within the larger project boundary.

Focusing Approach

We developed a set of three alternative Focus Areas from which our final Focus Areas were selected following public input.

These three alternative areas were developed by making a land cover map reflecting optimum areas of grassland cover, and then overlaying other key resources and features. The project's technical team used best information available at this time.

First Step - Preliminary land cover modeling

The first step in locating 'focus areas' is to identify general areas where current land use is compatible with the goals and objectives of this project. To do this, we used a Geographic Information Systems (GIS) modeling approach based on the state's WISCLAND land cover data. Land cover was put into four categories that are directly relevant to the success of this project:

1. ***Grasslands*** (e.g., pasture, grass hay, CRP, old field). Grasslands, prairies and savannas are priority natural communities in this landscape and the foundation of the project.
2. ***Agricultural lands*** (e.g., row crops, small grains, alfalfa). Agricultural lands maintain an open landscape, meet some needs of grassland species, are important buffers for prairies and grasslands, and represent opportunities for possible conversion to grassland in the future.
3. ***Woods.*** Forested areas are a natural and important part of this landscape. As such, the Department will avoid focusing grassland conservation efforts in heavily wooded areas, particularly if the woods extend beyond narrow valleys and draws into the uplands. (*Note: this does not include rare local Oak Woodland stands as described above.)*
4. ***Developed areas***. To minimize conflict with local development and maximize the long-term conservation value of our efforts, we will avoid focusing efforts near areas that are developed or planned for development

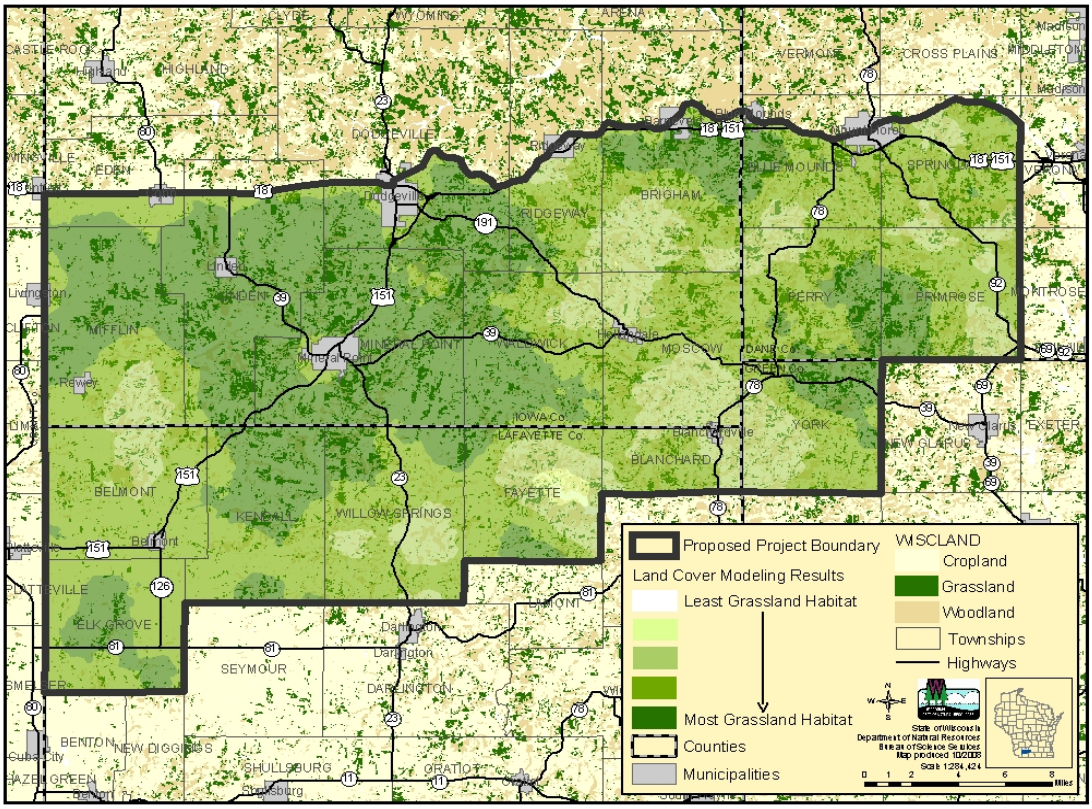
Next, we used standard tool used to analyze trends across a landscape, called a *"focal mean analysis."* In essence, a focal mean analysis shows spatial trends across landscapes and where resources (in our case, the four land cover types above) occur in configurations that are most valuable for conservation. A focal mean analysis works as follows.

Method:

1. Each of the four land cover types above is assigned a value, in terms of its value to this project: a high value (10) to grasslands; middle values to forage crops (5), small grains (5), and other agriculture lands (4); and a low value (0) to urban areas and forests.
2. A computer "looks" at each individual point (pixel) on a map, calculating the average of the values within a neighborhood around that point (in this case we used a circle with a radius of 2700 meters, or 1.7 miles), and we assign that average value to the point.
3. The process steps from pixel to pixel, repeating the steps listed in #2, until the entire map is completed.

The result for this project is shown here:

Figure B-1: *Areas within the project boundary where preliminary modeling indicates existing land cover is most likely to be compatible with the goals of the Southwest Wisconsin Grassland and Stream Conservation Area. Values shown are a continuum from highest value (dark) to lowest value (white).*



Level 2 Focusing Approach:

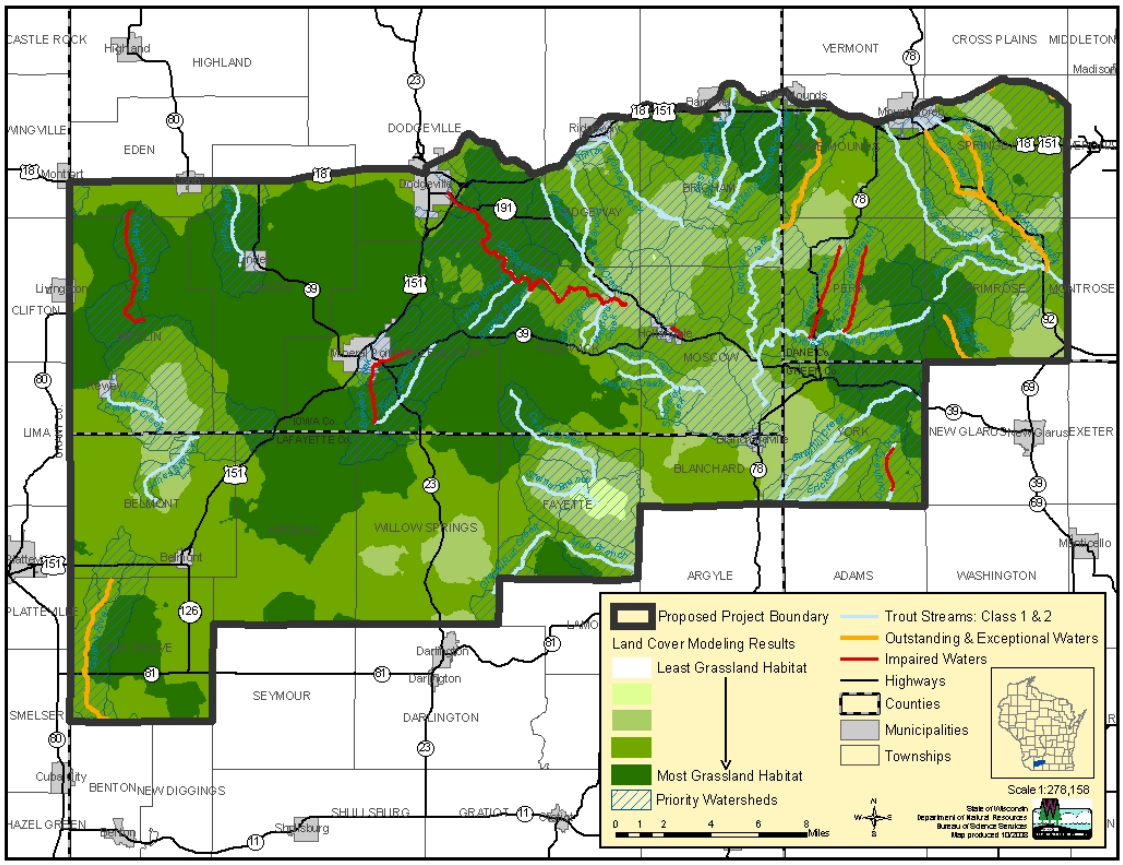
Next Step – Overlay key resources

The second step in identifying prospective Focus Areas was to overlay natural and cultural resources and land protection data on this base land cover map. These data illustrate areas on the landscape where we can best meet multiple objectives, e.g., improving water quality in priority streams while also protecting remnant prairies within a larger rural grassland landscape. We used the best and most current information available, which included recent prairie remnant and endangered resources surveys in the area.

Priority streams and their watersheds are among our major protection and management goals. Using the land cover modeling as a base map, we then overlaid the priority streams and their watersheds, as shown here:

1. Watersheds of priority streams: warm-water and cold-water streams that have been designated as 1) outstanding or exceptional resource waters, 2) class 1 & 2 trout streams, and 3) impaired waters (i.e., designated 303(d) streams).

Figure B-2: *Land cover modeling results overlain with watersheds of priority streams within the Southwest Grassland and Stream Conservation Area.*

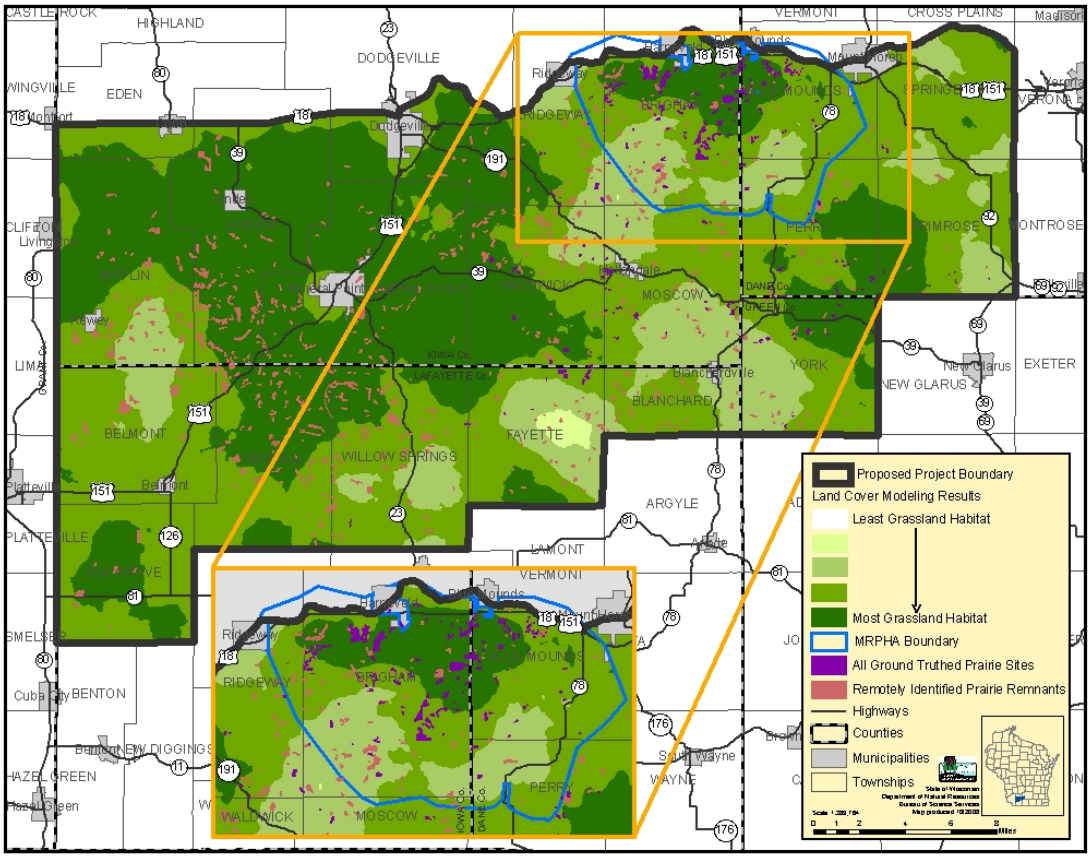


2. <u>Prairie remnants: known (ground-truthed) or potential (remotely identified) locations of remnant prairies and oak savannas:</u>

Remnant prairies of varying quality are scattered across the project area. With funding from a State Wildlife Grant, researchers from UW-Madison (led by John Harrington, Department of Landscape Architecture) identified likely locations of prairie using aerial photography interpretation. Biologists with The Prairie Enthusiasts then contacted landowners and where given permission, visited the properties to ground-truth, or verify, whether or not prairie sod indeed was present at these sites. In more than half the cases, prairie sod was present at the remotely – identified sites. Funding so far has permitted only the eastern half of the project area has been ground-truthed by field staff. Further ground-truthing across the western portions of the project is needed.

Results are shown below. Note the high number of prairie remnants ground-truthed within the Military Ridge Prairie Heritage Area, which was a top priority for field surveys in the study.

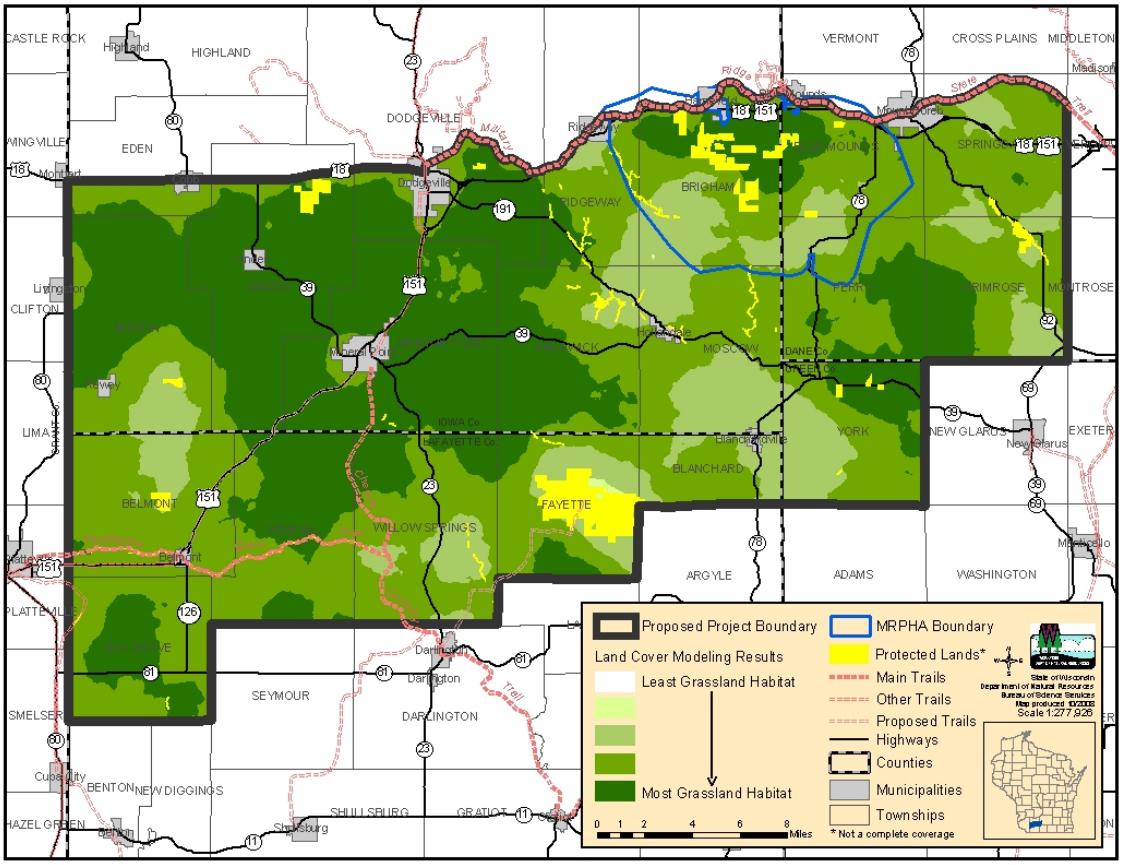
Figure B-3: Land *cover modeling results overlain with locations of remnant prairies, savannas and oak woodland, both remotely identified and ground-truthed*



3. Areas where there are protected lands, including both public lands and other conservation properties. These protected lands, as shown below, include 1) DNR lands (including easements), 2) other public lands (local, county, state, federal), 3) private conservation lands (e.g., lands in fee purchase or easement by private groups like The Nature Conservancy or The Prairie Enthusiasts) and 3) public trails

   Other conservation properties considered but not displayed on the map below are: 1) properties identified for conservation or open space in existing land use plans, 2) properties enrolled in USDA set aside programs (e.g., CREP, CRP), USFWS programs, or the state's Managed Forest Law. CREP lands are shown in the next map, Figure B-5.

Figure B-4: *Example of land cover modeling results overlain with public properties, existing or proposed trails, and other protected conservation properties in the Southwest Grassland and Stream Conservation Area (not all privately owned conservation lands shown here, e.g. CRP, Managed Forest Lands not shown).*



We also overlaid the following information:

4. Endangered Resources: areas with known rare plant and animal populations, or high quality natural communities (e.g., prairies, grasslands, savannas, pine relicts).

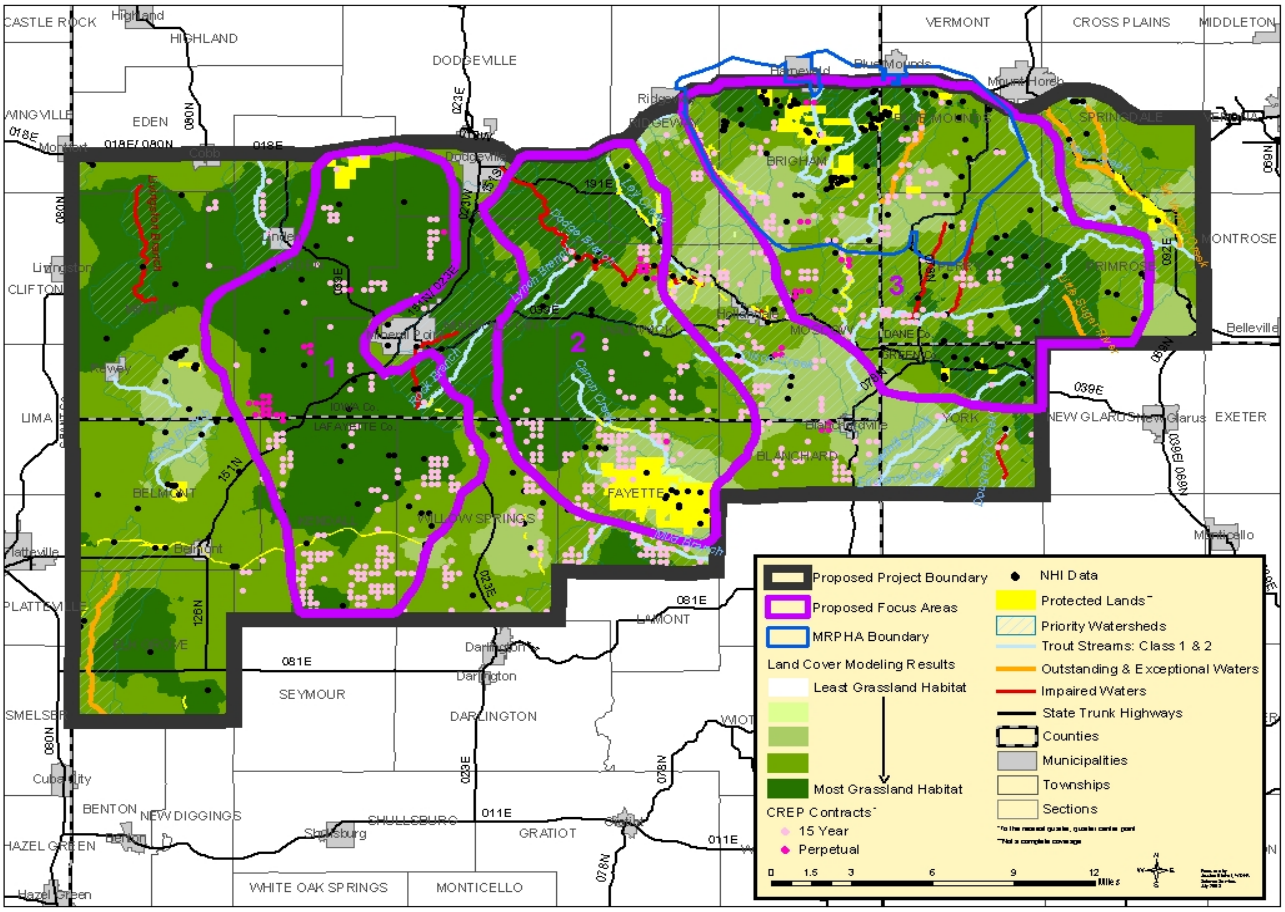
5. Historical and Archaeological Resources: most current spatial information available from the State Historical Society on locations of archaeological features (e.g., native burial mounds, ancient rock art) and historical features (e.g., historic European-American cemeteries or buildings).

Level 2 Focusing Approach:

Final Step – Putting the pieces together: Focus Area Alternatives

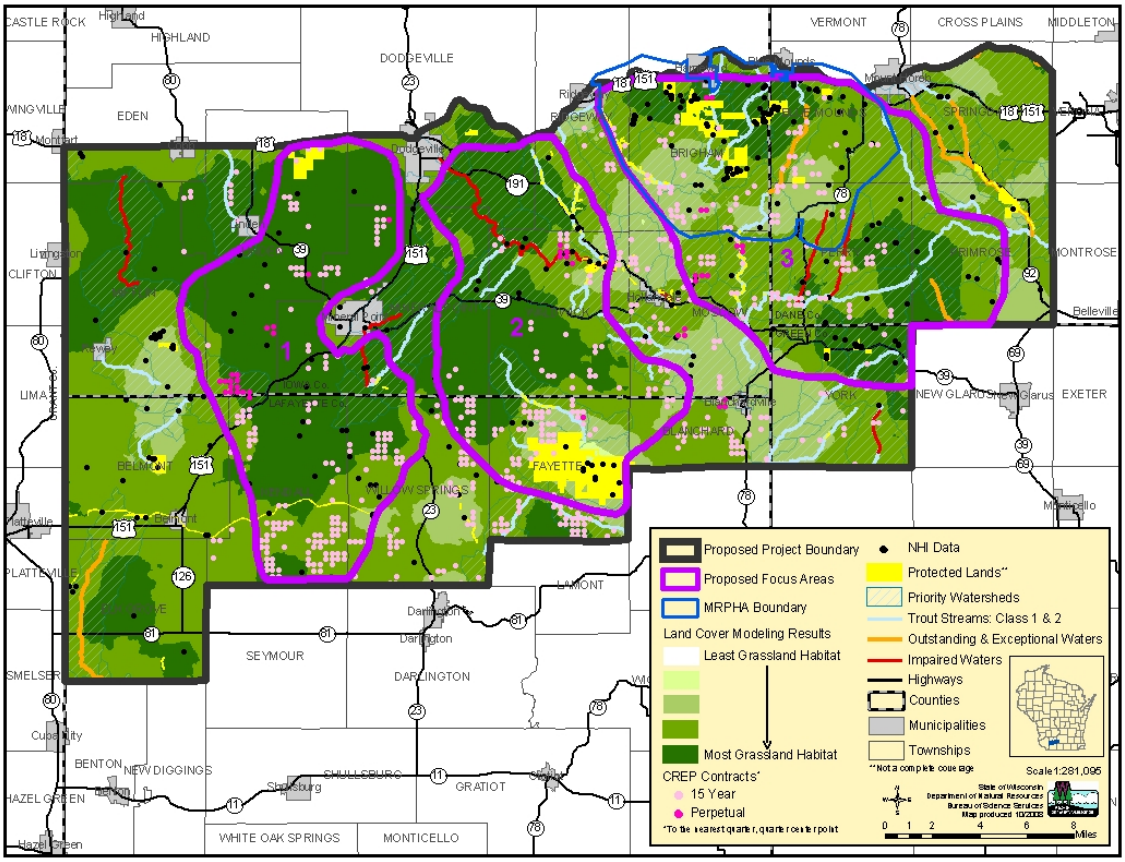
The following three possible Focus Areas, as shown, then were drawn using all of the information described above:

Figure B-5: *Composite showing 3 Proposed Alternative Focus Areas over multiple data layers*



These three proposed Focus Areas were taken to the partners and to the public for input in August 2008. Based upon public input and suggestions, Focus Area 2 was slightly modified, and all three were retained as the final proposed areas of focus for the project, as shown in the next Figure below.

Figure B-6: *Final three Focus Areas selected following public input 2008*



These boundaries are approximate only, and are subject to revision as land use changes occur, and as we work more intensively with landowners and partners on the ground to find the best conservation opportunities.

APPENDIX C: RANKING CRITERIA FOR INDIVIDUAL PARCELS

The following criteria will be used for focusing the Department's land protection efforts at the small or 'parcel' scale: A rating scale for these criteria will be developed and piloted prior to implementation. Note that we consider a parcel to be a unit of land available for protection. Typically the parcel will be a field, but it may range in size from ¼ acre to more than 500 acres.

Criteria 1-6 will be given additional weight if the parcel is located in a designated or proposed BCA.

Criteria 7-23 will be given additional weight if the parcel is located in a Focus Area or BCA.

Grassland habitat

1. Is parcel primarily existing grassland habitat (CRP, prairie remnants, pasture, old field, wet- or sedge meadow), or if somewhat degraded by wooded fence lines or young scattered trees, can it be easily restored to open grassland? Consider size (large parcels would be preferred over smaller parcels) and quality of the grassland parcel for the targeted birds (e.g., is the parcel dominated by invasive weeds).

Landscape context

2. Does the parcel exist within an 'open' area of 500 acres or more, with a low housing density of approximately 1 house/160 acres or less? Open means not to exceed 25% closed canopy forest in areas dissected by ridges or draws (and where the woods are mainly restricted to draws), or 10% forest cover in flatter landscapes.
3. Does the parcel consist of land on broad, open ridgetops or in broad, open valleys? For grassland bird conservation, ridgetops would rank higher than lowland areas.
4. Does the area immediately surrounding or adjoining the parcel have a significant amount of existing, formally protected grasslands (e.g. CRP, areas with management agreements, etc), which can serve as buffers and increase the value and likelihood of success of conservation actions on the parcel? Or, if somewhat degraded by wooded fence lines or young scattered trees, can the adjacent grasslands be easily restored to open grassland?
5. Does the parcel contribute to connectivity of existing grassland and/or agricultural areas?
6. Does the parcel exist in a matrix of largely open agricultural/undeveloped lands which are reasonably likely to continue to serve as buffers in the future?

Water resources

7. Is parcel within the watershed of an outstanding or exceptional resource water (ORW, ERW), and would conservation actions on the parcel contribute to the improvement/maintenance of stream quality?
8. Is parcel within the watershed of a Class 1 or 2 trout stream with naturally reproducing trout populations and/or brook trout present?
9. Is parcel within the watershed of a stream with rare aquatic or wetland species present (including Species of Greatest Conservation Need)?
10. Is parcel within the watershed of a stream with high biodiversity (IBI score), including environmentally intolerant species?
11. Is parcel within the watershed of a designated impaired water (303(d) stream) or a stream ranked high by the Bureau of Watershed Management for priority watershed funding, and would conservation actions on the parcel help improve water quality in the stream? Noted that 303(d) streams are a division priority, but that there are other state (DNR) and federal (EPA) funds targeted for work to restore 303(d) streams.
12. Do characteristics of the parcel indicate that the site is important for groundwater recharge (e.g. high bedrock, fractured limestone, shallow soils)
13. Is there a spring on the parcel?

High quality natural communities and rare species

14. Does the parcel include unplowed prairie sod? Consider size and quality of prairie plant community as well as proximity to other remnants and landscape context (surrounding land use, open habitats, etc).
15. Are high-quality natural communities present on the parcel (e.g., remnant prairies, savannas, oak woodlands)? Parcel would rank highest if high quality communities are present on site, but would also receive points in this category if there is potential for restoration of priority natural communities with limited or moderate work.
16. Are rare species (including Species of Greatest Conservation Need) present on or near the parcel, or does the parcel have the potential to positively influence rare species (with limited management/restoration) at some stage in their life history? Parcel would rank highest if rare species are present on site, but would also receive points in this category if rare species are present within one mile of the parcel according to NHI or other data sources, or if restoration on the parcel would positively influence rare species.

Other resources

17. Would the parcel enhance recreational opportunities in the area (e.g. adjoins or is quite near an existing park or trail)?
18. Are cultural, historical, or archaeological resources present on the parcel, or is the property near or within the viewshed of important cultural, historical, or archaeological sites? The presence of cultural, historical, or archaeological resources on the parcel would increase the value of the property, but there is a need to develop a priori a plan for future maintenance and management of such resources.
19. Are other high quality natural communities (e.g. pine relics, wetlands) or scenic natural features (e.g. rock outcrops) present on the parcel?

Partnerships and local support

20. Does the Department or another partner group/agency have an existing project on this or adjoining parcels that would be enhanced or complemented by Department action and increase the likelihood of success of Department conservation actions?
21. Are neighboring landowners supportive, potentially increasing the probability of conservation actions on the parcel and in nearby areas being successful over the long term?
22. Is local government supportive of project, potentially increasing the probability of conservation actions on the parcel and in nearby areas being successful over the long term?
23. Has land in the area been identified as important area for agriculture, conservation, or open space through other planning efforts (e.g. local smart growth plans or other land use planning efforts, local zoning)?

Arranged by the level of opportunity to sustain and manage the natural community type in the SW Savanna Ecological Landscape.

Major Opportunity

Dry Prairie

This grassland community occurs on dry, often loess-derived soils, usually on steep south or west facing slopes or at the summits of river bluffs with sandstone or dolomite near the surface. Short to medium-sized prairie grasses: little bluestem (*Schizachyrium scoparium*), side-oats grama (*Bouteloua curtipendula*), hairy grama (*B. hirsuta*), and prairie dropseed (*Sporobolus heterolepis*), are the dominants in this community. Common shrubs and forbs include lead plant (*Amorpha canescens*), silky aster (*Aster sericeus*), flowering spurge (*Euphorbia corollata*), purple prairie-clover (*Petalostemum purpureum*), cylindrical blazing-star (*Liatris cylindracea*), and gray goldenrod (*Solidago nemoralis*). Stands on gravelly knolls in the Kettle Moraine region of southeastern Wisconsin and along the St. Croix River on the Minnesota – Wisconsin border may warrant recognition, at least at the subtype level.

Dry-Mesic Prairie

This grassland community occurs on slightly less droughty sites than Dry Prairie and has many of the same grasses, but taller species such as big bluestem (*Andropogon gerardii*) and Indian-grass (*Sorghastrum nutans*) dominate. Needle grass (*Stipa spartea*) may also be present. The herb component is more diverse than in Dry Prairies, including many species that occur in both Dry and Mesic Prairies.

Mesic Prairie

This grassland community occurs on rich, moist, well-drained sites. The dominant plant is the tall grass, big bluestem (*Andropogon gerardii*). The grasses little bluestem (*Andropogon scoparius*), indian grass (*Sorghastrum nutans*), porcupine grass (*Stipa spartea*), prairie dropseed (*Sporobolus heterolepis*), and tall switchgrass (*Panicum virgatum*) are also frequent. The forb layer is diverse in the number, size, and physiognomy of the species. Common taxa include the prairie docks (*Silphium spp.*), lead plant (*Amorpha canescens*), heath and smooth asters (*Aster ericoides* and *A. laevis*), sand coreopsis (*Coreopsis palmata*), prairie sunflower (*Helianthus laetiflorus*), rattlesnake-master (*Eryngium yuccifolium*), flowering spurge (*Euphorbia corollata*), beebalm (*Monarda fistulosa*), prairie coneflower (*Ratibida pinnata*), and spiderwort (*Tradescantia ohioensis*).

Oak Opening

As defined by Curtis, this is an oak-dominated savanna community in which there is less than 50% tree canopy. Historically, oak openings occurred on wet-mesic to dry sites. The few extant remnants are mostly on drier sites, with the mesic and wet-mesic openings almost totally destroyed by conversion to agricultural or residential uses, and by the encroachment of other woody plants due to fire suppression. Bur, white, and black oaks (*Quercus macrocarpa*, *Q. alba* and *Q. velutina*) are dominant in mature stands as large, open-grown trees with distinctive limb architecture. Shagbark hickory (*Carya ovata*) is sometimes present. American hazelnut (*Corylus americana*) is a common shrub, and while the herblayer is similar to those found in oak forests and prairies, with many of the same grasses and forbs present, there are some plants and animals that reach their optimal abundance in the "openings".

Oak Woodland

This "forest" community is structurally intermediate between Oak Openings and Southern Dry Forest. The tree canopy cover is high, but frequent low-intensity fires and possibly (in pre-settlement times) browsing by herbivores such as elk, bison, and deer kept the understory relatively free of shrubs and saplings. Much additional information is needed but it appears that at least some plants (certain legumes, grasses, and composites among them) reached their highest abundance here.

Important Opportunity

Pine Relict

These isolated stands of white pine (*Pinus strobus*) and red pine (*P. resinosa*) or, less commonly, jack pine (*P.banksiana*), that occur on sandstone outcrops or in thin soils over sandstone in the Driftless Area of southwestern Wisconsin, have historically been referred to as relicts. The understories often contain species with northern affinities such as blueberries (*Vaccinium* spp.), huckleberry (*Gaylussacia baccata*), wintergreen (*Gaultheria procumbens*), pipsissewa (*Chimaphila umbellata*), and partridge-berry (*Mitchella repens*), sometimes mixed with herbs typically found in southern Wisconsin's oak forests and prairies.

Southern Dry Forest

Oaks are the dominant species in this upland forest community of dry sites. White oak (*Quercus alba*) and black oak (*Quercus velutina*) are dominant, often with admixtures of red and bur oaks (*Q. rubra and Q. macrocarpa*) and black cherry (*Prunus serotina*). In the well developed shrub layer, brambles (*Rubus* spp.), gray dogwood (*Cornus racemosa*), and American hazelnut (*Corylus americana*) are common. Frequent herbaceous species are wild geranium (*Geranium maculatum*), false Solomon's-seal (*Smilacina racemosa*), hog-peanut (*Amphicarpaea bracteata*), and woodland sunflower (*Helianthus strumosus*).

Southern Dry-Mesic Forest

Red oak (*Quercus rubra*) is a common dominant tree of this upland forest community type. White oak (*Q. alba*), basswood (*Tilia americana*), sugar and red maples (*Acer saccharum* and *A. rubrum*), and white ash (*Fraxinus americana*) are also important. The herbaceous understory flora is diverse and includes many species listed under Southern Dry Forest plus jack-in-the-pulpit (*Arisaema triphyllum*), enchanter's-nightshade (*Circaea lutetiana*), large-flowered bellwort (*Uvularia grandiflora*), interrupted fern (*Osmunda claytoniana*), Lady Fern (*Athyrium Filix-femina*), tick-trefoils (*Desmodium glutinosum* and *D. nudiflorum*), and hog peanut (*Amphicarpa bracteata*) . To the detriment of the oaks, mesophytic tree species are becoming increasingly important under current management practices and fire suppression policies.

Southern Mesic Forest

This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be co-dominant. Many other trees are found in these forests, including those of the walnut family (Juglandaceae). The understory is typically open (sometimes brushy with species of gooseberry (*Ribes*) if there is a past history of grazing) and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium* spp.), trilliums (*Trillium* spp.), violets (*Viola* spp.), bloodroot (*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*).

Wet-Mesic Prairie

This herbaceous grassland community is dominated by tall grasses including big bluestem (*Andropogon gerardii*), Canada bluejoint grass (*Calamagrostis canadensis*), cordgrass (*Spartina pectinata*), and Canada wild-rye (*Elymus canadensis*). The forb component is diverse and includes azure aster (*Aster oolentangiensis*), shooting-star (*Dodecatheon meadia*), sawtooth sunflower (*Helianthus grosseseratus*), prairie blazing-star (*Liatris pycnostachya*), prairie phlox (*Phlox pilosa*), prairie coneflower (*Ratibida pinnata*), prairie docks (*Silphium integrifolium* and *S. terebinthinaceum*), late and stiff goldenrods (*Solidago gigantea* and *S. rigida*), and culver's-root (*Veronicastrum virginicum*).

Dry Cliff (Exposed Cliff of Curtis' community classification)

These dry vertical bedrock exposures occur on many different rock types, which may influence species composition. Scattered pines, oaks, or shrubs often occur. However, the most characteristic plants are often the ferns, common polypody (*Polypodium vulgare*) and rusty woodsia (*Woodsia ilvensis*), along with herbs such as columbine (*Aquilegia canadensis*), harebell (*Campanula rotundifolia*), pale corydalis (*Corydalis sempervirens*), juneberry (*Amelanchier* spp.), bush-honeysuckle (*Diervilla lonicera*), and rock spikemoss (*Selaginella rupestris*).

Moist Cliff (Shaded Cliff of the Curtis community classification)

This "micro-community" occurs on shaded (by trees or the cliff itself because of aspect), moist to seeping mossy, vertical exposures of various rock types, most commonly sandstone and dolomite. Common species are columbine (*Aquilegia canadensis*), the fragile ferns (*Cystopteris bulbifera and C. fragilis*), wood ferns (*Dryopteris* spp.), rattlesnake-root (*Prenanthes alba*), and wild sarsaparilla (*Aralia nudicaulis*). The rare flora of these cliffs vary markedly in different parts of the state; Driftless Area cliffs might have northern monkshood (*Aconitum noveboracense*), those on Lake Superior, butterwort (*Pinguicula vulgaris*), or those in Door County, green spleenwort (*Asplenium viride*).

Present

Floodplain Forest (replaces in part the Southern Wet and Southern Wet-Mesic Forests of Curtis)

This is a lowland hardwood forest community that occurs along large rivers, usually stream order 3 or higher, that flood periodically. The best-development occurs along large rivers in southern Wisconsin, but this community is also found in the north. Canopy dominants may include silver maple (*Acer saccharinum*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), swamp white oak (*Quercus bicolor*), and cottonwood (*Populus deltoides*). Northern stands are often species poor, but balsam-poplar (*Populus balsamifera*), bur oak (*Quercus macrocarpa*), and box elder (*Acer negundo*) may replace some of the missing “southern” trees. Buttonbush (*Cephalanthus occidentalis*) is a locally dominant shrub and may form dense thickets on the margins of oxbow lakes, sloughs and ponds within the forest. Nettles (*Laportea canadensis* and *Urtica dioica*), sedges, ostrich fern (*Matteuccia struthiopteris*) and gray-headed coneflower (*Rudbeckia laciniata*) are important understory herbs, and lianas such as Virginia creepers (*Parthenocissus* spp.), grapes (*Vitis* spp.), Canada moonseed (*Menispermum canadense*), and poison-ivy (*Toxicodendron radicans*) are often common. Among the striking and characteristic herbs of this community are cardinal flower (*Lobelia cardinalis*) and green dragon (*Arisaema dracontium*).

Hemlock Relict

These are isolated hemlock (*Tsuga canadensis*) stands occuring in deep, moist ravines or on cool, north or east facing slopes in southwestern Wisconsin. Associated trees include white pine (*Pinus strobus*), and yellow birch (*Betula allegheniensis*). The groundlayer includes herbaceous species with northern affinities such as shining clubmoss (*Lycopodium lucidulum*), bluebead lily (*Clintonia borealis*), canada mayflower (*Maianthemum canadense*), and woodferns (*Dryopteris* spp). Cambrian sandstone cliffs are usually nearby and often prominent.

Cedar Glade

Dry sandstone, quartzite or dolomite exposures vegetated with dense thickets of red cedar (*Juniperus virginiana*). Red maple (*Acer rubrum*), Paper birch (*Betula papyrifera*) and black and bur oaks (*Quercus velutina* and *Q. macrocarpa*) may also be present. This community is usually if not always the result of fire suppression on dry prairies, and in pre-settlement times it may have occurred only where extensive cliffs served as firebreaks. Common herbs include bluestem and grama grasses (*Andropogon* spp. and *Bouteloua* spp.), prickly-pear cactus (*Opuntia compressa*), flowering spurge (*Euphorbia corollata*), stiff sandwort (*Arenaria stricta*) and gray goldenrod (*Solidago nemoralis*).

Sand Prairie (or Dry Sand Prairie)

This dry grassland community is composed of little bluestem (*Schizachyrium scoparium*), junegrass (*Koeleria macrantha*), panic grass (*Panicum* spp.), and crab grass (*Digitaria cognata*). Common herbaceous species are western ragweed (*Ambrosia psilostachya*), the sedges (*Carex muhlenbergii and C. pensylvanica*), poverty-oat grass (*Danthonia spicata*), flowering spurge (*Euphorbia corollata*), frostweed (*Helianthemum canadense*), common bush-clover (*Lespedeza capitata*), false-heather (*Hudsonia tomentosa*), long-bearded hawkweed (*Hieracium longipilum*), stiff goldenrod (*Solidago rigida*), horsebalm (*Monarda punctata*), and spiderwort (*Tradescantia ohioensis*). At least some stands are Barrens remnants now lacking appreciable woody cover, though extensive stands may have occurred historically on broad level terraces along the Mississippi, Wisconsin, Black, and Chippewa Rivers.

Emergent Aquatic

These open, marsh, lake, riverine and estuarine communities with permanent standing water are dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cat-tails (*Typha* spp.), bulrushes (particularly *Scirpus acutus*, *S. fluviatilis*, and *S. validus*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*), water-plantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), and the larger species of spikerush such as (*Eleocharis smallii*).

Submergent Aquatic

This herbaceous community of aquatic macrophytes occurs in lakes, ponds, and rivers. Submergent macrophytes often occur in deeper water than emergents, but there is considerable overlap. Dominants include various species of pondweeds (*Potamogeton spp.*) along with waterweed (*Elodea canadensis*), slender naiad (*Najas flexilis*), eel-grass (*Vallisneria americana*), and species of water-milfoil (*Myriophyllum*) and bladderworts (*Utricularia*).

Ephemeral Pond

These ponds are depressions with impeded drainage (usually in forest landscapes), that hold water for a period of time following snowmelt but typically dry out by mid-summer. Common aquatic plants of these habitats include yellow water crowfoot (*Ranunculus flabellaris*), mermaid weed (*Proserpinaca palustris*), Canada bluejoint grass (*Calamagrostis canadensis*), floating manna grass (*Glyceria septentrionalis*), spotted cowbane (*Cicuta maculata*), smartweeds (*Polygonum* spp.), orange jewelweed (*Impatiens capensis*), and sedges. Ephemeral ponds provide critical breeding habitat for certain invertebrates, as well as for many amphibians such as frogs and salamanders.

Shrub-Carr

This wetland community is dominated by tall shrubs such as red-osier dogwood (*Cornus stolonifera*), meadow-sweet (*Spiraea alba*), and various willows (*Salix discolor*, *S. bebbiana*, and *S. gracilis*). Canada bluejoint grass (*Calamagrostis canadensis*) is often very common. Associates are similar to those found in Alder Thickets and tussock-type Sedge Meadows. This type is common and widespread in southern Wisconsin but also occurs in the north.

Southern Sedge Meadow

Widespread in southern Wisconsin, this open wetland community is most typically dominated by tussock sedge (*Carex stricta*) and Canada bluejoint grass (*Calamagrostis canadensis*). Common associates are water-horehound (*Lycopus uniflorus*), panicled aster (*Aster simplex*), blue flag (*Iris virginica*), Canada goldenrod (*Solidago canadensis*), spotted joe-pye-weed (*Eupatorium maculatum*), broad-leaved cat-tail (*Typha latifolia*), and swamp milkweed (*Asclepias incarnata*). Reed canary grass (*Phalaris arundinacea*) may be dominant in grazed and/or ditched stands. Ditched stands can succeed quickly to Shrub-Carr.

Wet Prairie

This is a rather heterogeneous tall grassland community that shares characteristics of prairies, Southern Sedge Meadow, Calcareous Fen and even Emergent Aquatic communities. The Wet Prairie's more wetland- like character can mean that sometimes very few true prairie species are present. Many of the stands assigned to this type by Curtis are currently classified as Wet-Mesic Prairies. The dominant graminoids are Canada bluejoint grass (*Calamagrostis canadensis*), cordgrass (*Spartina pectinata*), and prairie muhly (*Muhlenbergia glomerata*), plus several sedge (*Carex*) species including lake sedge (*C. lacustris*), water sedge (*C. aquatilis*), and woolly sedge (*C. lanuginosa*). Many of the herb species are shared with Wet-Mesic Prairies, but the following species are often prevalent: New England aster (*Aster novae-angliae*), swamp thistle (*Cirsium muticum*), northern bedstraw (*Galium boreale*), yellow stargrass (*Hypoxis hirsuta*), cowbane (*Oxypolis rigidior*), tall meadow-rue (*Thalictrum dasycarpum*), golden alexander (*Zizea aurea*), and mountain-mint (*Pycnanthemum virginianum*).

APPENDIX E: RARE OR UNCOMMON PRAIRIE-DEPENDENT INSECTS KNOWN FROM OR LIKELY TO BE PRESENT IN THE PROPOSED SOUTHWEST WISCONSIN GRASSLAND AND STREAM CONSERVATION AREA[1]

Butterflies & Moths (Lepidoptera)

Nymphalidae	
*Chlosyne gorgone**	Gorgone checkerspot
*Satyrodes eurydice fumosus**	Smokey eyed-brown
Speyeria aphrodite	Aphrodite fritillary
*Speyeria idalia**	Regal fritillary
Hesperidae	
*Hesperia leonardus**	Leonard skipper
*Hesperia ottoe+**	Ottoe skipper
Choreutidae	
Tebenna silphiella	Day-flying Silphium micro-moth
Noctuidae	
*Catocala abbreviatella**	Abbreviated underwing moth
Catocala amestris	Three-staff underwing moth
*Catocala whitneyi**	Whitney's underwing moth
Dichagyris reliqua	a moth on prairie dropseed
*Faronta ribripennis**	Pink-streak moth
*Meropleon ambifusca**	a moth
*Papaipema beeriana+**	Liatris stem-borer moth
Papaipema sciata	Culver-s root stem-borer moth
*Papaipema silphii+**	Silphium stem-borer moth
*Phytometra ernestinana+**	Ernestine's moth
Schinia lucens	Leadplant flower-moth
Tarachidia binocular	Sunflower moth
Tricholita notata	Composites feeding moth

Grasshopper, Crickets, & Katydids (Orthoptera)

Acrididae (Short-horned Grasshoppers)	
*Eritettix simplex+**	Velvet-striped grasshopper
Opeia obscura+	Obscure grasshopper
*Orphulella pelidna+**	Spotted-winged grasshopper
Phoetaliotes nebrascensis+	Large-headed grasshopper
Syrbula admirabilis	Handsome grasshopper

Leafhoppers and their kin (Homoptera)

Cercopidae (Spittle Bugs)

Lepyronia gibbosa
Philaenarcys killa
Prosapia ignipectus

Cicadellidae (Leafhoppers)

*Aflexia rubranura**
*Amplicephalus kansiensis**
*Attenuipyga (Dorycara) platyrhyncha**
Chlorotettix spatulatus
Commellus comma
Erythroneura carbonate

Appendix E: Rare or Uncommon Prairie-Dependent Insects Known from or likely to be present in the proposed Southwest Wisconsin Farming & Grassland Conservation Area[1]

Cicadellidae (Leafhoppers), cont.
- *Extrusanus oryssus*
- *Flexamia albida*
- *Flexamia pectinata*
- *Laevicephalus minimus*
- *Laevicephalus unicoloratus*
- *Laevicephalus vannus**
- *Memnonia panzeri**
- *Paraphlepsius umbrosus*
- *Polyamia caperata*
- *Polyamia compacta*
- *Polyamia herbida*
- *Prairiana kansana**

Cixidae
- *Myndus ovatus**

Delphacidae
- *Delphacodes nigriscutellata*
- *Delphacodes parvula*

Issidae (Piglet bugs)
- *Bruchomorpha dorsata*
- *Bruchomorpha extensa**

Membracidae (Tree hoppers)
- *Ceresa minuta**

<u>Beetles (Coleoptera)</u>

Brentidae (Seed weevils)
- *Kissingeria amaurum*
- *Kissingeria capitone*
- *Sayapion segnipes*
- *Trichapion minor*
- *Trichapion modicum*
- *Trichapion reconditum*
- *Trichapion rostrum*
- *Trichapion tenuirostrum*

Buprestidae (Metallic stem-boring beetles)
- *Pachyschelus confusus*
- *Pachyschelus laevigatus*

Carabidae (Ground beetles)
- *Cicindela punctulata*

Cerambycidae (Long-horned beetles)
- *Tetraopes annulatus*
- *Tetraopes tetrophthalmus*
- *Typocerus octonotatus*

Appendix E: Rare or Uncommon Prairie-Dependent Insects Known from or likely to be present in the proposed Southwest Wisconsin Farming & Grassland Conservation Area[1]

Chrysomelidae (Leaf beetles)
- *Anomoea laticlava*
- *Brachypnoea margaretae*
- *Brachypnoea puncticollis*
- *Calligrapha incisa*
- *Colaspis brunnea*
- *Colaspis suggona+*
- *Coleothorpa dominicana dominicana*
- *Cryptocephalus calidus*
- *Labidomera clivicollis clivicollis*
- *Longitarsus subrufus*
- *Ophraella conferta*
- *Pachybrachis prob. othonus othonus*
- *Pachybrachis trinotatus*
- *Saxinis omogera+*
- *Zygogramma suturalis*

Cleridae (Checkered beetles)
- *Trichodes nutalli*

Melyridae (Soft-winged flower beetles)
- *Attalus terminalis*
- *Collops vicarius+*

Rhipiphoridae (Wedge-shaped beetles)
- *Macrosiagon dimidiatum*
- *Macrosiagon limbatum*

Scarabidae (Scarab beetles
- *Canthon virides*

[1] There are likely dozens of species of Hymenoptera (bees, wasps, & ants) and Diptera (flies) that are rare prairie-specialists, but the general lack of knowledge on the taxonomy and ecology of species within major sections of these groups hinders our ability to generate lists.

+ Likely present, but not yet confirmed, within the proposed SW Grassland Conservation Area.

* State listed species (Endangered, Threatened, or Special Concern).

APPENDIX G: RARE PLANTS AND ANIMALS RECORDED WITHIN THE PROPOSED PROJECT BOUNDARY

Scientific Name	Common Name	State Status	Fed. Status	Date Last Observ.	Group
Natural Communities					
Dry cliff		NA		1976-10	Community
Dry prairie		NA		2001-09-21	Community
Dry-mesic prairie		NA		1987-09-04	Community
Hemlock relict		NA		2000-05-24	Community
Mesic prairie		NA		1996-10-11	Community
Moist cliff		NA		1976-09	Community
Oak woodland		NA		1993-08-22	Community
Pine relict		NA		1987-06-05	Community
Southern dry forest		NA		1989-04-13	Community
Southern dry-mesic forest		NA		1992-06-30	Community
Southern mesic forest		NA		1990-09-26	Community
Calcareous fen		NA		1975	Community~*
Emergent marsh		NA		1981	Community~
Floodplain forest		NA		1973-01	Community~
Lake--oxbow		NA		1973-01	Community~
Shrub-carr		NA		1981	Community~
Southern sedge meadow		NA		2003-09-10	Community~
Stream--slow, hard, cold		NA		1969	Community~
Wet prairie		NA		1972-08	Community~
Wet-mesic prairie		NA		1981	Community~
OTHER					
Bat Hibernaculum	Bat Hibernaculum	SC		1993-01-23	Other
Bird Rookery	Bird Rookery	SC		1987	Other

Appendix G: Rare plants and animals recorded within the proposed project boundary.

Scientific Name	Common Name	State Status	Fed. Status	Date Last Observ.	Group
MAMMALS					
Pipistrellus subflavus	Eastern Pipistrelle	SC/N		1948-02-05	Mammal
Reithrodontomys megalotis	Western Harvest Mouse	SC/N		1998	Mammal
Spermophilus franklinii	Franklin's Ground Squirrel	SC/N		1987-07-22	Mammal
BIRDS					
Ammodramus henslowii	Henslow's Sparrow	THR		2004-07-12	Bird
Bartramia longicauda	Upland Sandpiper	SC/M		2004-05-07	Bird
Empidonax virescens	Acadian Flycatcher	THR		2003-06-14	Bird
Lanius ludovicianus	Loggerhead Shrike	END		1992-06-30	Bird
Spiza americana	Dickcissel	SC/M		2001-07-10	Bird
Sturnella neglecta	Western Meadowlark	SC/M		2004-07-08	Bird
Vireo bellii	Bell's Vireo	THR		2004-08-31	Bird
Haliaeetus leucocephalus	Bald Eagle	SC/FL		2005-04-18	Bird~
Nycticorax nycticorax	Black-crowned Night-heron	SC/M		1947	Bird~
HERPTILES					
Pituophis catenifer	Bullsnake	SC/N		1992-05-28	Snake
Emydoidea blandingii	Blanding's turtle	THR		2005-04-21	Turtle~
Acris crepitans blanchardi	Blanchard's Cricket Frog	END		2005-06-22	Frog~
Rana catesbeiana	Bullfrog	SC		2000	Frog~
FISH					
Clinostomus elongatus	Redside Dace	SC/N		2002-11-12	Fish~
Erimystax x-punctatus	Gravel Chub	END		1986-08-22	Fish~
Notropis nubilus	Ozark Minnow	THR		2003-10-23	Fish~

Appendix G: Rare plants and animals recorded within the proposed project boundary.

Scientific Name	Common Name	State Status	Fed. Status	Date Last Observ.	Group
FISH (cont.)					
Noturus exilis	Slender Madtom	END		1976-07-15	Fish~
INSECTS					
Chlosyne gorgone	Gorgone Checker Spot	SC/N		1991-08-04	Butterfly
Hesperia leonardus	Leonard's Skipper	SC/N		1996-09-07	Butterfly
Speyeria idalia	Regal Fritillary	END		2004-08-31	Butterfly
Poanes massasoit	Mulberry Wing	SC/N		2003-07-15	Butterfly~
Archilestes grandis	Great Spreadwing	SC/N		1983-09-18	Dragonfly~
Dichromorpha viridis	Short-winged Grasshopper	SC/N		1999-08-02	Grasshopper
Aflexia rubranura	Red-tailed Prairie Leafhopper	END		2005-07-31	Leafhopper
Amplicephalus kansiensis	A Leafhopper	SC/N		1997-08-07	Leafhopper
Laevicephalus vannus	A Leafhopper	SC/N		1999-07-12	Leafhopper
Prairiana cinerea	A Leafhopper	SC/N		1996-06-18	Leafhopper
PLANTS					
Agalinis gattingeri	Roundstem Foxglove	THR		1997	Plant
Agastache nepetoides	Yellow Giant Hyssop	THR		1987-08-11	Plant
Aplectrum hyemale	Putty Root	SC		1972-11-10	Plant
Arabis shortii	Short's Rock-cress	SC		2001	Plant
Asclepias lanuginosa	Woolly Milkweed	THR		1999-07-31	Plant
Asclepias purpurascens	Purple Milkweed	END		1987	Plant
Baptisia tinctoria	Yellow Wild-indigo	SC		1986	Plant
Besseya bullii	Kitten Tails	THR		1998-05-12	Plant

Appendix G: Rare plants and animals recorded within the proposed project boundary.

Scientific Name	Common Name	State Status	Fed. Status	Date Last Observ.	Group
PLANTS (cont.)					
Botrychium campestre	Prairie dune-wort	END		2006	Plant
Cacalia muehlenbergii	Great Indian-plantain	SC		2002-06-17	Plant
Cacalia tuberosa	Prairie Indian Plantain	THR		2000-07-28	Plant
Camassia scilloides	Wild Hyacinth	END		1989-06-27	Plant
Carex laevivaginata	Smooth-sheath Sedge	END		2005-06-09	
Carex richardsonii	Richardson Sedge	SC		1996	Plant~
Cirsium hillii	Hill's thistle	THR		2001	
Cyprepedium candidum	Small white lady's slipper orchid	THR		1999-05-26	Plant~
Diarrhena obovata	Beak Grass	END		2001-09-06	Plant
Echinacea pallida	Pale Purple Coneflower	THR		2006	Plant
Gentiana alba	Yellow Gentian	THR		2001	Plant
Gymnocarpium robertianum	Limestone Oak Fern	SC		1972-07-18	Plant
Houstonia caerulea	Innocence	SC		1993-08-22	Plant
Jeffersonia diphylla	Twinleaf	SC		1991	Plant
Lespedeza leptostachya	Prairie Bush-clover	END	LT	2003-08-14	Plant
Lithospermum latifolium	American Gromwell	SC		2003-06-16	Plant
Melica nitens	Three-flower Melic Grass	SC		1959-06-04	Plant
Napaea dioica	Glade Mallow	SC		1999-06-19	Plant~
Nothocalais cuspidata	Prairie False-dandelion	SC			Plant
Onosmodium molle	Marbleseed	SC		2002-11-28	Plant
Orobanche uniflora	One-flowered Broomrape	SC		1999-05-22	Plant

Appendix G: Rare plants and animals recorded within the proposed project boundary.

Scientific Name	Common Name	State Status	Fed. Status	Date Last Observ.	Group
PLANTS (cont.)					
Parthenium integrifolium	American Fever-few	THR		2001-06-18	Plant
Pediomelum esculentum	Prairie Turnip	SC		2001	Plant
Platanthera flava var. *herbiola*	Pale Green Orchid	THR		2000-06-10	Plant
Platanthera orbiculata	Large Roundleaf Orchid	SC		1993-08-22	Plant
Poa sylvestris	Woodland Bluegrass	SC		2001	Plant
Polytaenia nuttallii	Prairie Parsley	THR		1987-06-10	Plant
Prenanthes aspera	Rough Rattlesnake-root	END		1997-09-03	Plant
Prenanthes crepidinea	Nodding Rattlesnake-root	END		2002-07-30	Plant
Scutellaria ovata	Heart-leaved Skullcap	SC		2001	Plant
Silene nivea	Snowy Campion	THR		1994-07-09	Plant
Silene virginica	Fire Pink	END		2001	Plant
Talinum rugospermum	Prairie Fame-flower	SC		1993-08-22	Plant
Thaspium trifoliatum var. *flavum*	Purple Meadow-parsnip	SC		1978-06-10	Plant
Triphora trianthophora	Nodding Pogonia	SC		2002-08-08	Plant

** "~" character means aquatic/wetland species*

Comments & issued raised at the Southwest Grassland Feasibility Study Open Houses

The following comments, issues and opinions represent input received from people who attended the open house meetings held in Mount Horeb, Hollandale and Mineral Point in July 2005. Attendance totaled ~100 people.

Some of the resources and opportunities which are most important to you:

Things you like most about living in this area: *natural beauty, the rural landscape, and peace & quiet*

Natural features and resources which are most important to you: *groundwater quality, farmlands/rural character of landscape, air quality, and streams, rivers & wetlands*

Historical and cultural resources that most interest you: *farming history and culture; historic barns, churches, cemeteries and other sites*

Top recreational activities that you enjoy: *observing wildlife, hiking/walking, birdwatching, bicycling, and hunting*

Tools you think are most helpful in maintaining openspace in the landscape: *permanent land protection (e.g. conservation easements, land purchases or donations), maintaining profitable agriculture, promoting healthy rural economies, and community land use planning efforts (e.g. Smartgrowth plans)*

Tools you think are most helpful in maintaining working farms in the area: *permanent protections that allow continued agricultural use of the land (e.g. conservation easements, purchases of development rights), technical assistance to farmers (e.g. developing grazing plans), and new programs to help farmers keep farming*

***Aspects of proposed project that you find exciting*:**

- Potential to preserve/restore rural agricultural lands, prairies, savannas, grasslands, and streams for future generations
- Large landscape scale and broad, cooperative nature of the proposed project
- Idea that conservation in this landscape is compatible with farming, recreation, and tourism
- Opportunities to integrate with existing programs and projects for a better chance of long term success
- Public is interested, supportive, and being engaged early in the process

Your suggestions for modifying the initially proposed project boundary *included expanding the boundary north, south, east and west to include important areas of grasslands, prairies, and savannas.*

You're ***concerned*** *about changes occurring in the landscape, about development pressure, and about the habitat becoming more fragmented. As a result, you see that conservation opportunities in this landscape are time-sensitive.*

You asked some really good ***questions*** *about the proposed project. We try to address these in the draft feasibility study.*

- How will the proposed project augment current efforts of the DNR and other groups in the area?
- How can a large project be feasible, effective, and manageable? Is funding identified and sufficient?
- What are conservation easements, and what role would permanent land protection such as easements play in the project? You would like more information about taxes that DNR pays on state owned lands.
- How would the proposed project relate to existing programs (e.g. CREP), projects (e.g. Military Ridge Prairie Heritage Area, DNR Land Legacy Study, Great Wisconsin Birding Trail, Blanchardville River Walk), and land use planning efforts (e.g. SmartGrowth)?
- How might this project affect the local economy?

You suggested a variety of ***conservation strategies****. Here are a few of them*:

- Use existing projects such as the Military Ridge Prairie Heritage Area as a model.
- A resource person is needed to assist farmers and landowners and to help coordinate efforts between agencies
- Education & outreach to landowners, local government and communities, and the public both about the importance of grasslands and related to specific conservation efforts is key
- Find incentives to get new farmers farming, and to build support among and interest farmers in the project
- Develop a website to build support for the project and to keep the public informed
- Manage habitat to open up former savannas and control invasive plants
- Incorporate tourism into the project, for example through a prairie heritage center
- Involve realtors in the project, work to protect ridgetops from development, and promote conservation subdivisions
- Work with local communities on their land use planning efforts.