

2009 State Wildlife Grant

Grant Number: U2-3-HM-1

Grant Title: Adaptive Management Framework for Nebraska Natural Legacy Plan Implementation

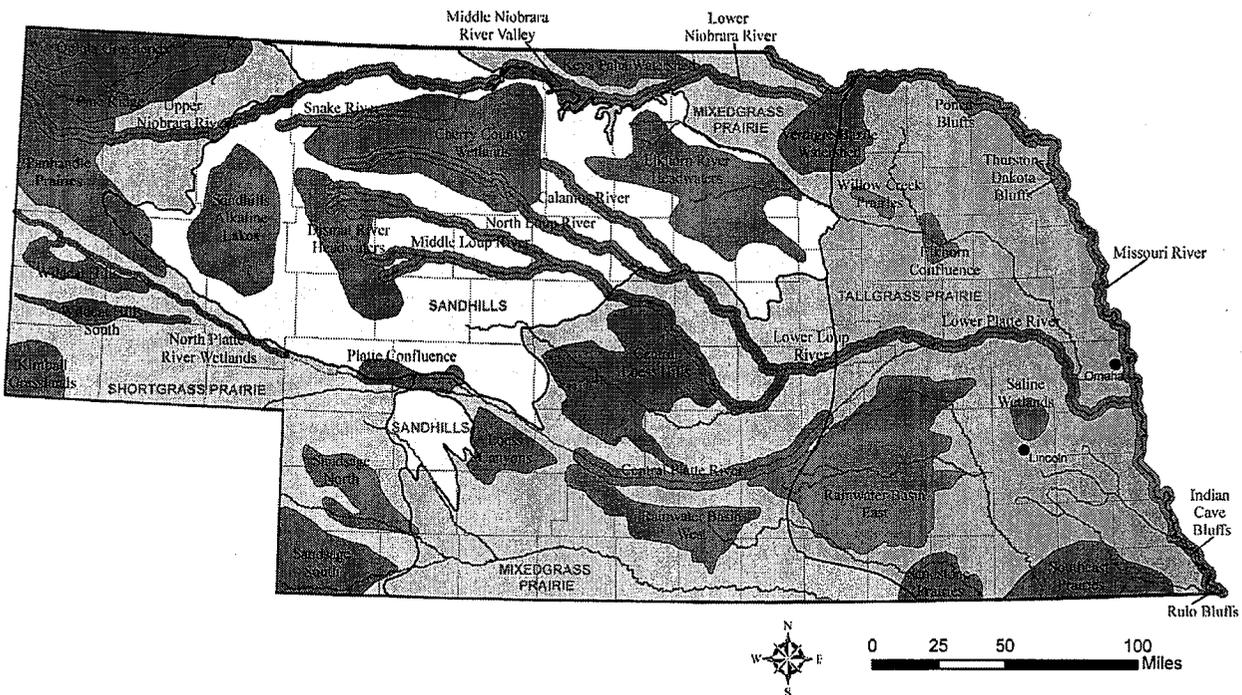
Project Period: August 1, 2009 to July 31, 2012

Purpose and Need

In November of 2005 the United States Fish and Wildlife Service approved Nebraska's Comprehensive Wildlife Conservation Strategy (CWCS) entitled the "Nebraska Natural Legacy Plan (NNLP). The Nebraska Game and Parks Commission (NGPC) and its conservation and agricultural partners developed the plan, which identifies conservation targets, threats to Nebraska's biodiversity, and conservation strategies. The NNLP also identified forty Biologically Unique Landscapes (BULs) containing relatively intact native plant communities and concentrations of at-risk species that offer the best opportunity to preserve the state's at-risk species and biodiversity (Figure 1).

Since 2005, fourteen BULs have received focused attention from coordinating wildlife biologists to organize NNLP implementation activities and build long-term support to sustain local conservation activities within the BUL areas (Figure 1).

Figure 1. Map of Nebraska with Biologically Unique Landscapes (green) and Flagship Biologically Unique Landscapes (red) .



This model has considerably increased the capacity to implement the NNLP, and build organizational relationships necessary for long-term support.

Nebraska has been very successful in implementing conservation actions with private landowners to meet the needs of Species of Greatest Conservation Need (SGCN), as identified in the Nebraska Natural Legacy Plan (NNLP). Implementation has been done by focusing staff in Biologically Unique Landscapes (BULs) focusing efforts to impact local landscapes to benefit SGCN. Success has come from landowner interest, partner participation and contributions, and successful leveraging of various funds to complete activities. In all BUL's, we have not yet developed a coordinated adaptive management framework to continue to build our science base and fully evaluate and improve the effectiveness of our actions for SGCN's. Project success for landowners is dependent upon our integrating our best science with our increased knowledge of how to improve upon land management techniques. In this grant, we are focusing efforts to improve our ability to adaptively manage our current and future implementation actions.

Adaptive Management of Conservation Actions (including Conservation Planning, Research, Inventory, and Monitoring)

Currently, although conservation action implementation is occurring throughout Nebraska with the NNLP, we are unable to objectively assess and document the benefits to at-risk species that our activities are producing. Standardized, long-term monitoring programs such as the Breeding Bird Survey and prairie grouse lek surveys have been established across the state. These programs are invaluable in providing basic information about population trends of some of our target at-risk species at a regional level. However, we have a need for more information about the effects of our conservation activities at local and regional levels, and we need baseline biological inventory information for other taxa in addition to birds (e.g., insects, amphibians, small mammals) which are more difficult or time-consuming to survey. This lack of clear, biological accountability prevents efforts through the NNLP from being improved through an adaptive management framework. This grant funding will be used to objectively prioritize and implement research and inventory activities that are the most critical information needs for meeting NNLP goals, and to develop and implement innovative programs to improve our ability to inventory and monitor at-risk species. The issue of assessing and improving conservation actions is a statewide dilemma that affects all active BULs. Therefore, funding requested for these efforts will be coordinated at a statewide level, but targeted to meeting the needs in each active BUL. Funds will also be used to continue to refine and improve our conservation planning and planning tools to assist BUL coordinators in targeting and improving the effectiveness of our conservation actions in local landscapes.

Population monitoring is currently being conducted on a regular basis for a handful of at-risk species (e.g. bald eagle, piping plover, interior least tern, greater prairie chicken, pallid sturgeon, Salt Creek tiger beetle). This type of monitoring allows us to determine if populations are increasing, stable, or decreasing and can alert us to the need for action in the case of declining populations. This type of monitoring is most effectively conducted prior to and following management actions to assess the impacts of these actions and modify the actions to maximize the desired effect on species of interest. Monitoring protocols will be developed through the planning from what is known about the species. Monitoring protocols will be specifically tailored to the species and management actions being evaluated. Monitoring will be designed to quantify population change and to understand the potential causes of the change.

Monitoring factors might include direct measurements of populations or indirect measures such as habitat. Direct measures might include population size, density, growth/condition, productivity, or survival. Habitat can be used as a surrogate for direct population measures if the relationship between habitat and population is well defined. In many cases, a combination of direct and indirect measures will be appropriate.

In addition to inventory and research that may be conducted as a part of monitoring, there is a need to fill critical information gaps on the distribution, abundance, conservation status, biology and ecology of at-risk species and ecological communities.

Areas With Active NNLN Delivery Efforts:

Southeast Tallgrass Prairie (Southeast Prairies, NNLN Page 73, Rulo Bluffs NNLN Page 86; and Indian Cave Bluffs NNLN Page 61 BULs)

The Southeast Tallgrass Prairies include rolling hills and bluffs in southeastern Nebraska. The landcover is primarily cropland, but there are also many tallgrass prairie remnants dominated by big bluestem and Indiangrass and reseeded native and exotic grasslands. The native prairies are of two types: hay meadows and grazed pastures. The hay meadows are generally in better ecological condition. Many of the prairies have been overgrazed and invaded by eastern red cedar and invasive deciduous trees. Native bur oak woodlands occur in many drainage bottoms. Prairie fens occur occasionally in canyon bottoms and on side slopes. The Big Nemaha River drains the eastern portion of the region while the Big Blue River drains the western portion of the region. Eastern deciduous woodlands are found along the bluffs and floodplains of these streams and their tributaries. The abundance of native and restored grasslands in the regions support a stable population of greater prairie chickens and other grassland birds. The Rulo Bluffs and Indian Cave Bluffs areas include the steep bluffs of the Missouri River in the southeast corner of Nebraska. The majority of the bluffs support eastern deciduous forest of oaks, hickories and basswood. Due to the location in extreme southeastern Nebraska, these areas contain a high diversity of eastern deciduous forest plant and animal species. Tallgrass prairie remnants occur on some bluff tops and south- and west-facing slopes. These have been reduced in size and degraded over the years by shrub and tree encroachment due to lack of wildfires. Scattered cropland and pastureland occur in the landscape. Some areas of woodland have been farmed or logged in the past.

Stresses Affecting Species and Habitats - NNLN Pages 59-77

- Livestock grazing practices that reduce native plant diversity and promote uniform habitat structure
- Conversion of native prairies to cropland and other uses
- Invasive tree encroachment in prairies and woodlands
- Exotic herbaceous plant invasion of prairies
- Agricultural chemical and sediment runoff into streams
- Housing development and other forms of fragmentation
- Logging on private lands

Conservation Strategies - NNLN Pages 59-77

- Support voluntary implementation of planned grazing and haying systems on private and public lands in combination with prescribed fire and rest
- Implement tree clearing programs on private and public lands in combination with the prescribed fire and planned grazing
- Develop and implement control programs for invasive exotic species
- Protect priority streams from siltation and contaminants using methods such as stream buffers and grass waterways
- Use conservation easements or voluntary fee title acquisition to protect high-quality prairies and woodlands
- Conduct annual surveys for invasive plants in woodlands and prairies, especially on protected areas
- Protect priority streams from siltation and contaminants
- Implement integrated public and private lands management

Sandstone Prairies in Nebraska and Kansas NNL Page 71

The Sandstone Prairies are approximately 200,000 in size and are located on Nebraska-Kansas border. The land cover is 70% grassland and the area contains soils that are shallow and derived from sandstone that has limited agricultural use. The area includes large blocks of native tallgrass prairie in Jefferson and Thayer counties in Nebraska as well as Republic and Washington counties in Kansas. Bur oak woodlands often occur in many of the drainage bottoms found in the areas. On the NE side of the border there are protected areas, which include Rock Glen Wildlife Management Area (WMA), Rose Creek WMA, and Rock Creek Station State Historical Park, while the Kansas side is composed of private lands. Even though some of the prairies are degraded, the large parcels of prairie remnants and their proximity to one another makes this area unique and provides an opportunity for landscape scale tallgrass prairie conservation.

The coordinating wildlife biologist working in the Sandstone Prairies currently is responsible for implementation of conservation actions in both Nebraska and Kansas. Additionally, this position also coordinates the Quad-State Tall Grass Prairie Partnership which is focused on coordinating efforts to implement the Comprehensive Wildlife Conservation Plans between Kansas, Nebraska, Missouri, and Iowa.

Stresses Affecting Species and Habitats

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- Housing development and other forms of fragmentation

Conservation Strategies (pages 71-73 in NNL; pages 75-80 in "A Future for Kansas Wildlife" (Kansas Comprehensive Wildlife Conservation Plan)

- Support voluntary implementation of planned grazing and haying systems on private and public lands in combination of prescribed fire and rest.
- Implement tree clearing programs on private and public lands in combination with prescribed fire and planned grazing.
- Develop and implement control programs for invasive and exotic species.
- Conduct private land owner outreach with personal visits, education programs and workshops.

Central Loess Hills (Central Loess Hills and Lower Loup River BULs) NNL Page 91

The Central Loess Hills occupy the loess hills of central Nebraska from the Sandhills south to the Platte River valley. The area consists of rolling to steep loess hills dissected by the valleys of the Loup Rivers. The hills are now a mosaic of mixed-grass prairie and cropland. Lack of grazing managed for biological diversity values, exotic plant invasion, and herbicide spraying have degraded the prairies. Some flatter tablelands of this area contain playa wetlands that are used by whooping cranes as well as waterfowl and other birds during migration. The branches of the Loup River in the Central Loess Hills are medium-sized rivers with broad braided, somewhat shallow channels. The river channels have many open sandbars and wooded islands. The flows on the North Loup River have been modified by the upstream Taylor Dam and irrigation diversions. The flows on the Middle Loup and Loup Rivers have been modified by several diversions. Though somewhat modified, the Loup rivers maintain a fairly constant year-around flow of water because of the spring-fed nature of the streams in their upper reaches in the Sandhills. Much of the valley floodplains along the branches of the Loup River have been converted to cropland, though some areas support cottonwood woodlands, wet meadows and marshes. Sandbars on the lower reaches of the Loup River support nesting colonies of the federally and state listed interior least tern and piping plover. The federally and state endangered whooping crane frequently uses sandbars and wet meadows in the Loup River floodplains as migratory stopover habitat. Bald eagles are also known to nest along the lower branches of the Loup River. Nebraska's most extensive populations of the state threatened small white lady's-slipper occur in wet meadows in the Middle Loup River floodplain.

Stresses Affecting Species and Habitats NNL Pages 90 to 104

- Livestock grazing practices that reduce native plant diversity and promote uniform habitat structure
- Eastern red cedar and Russian olive encroachment of prairies, wet meadows and native woodland communities
- Exotic herbaceous plant invasion of prairies and river corridors
- Herbicide spraying of prairie
- Sedimentation and drainage of wetlands
- Additional water diversions

Conservation Action Strategies NNL Pages 90 to 104

- Increase use of prescribed fire and mechanical tree removal on private lands to reduce eastern red cedar abundance

- Implement planned grazing systems on private lands to reduce exotic cool-season grasses and improve native plant diversity and vigor
- Protect key stretches of the Loup rivers through conservation easements
- Restore wetland hydrology
- Maintain existing stream flows and hydrologic regime

Loess Canyons NNLP Page 96

This area consists of steep loess hills and canyons south of the Platte River in Lincoln, Dawson, and northern Frontier counties. These hills support mixed-grass prairie and are used primarily as rangeland though scattered crop fields occur. The mixed-grass prairies have been heavily invaded by eastern red cedars in recent decades. Most grasslands in the Loess Canyons have been overgrazed in the past and are now heavily infested with cheatgrass and Japanese brome. The area is significant because it contains one of the largest known populations of the federally and state endangered American burying beetle and likely contains approximately 20% of species known range.

Stresses Affecting Species and Habitats NNLP Pages 96 to 97

- Eastern red cedar encroachment
- Livestock grazing practices that reduce native plant diversity and promote uniform habitat structure
- Exotic, cool-season grass invasion
- Light pollution from acreage developments which impacts the American burying beetle

Conservation Action Strategies NNLP Pages 96 to 97

- Increase use of prescribed fire and mechanical tree removal on private lands to reduce the abundance of eastern red cedar
- Implement planned grazing systems on private lands to reduce exotic cool-season grasses and improve native plant diversity and vigor
- Promote use of appropriate lighting sources

Middle Niobrara River Valley - NNLP Page 124

The Middle Niobrara River Valley is a 76-mile reach of the river in Cherry, Keya Paha, Rock, and Brown counties. This river reach has been designated as a National Wild and Scenic River and is often referred to as the biological crossroads of the Midwest. The Middle Niobrara River Valley is deeply incised, and is the intersection of five diverse plant communities: northern mixed-grass prairie, Sandhills prairie, Rocky Mountain pine woodland, northern paper birch woodland, and eastern deciduous woodland. The valley, with its diverse mix of plant communities, is home to an incredible diversity of native animal and plant species, including many glacial relict species.

Stresses Affecting Species and Habitats - NNLP Pages 124-126

- Development of homes, cabins, roads and recreational facilities
- Interruption of the natural fire regime leading to increased tree densities resulting in excess litter accumulation and exotic plant invasion

- Invasive plants in stream channel, wetlands, woodlands, and grasslands
- Livestock grazing practices that reduce native plant diversity and promote uniform habitat structure
- Upstream dams and water diversion

Conservation Action Strategies – NNLP Pages 124-126

- Increase tree thinning and use of prescribed fire in the valley on private and public lands
- Conduct integrated weed control efforts to control invasive species
- Implement appropriate grazing strategies on private lands

Verdigre and Bazile Creek Watersheds – NNLP Page 104

This area occupies the watersheds of Verdigre Creek and Bazile Creek in Cedar, Knox, Holt, and Antelope counties. The streams are spring-fed coldwater streams that have unique fish assemblages. The watersheds are a mosaic of cropland, restored native and exotic grasslands, and native tallgrass and mixed-grass prairie. Most of the prairies have been degraded by use of livestock grazing regimes that reduce native species diversity and encourage invasion by exotic vegetation. Oak woodlands are common along the streams and in ravines. The northern portion of the area includes the Missouri River bluffs and breaks. These areas support loess bluff mixed-grass prairie, tallgrass prairie, and deciduous woodlands.

Stresses Affecting Species and Habitats – NNLP Pages 104-105

- Potential waste runoff from dairy and hog confinements built within the watershed
- Conversion of grasslands to cropland
- Eastern red cedar and other invasive tree encroachment in woodlands and prairies
- Livestock grazing practices that reduce native plant diversity and promote uniform habitat structure

Conservation Action Strategies – NNLP Pages 104-105

- Implement measures to site dairy and hog confinements away from sensitive habitats and watersheds
- Protect key stretches of Verdigre Creek and Bazile Creek through conservation easements
- Implement invasive tree clearing projects on privately owned prairies and woodlands
- Implement innovative grazing systems on private lands
- Restore selected cropland to grassland, including expansion of stream buffer programs

Shortgrass Prairie (Oglala Grasslands, Pine Ridge, Upper Niobrara River, Panhandle Mixedgrass Prairies and Kimball County Grasslands BULs) - NNLP Pages 133 to 156

The Shortgrass Prairie region of Nebraska occupies a variety of habitat types throughout the plains and rolling hills of western Nebraska. The Oglala Grasslands support mixed-grass prairie and contain numerous areas of badlands and several streams with partially wooded valleys. This landscape is unique in that it is one of the larger intact grasslands remaining in Nebraska and holds the only occurrences of

several plant communities including western floodplain terrace grassland, silver sagebrush shrub prairie, greasewood shrub prairie, and northwestern mixed-grass prairie.

The Pine Ridge is a rocky escarpment that rises several hundred feet from the surrounding plains in Sioux, Dawes, and Sheridan counties in northwest Nebraska. Pine woodlands and mixed-grass prairie occupy the south- and west-facing slopes. Several streams, including the White River, Hat Creek and Soldier Creek, have headwaters in the Pine Ridge. The valleys of these northward flowing streams support deciduous woodlands and meadows in their floodplains. The Pine Ridge supports many at-risk species at the edge of their range, including two of the state's three populations of the Rocky Mountain bighorn sheep.

The Upper Niobrara River BUL occupies the Niobrara River channel, and a two-mile wide buffer on each side of the river, from eastern Cherry County westward to the Nebraska/Wyoming border. Rocky outcrops are common along the valley bluffs and mixed-grass prairie occurs on most of the bluffs. Where the river enters the Sandhills in western Cherry County the valley is several hundred feet deep and ponderosa pine woodlands occupy portions of the bluff and cottonwood dominated-woodlands occupy portions of the floodplain. The upper Niobrara River supports a unique assemblage of cold-water fish including the pearl dace and the state-listed blacknose shiner and finescale dace. Wet meadows in the Niobrara River valley in western Sioux County support the state's only known population of Ute lady's-tresses orchid.

The Panhandle Mixed-grass Prairies BUL includes the plains and rolling hills in the northern Panhandle from the Pine Ridge south to the North Platte River valley. It also includes the rough breaks and rocky outcrops associated with the Niobrara River in central Sioux County and the North Platte River in Scotts Bluff and Morrill counties. This region is unique because it is one of the largest intact, higher quality grasslands remaining in Nebraska. These grasslands support prairie dog towns, the state's largest swift fox populations, and extensive habitat for grassland birds. Alkaline wetlands occur along Snake Creek in the far east-central portion of this landscape.

The Kimball County Grasslands BUL includes the level to rolling hills and breaks of southwest Kimball County. Most of the more level ground is in dryland crops, primarily wheat. Native mixed-grass prairie still occupies the shallow-soiled breaks bordering Lodgepole Creek and other stream valleys. The landscape is unique in that it supports the state's only population of the federally and state listed Colorado butterfly plant. In addition, nesting populations of the state-listed mountain plover occur in this landscape, where they utilize heavily grazed native grasslands and cropland such as wheat stubble.

Stresses Affecting Species and Habitats

- Alteration of natural grazing and fire regimes
- Altered hydrology and channel degradation of rivers and streams
- Spread of invasive species
- Lack of knowledge about the region's biological diversity and ecological processes
- Conversion and fragmentation of natural habitats

Conservation Action Strategies

- Work with private landowners and the U.S. Forest Service to implement ecological sensitive grazing systems to reduce cheatgrass abundance and promote native plant diversity
- Restore sagebrush communities
- Work with private and public landowners to implement prescribed, low-intensity surface fires to control exotic plants, reduce ponderosa pine and eastern red cedar densities, and reduce threat of crown fires
- Conduct ecologically sensitive tree thinning on private and public land
- Maintain the natural hydrology of the Niobrara River that is necessary to sustain biological diversity and ecosystem function
- In meadows containing the Ute lady's-tresses orchid, implement haying and grazing regimes that benefit the orchid
- Restrict stocking of exotic fish when they threaten at-risk fish species
- Restore and maintain the natural hydrology of Lodgepole Creek that is needed to sustain biological diversity and ecosystem function
- Prevent sedimentation and restore the hydrology of the playa wetlands

Wildcat Hills (Wildcat Hills and Wildcat Hills South BULs) – NNLP Pages 154-156

The Wildcat Hills is a rocky escarpment that rises several hundred feet on the south side of the North Platte River in Scotts Bluff, Banner, and Morrill counties. The escarpment is composed primarily of sandstone, siltstone and volcanic ash. The north bluff of the escarpment is steep and deep canyons cut into the bluff. The canyons support stands of mountain mahogany, eastern red cedar and Rocky Mountain juniper. The north-facing slopes of the escarpment support ponderosa pine woodlands. Mixed-grass prairie, rock outcrops, and scattered patches of sandsage prairie occupy the remainder of the Wildcat Hills. The Wildcat Hills are unique in that they are an intact mosaic of pine woodlands and mixed-grass prairie and support the largest Rocky Mountain bighorn sheep populations in the state.

Stresses Affecting Species and Habitats

- Livestock grazing practices that reduce native plant diversity and promote uniform habitat structure in both uplands and riparian areas
- Exotic plant invasion
- Fire suppression, leading to eastern red cedar encroachment

Conservation Strategies

- Work with private landowners to implement planned grazing systems
- Work with private landowners to implement prescribed fire to control exotic plants, and reduce eastern red cedar densities

Capacity for conservation

Nebraska has great capacity to undertake conservation of at-risk species as outlined in this proposal. The agency has more than 30 years of experience in private lands conservation and puts a high priority on delivery of technical and financial incentives to farmers and ranchers. District managers and private lands biologists have

an interest, knowledge and experience in at-risk species projects on private lands. The agency is well regarded and trusted by many of the state's private landowners.

In addition, the agency has a long history of cooperation on issues related to private lands conservation with local, state, and federal agencies and private conservation groups. The agency has helped build capacity to deliver private lands programs by providing funding and/or collaborating on positions with twenty-one Natural Resource Districts, the Natural Resources Conservation Service, Pheasants Forever, Ducks Unlimited, The Nature Conservancy, Northern Prairies Land Trust, Rocky Mountain Bird Observatory, National Wild Turkey Federation, and others. Twenty of the state's largest conservation and agricultural organizations collaborated on development of the Nebraska Natural Legacy Project. A rapid acceleration of prairie conservation work is anticipated in the next several years, and Landowner Incentive Program funding will be critical to meet this growing demand.

OBJECTIVE

1. Objectively prioritize and implement research and inventory activities that are the most critical information needs for meeting NNLP goals, and implement innovative programs developed to improve our ability to inventory and monitor at-risk species. (Adaptive Management is discussed in the NNLP on pages 157 to 163).
2. Evaluate and apply the results of the research, inventory and monitoring activities to modify our management practices in order to maximize the benefit for habitats, SGCN's and landowners.

Strategy

- 1 Coordinate efforts with partnering agencies and organizations to establish a statewide adaptive management framework for NNLP Flagship BUL conservation action implementation activities.
- 2 Develop and prioritize research, inventory and monitoring needs for Flagship BULs.
Information and compliance reviews for strategy 3-6 will be amended into the grant based on results of Strategy 1 and 2.
- 3 Perform research, inventory and monitoring programs.
- 4 Apply results of research, inventory and monitoring to adaptive management framework.
- 5 Modify NNLP Flagship BUL conservation action implementation activities where needed.
- 6 Coordinate local research, inventory and monitoring projects.

EXPECTED RESULTS AND BENEFITS

Benefits to At-risk Species Habitats

The primary ecological benefits derived from implementation of this project will be the conservation of at-risk species within their native prairie, woodland and wetland habitats. The proposed management practices will help fulfill the U.S. Fish and Wildlife

Service's long-term goals of sustaining fish and wildlife populations and habitat conservation.

Strategy 1 and 2 will determine what areas and species will be pursued under Strategy 3. Results of the research, inventory and monitoring will then be used as the NNLP is updated and conservation plans are modified and implemented.

Several at-risk species plant communities will also benefit from our conservation efforts. These are listed by BUL in Table 1 and Table 2, attached to this grant.

APPROACH

Adaptive Management of Conservation Actions

Nebraska has been tremendously successful in delivering implementation of conservation actions identified in the NLLP, especially in working with private landowners through cooperative and voluntary actions. However, we continue to recognize that we are limited in our ability to undertake sufficient coordinated research, monitoring, and inventory efforts that are developed and implemented to quantify the direct benefits (or lack thereof) of implementation actions on SGCN's. These needs were identified in the NNLP (Chapter 9, pages 157-163); and are where NGPC feels we still are falling short in fully implementing the plan. To meet this need, in this SWG we are utilizing funds for a significant effort to implement the results of our development of an adaptive management framework for the NNLP. We will use this grant to assist NGPC and our partners in research, monitoring, and inventory efforts. Through this effort, we want to undertake action on short-term information, research, and monitoring needs that can allow us to more quickly adapt our conservation implementation efforts to better meet the needs of SGCN's in the NNLP. Currently, although conservation action implementation is occurring throughout Nebraska with the NNLP, we are unable to objectively assess and document the benefits to at-risk species that our activities are producing. Standardized, long-term monitoring programs such as the Breeding Bird Survey and prairie grouse lek surveys have been established across the state. These programs are invaluable in providing basic information about population trends of some of our target at-risk species at a regional level. However, we have a need for more information about the effects of our conservation activities at local and regional levels, and we need baseline biological inventory information for other taxa in addition to birds (e.g., insects, amphibians, small mammals) which are more difficult or time-consuming to survey. This lack of clear, biological accountability prevents efforts through the NNLP from being improved through an adaptive management framework. The issue of assessing and improving conservation actions is a statewide dilemma that affects all active BULs. Therefore, funding for these efforts will be coordinated at a statewide level, but targeted to meeting the needs in each active BUL. Through this effort, we want to identify and undertake action on short-term information, research, and monitoring needs that can allow us to more quickly adapt our conservation implementation efforts to better meet the needs of SGCN's in the NNLP. Changes to our land management practices to better meet the needs of both landowner and our SGCN's can be better made with the incorporation of knowledge gained from implementing our adaptive management plan. Another product of this effort will be the development of standardizes monitoring

frameworks that can be used across the state that are comparable and scalable to larger areas (eg. species ranges within the state). We expect that as we improve our knowledge of the impacts of conservation actions, we will need to modify and update our conservation planning and evaluation tools used to target implementation efforts.

There is a need to develop a set of best management practices for ecological communities that maintain and enhance their biodiversity value. Monitoring responses of individual community types to various management practices will be a key component in developing those guidelines. Floristic quality assessment is one approach that may be used for evaluating responses to treatments. One could also monitor responses of indicator species or exotic species within the community.

Finally, these efforts will assist NGPC and all of Nebraska's conservation partners in improving our efforts to meet the needs of SGCN's in the state.

Estimated Costs

	Adaptive Management
Statewide	\$333,333.00
Total	\$333,333.00

Estimated Budget Category Distribution of Funds	
Salaries and Benefits	\$162,500.00
Contractual Services	\$162,500.00
Supplies and Materials	\$4,166.50
Travel	\$4,166.50
Total	\$333,333.00

Federal portion: \$200,000.00
 Non-federal portion: \$133,333.00

Nonfederal match will be provided by NGPC and

Project Period: August 1, 2009 through July 31, 2012

Project Leader: Scott Taylor, Research Section Division Administrator, NGPC
 Rick Schneider, Heritage Program, NGPC

This proposal is completely covered by categorical exclusion 516 DM 8, 8.5 B 1.

This proposal does not have significant adverse effects on public health or safety.

This proposal does not have significant adverse effects on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds (Executive Order 13186); and other ecologically significant or critical areas under Federal ownership or jurisdiction.

This proposal does not have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)].

This proposal does not have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.

This proposal does not have a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.

This proposal does not have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.

This proposal does not have significant adverse effects on properties listed or eligible for listing on the National Register of Historic Places as determined by either the bureau or office, the State Historic Preservation Officer, the Tribal Historic Preservation Officer, the Advisory Council on Historic Preservation, or a consulting party under 36 CFR 800.

This proposal does not have significant adverse effects on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant adverse effects on designated Critical Habitat for these species.

This proposal does not have the possibility of violating a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.

This proposal does not have the possibility for a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).

This proposal does not have the possibility to limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).

This proposal does not have the possibility to significantly contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion

of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).

Environmental Considerations

Executive Order Number 11988, Flood Plain Management. The proposed work consists of research, monitoring and inventory activities. In no case will any flood plain be adversely impacted by the activities of this grant.

Executive Order Number 11990, Protection of Wetlands. The proposed work consists of research, monitoring and inventory activities. In no case will any wetland be adversely impacted by the activities of this grant.

Public Law 97-98, Farmland Protection Policy Act. The proposed work consists of research, monitoring and inventory activities. In no case will any prime and unique farmland be adversely impacted by the activities of this grant.

Historic and Cultural Preservation. The project work in this grant falls within activities covered by the Programmatic Agreement (18. Surveys of Use, Harvest and Populations -- Observations and investigations, report writing.) with SHPO and will not have any impact on properties enrolled in or eligible for inclusion in the National Register of Historic Places. We will stop all of the activities scheduled for the area if any cultural or historic remains are uncovered. The SHPO will be notified immediately and we will not resume any activities until we are directed by the SHPO on how to proceed.

Endangered Species Act. This project will not have any adverse impacts on any Federal proposed, candidate or listed threatened endangered species or their designated critical habitats. All project activities will be done within guidelines of the Programmatic Agreement with USFWS, Ecological Services Nebraska Field Office, and NGPC. (Item 17 Surveys of Use, Harvest, and Populations -- Observations and investigations, report writing.). The agreement is attached.

Environmental Justice. This project will not have adverse human health or environmental effects on low-income populations, minority populations or Indian tribes. The Environmental Protection Agency (EPA) defines Environmental Justice (EJ) as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies."

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NEBRASKA ENDANGERED AND THREATENED SPECIES

Common Name	Scientific Name	State Status	Federal Status
BIRDS - 5 Species			
Eskimo Curlew	<i>Numenius borealis</i>	Endangered	Endangered
Whooping Crane	<i>Grus americana</i>	Endangered	Endangered
Interior Least Tern	<i>Sterna antillarum athalassos</i>	Endangered	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened	Threatened
Mountain Plover	<i>Charadrius montanus</i>	Threatened	
MAMMALS - 4 Species			
Black-footed Ferret	<i>Mustela nigripes</i>	Endangered	Endangered
Swift Fox	<i>Vulpes velox</i>	Endangered	
River Otter	<i>Lutra canadensis</i>	Threatened	
Southern Flying Squirrel	<i>Glaucomys volans</i>	Threatened	
FISH - 7 Species			
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Endangered
Topeka Shiner	<i>Notropis topeka</i>	Endangered	Endangered
Sturgeon Chub	<i>Macrhybopsis gelida</i>	Endangered	
Blacknose Shiner	<i>Notropis heterolepis</i>	Endangered	
Lake Sturgeon	<i>Acipenser fulvescens</i>	Threatened	
Northern Redbelly Dace	<i>Phoxinus eos</i>	Threatened	
Finescale Dace	<i>Phoxinus neogaeus</i>	Threatened	
INSECTS - 2 Species			
American Burying Beetle	<i>Nicrophorus americanus</i>	Endangered	Endangered
Salt Creek Tiger Beetle	<i>Cincidela nevadica lincolniiana</i>	Endangered	Endangered
REPTILES - 1 Species			
Massasauga	<i>Sistrurus catenatus</i>	Threatened	Eastern subspecies Endangered
MUSSELS 1 Species			
Scaleshell Mussel	<i>Leptodea leptodon</i>	Endangered	Endangered*
PLANTS -7 Species			
Hayden's (Blowout) Penstemon	<i>Penstemon haydenii</i>	Endangered	Endangered
	<i>Gaura neomexicana ssp. coloradensis</i>	Endangered	Threatened
Colorado Butterfly Plant	<i>Salicornia rubra</i>	Endangered	
Saltwort			
Western Prairie Fringed Orchid	<i>Platanthera praeclara</i>	Threatened	Threatened
Ute Lady's Tresses	<i>Spiranthes diluvialis</i>	Threatened	Threatened
Ginseng	<i>Panax quinquefolium</i>	Threatened	
Small White Lady's Slipper	<i>Cypripedium candidum</i>	Threatened	
<u>CANDIDATE SPECIES FOR FEDERAL LISTING</u>			
None			

15 State Endangered Species

10 Species State and Federal Endangered

1 Species State Endangered /Federal
Threatened

4 Species State Endangered

12 State Threatened Species

3 Species State and Federal Threatened

9 Species State Threatened

*Species recorded for state but Nebraska is not included in distribution in federal listing.
NGPC 5/2009

Table 1. NNLTP Tier 1 At-risk species targeted for conservation actions by ecoregion/BUL, State and Federal Threatened and Endangered status, and habitat needs. (NNLP Page 203 to 232)

Ecoregion or BUL Species	State & Federal status	Habitat Needs
Southeast Tallgrass Prairies, Rulo and Indian Cave Bluffs		
American Ginseng	State T	Oak-Hickory-Ironwood Forest, Bur Oak-Basswood-Ironwood Forest, Red Oak-Basswood-Ironwood Forest
Iowa Skipper		Tallgrass prairie- bluestems likely host plant, requires native prairie with standing grass stems
Ottoo Skipper		Tallgrass prairie, rolling/hilly prairie - feed on bluestems
Regal Fritillary		Tallgrass and midgrass prairie with violets
Pond Mussel		Small to medum streams, possibly ponds, in mud or sand
Massasauga	State T	Wet mesic tallgrass prairie, wet meadow/marsh/wet prairie, lower-middle tallgrass prairie, cordgrass wet prairie, crayfish burrows.
Timber Rattlesnake		Deciduous woodland, riparian woodland - both in conjunction with rock outcrops
Gr. Prairie Chicken		Sandsage prairie, tallgrass prairie, sandhills dry valley prairie, loess mixed grass, (may have moved into sandhills after ag took tallgrass)
Bald Eagle		Riparian woodlands associated with large rivers and lakes
Bell's Vireo		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs
Henslow's Sparrow		Tallgrass, wet-mesic tallgrass, will use CRP
Cerulean Warbler		Deciduous forest w/emergents, old forest with little undergrowth, eastern riparian forest, red oak-basswood-ironwood forest, lowland hackberry, streams where bluff meets floodplain

Plains Pocket Mouse		Tallgrass prairie, sandy-loose soil prairies, loess bluff prairie, loess mixed-grass prairie, northern sand/gravel prairie
Plains Harvest Mouse		Tallgrass prairie - heavily grazed
S. Flying Squirrel	State T	Red oak-basswood-ironwood forest
Sandstone Prairies in Nebraska and Kansas		(Kansas identified as Species of Greatest Conservation Need)
Iowa Skipper		Tallgrass prairie- bluestems likely host plant, requires native prairie with standing grass stems
Ottoo Skipper		Tallgrass prairie, rolling/hilly prairie, feed on bluestems
Massasauga	State T	Wet mesic tallgrass prairie, wet meadow/marsh/wet prairie, lower-middle tallgrass prairie, cordgrass wet prairie, crayfish burrows.
Timber Rattlesnake		Deciduous woodland, riparian woodland - both in conjunction with rock outcrops
Gr. Prairie Chicken		Sandsage prairie, tallgrass prairie, sandhills dry valley prairie, loess mixed grass, (may have moved into sandhills after ag took tallgrass)
Bell's Vireo		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs
Henslow's Sparrow		Tallgrass, wet-mesic tallgrass, will use CRP
Plains Pocket Mouse		Tallgrass prairie
Plains Harvest Mouse		Tallgrass prairie - heavily grazed
Central Loess Hills		
Small white lady's slipper orchid	State T	Northern Sedge Wet Meadow, Northern Cordgrass Wet Prairie, Wet-mesic Tallgrass Prairie
Ottoo Skipper		Tallgrass prairie, rolling/hilly prairie, mixed-grass prairie - feed on bluestems
Regal Fritillary		Tallgrass and midgrass prairie with violets
Plains Topminnow		Vegetative backwaters and headwaters, shallow parts of rivers and streams
Ferruginous Hawk		Rock outcrop, shortgrass prairie, sandhills dune prairie, prairie dog towns, (may be using rock outcrops less now)
Bald Eagle		Riparian woodlands associated with large rivers and lakes

Burrowing Owl		Prairie dog towns, shortgrass prairie, mixed grass prairie, heavily grazed grasslands
Gr. Prairie Chicken		Sandsage prairie, tallgrass prairie, sandhills dry valley prairie, loess mixed grass, (may have moved into sandhills after ag took tallgrass)
Short-eared Owl		Open grasslands with standing cover and little disturbance
Long-billed Curlew		Sandhills dune prairie, sandhill valley prairie with mixed grass, prairie dog towns
Bell's Vireo		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs
Whooping Crane	State E, Federal E	Wetlands, wet meadows, sandbars and shallow water in rivers
Interior Least Tern	State E, Federal E	Bare sand bars and sandy shorelines of large rivers, lakes and sand pits
Piping Plover	State T, Federal T	Bare sand bars and sandy shorelines of large rivers, lakes and sand pits
Loess Canyons		
Regal Fritillary		Tallgrass and midgrass prairie with violets
American Burying Beetle	State E, Federal E	Wet meadows in sandhills, open woodlands, loess prairie, Platte River riparian woodlands
Bell's Vireo		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs
Burrowing Owl		Prairie dog towns, shortgrass prairie, mixed grass prairie, heavily grazed grasslands
Ferruginous Hawk		Rock outcrop, shortgrass prairie, sandhills dune prairie, prairie dog towns, (may be using rock outcrops less now)
Gr. Prairie Chicken		Sandsage prairie, tallgrass prairie, sandhills dry valley prairie, loess mixed grass, (may have moved into sandhills after ag took tallgrass)
Plains Harvest Mouse		Tallgrass prairie, sandy-loose soil prairies, loess bluff prairie, loess mixed-grass prairie, northern sand/gravel prairie

Verdigre-Bazile Watershed		
Plains Topminnow		Vegetative backwaters and headwaters, shallow parts of rivers and streams
Gr. Prairie Chicken		Sandsage prairie, tallgrass prairie, sandhills dry valley prairie, loess mixed grass, (may have moved into sandhills after ag took tallgrass)
Iowa Skipper*		Tallgrass prairie, mixed-grass prairie along the Niobrara - bluestems likely host plant, requires native prairie with standing grass stems
Ottoo Skipper*		Tallgrass prairie, rolling/hilly prairie, mixed-grass prairie - feed on bluestems
Regal Fritillary*		Tallgrass and midgrass prairie with violets
Buchholz Black Dash*		Native prairie and pastureland
Piping Plover*	State T, Federal T	Bare sand bars and sandy shorelines of large rivers, lakes and sand pits
Interior Least Tern*	State E, Federal E	Bare sand bars and sandy shorelines of large rivers, lakes and sand pits
Whooping Crane*	State E, Federal E	Wetlands, wet meadows, sandbars and shallow water in rivers
Bell's Vireo*		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs
Bald Eagle*		Riparian woodlands associated with large rivers and lakes
Buff-breasted Sandpiper*		Wet pastureland and crop land
Burrowing owl*		Prairie dog towns, shortgrass prairie, mixed grass prairie, heavily grazed grasslands
Plains Harvest Mouse*		Tallgrass prairie, sandy-loose soil prairies, loess bluff prairie, loess mixed-grass prairie, northern sand/gravel prairie
Plains Pocket Mouse*		Tallgrass prairie - heavily grazed
Middle Niobrara River Valley		
Small white lady's slipper orchid	State T	Northern Sedge Wet Meadow, Northern Cordgrass Wet Prairie, Wet-mesic Tallgrass Prairie
Iowa Skipper		Tallgrass prairie, mixed-grass prairie along the Niobrara - bluestems likely host plant, requires

		native prairie with standing grass stems
Ottoo Skipper		Tallgrass prairie, rolling/hilly prairie, mixed-grass prairie - feed on bluestems
Regal Fritillary		Tallgrass and midgrass prairie with violets
Piping Plover	State T, Federal T	Bare sand bars and sandy shorelines of large rivers, lakes and sand pits
Interior Least Tern	State E, Federal E	Bare sand bars and sandy shorelines of large rivers, lakes and sand pits
Whooping Crane	State E, Federal E	Wetlands, wet meadows, sandbars and shallow water in rivers
Bell's Vireo		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs
Bald Eagle		Riparian woodlands associated with large rivers and lakes
Shortgrass Prairies		
Blowout Penstemon	State E, Federal E	Sandhills Dune Prairie (blowouts)
Colorado Butterfly Plant	State E, Federal T	Western Floodplain Terrace Grassland
Gordon's Wild Buckwheat		Rocky prairies (most likley Western Mixedgrass Prairie)
Ute Ladies' Tresses Orchid	State T, Federal T	Western Alkaline Meadow
Regal Fritillary		Tallgrass and midgrass prairie with violets
Tawny Crescent		Canyon type habitat - close to water, between stream and dry, pine wooded areas
Blacknose Shiner	State E	Headwaters, spring fed, clear water, pools, quiet waters
Finescale Dace	State T	Headwaters, spring fed, clear water, sandhill streams, beaver ponds, undercut banks, meandering streams, small pools
Pearl Dace		Headwaters, spring fed, clear water, sandhill streams, beaver ponds, undercut banks, meandering streams, small pools
Plains Topminnow		Vegetative backwaters and headwaters, shallow parts of rivers and streams
Bell's Vireo		All shrubland types except buckbrush, grasslands with shrubs, dependant on shrubs

Brewer's Sparrow		Sandsage prairie, shortgrass, mixed grass w/sandsage component, shrub associated species - low shrubs
Burrowing Owl		Prairie dog towns, shortgrass prairie, mixed grass prairie, heavily grazed grasslands
Ferruginous Hawk		Rock outcrop, shortgrass prairie, sandhills dune prairie, prairie dog towns, (may be using rock outcrops less now)
Lewis' Woodpecker		Ponderosa pine & woodland associated with burns and some live forest edges
Long-billed Curlew		Sandhills dune prairie, sandhill valley prairie with mixed grass, prairie dog towns
McCown's Longspur		Shortgrass with mixed grass, short stature vegetation
Mountain Plover	State T, Fed Prop.	Shortgrass, fallow fields, prairie dog towns, very low stature vegetation, flat
Fringe-tailed Myotis		Ponderosa pine forest and woodland, green ash-elm bottom woodland
Long-legged Myotis		Ponderosa pine forest and woodland, green ash-elm bottom woodland, canyon bottom woodland, badlands
Northern River Otter	State T	Along rivers and streams with sloughs and backwater areas, marshes, will frequent lakes and ponds
Rocky Mtn Bighorn Sheep		Rocky buttes of Pine Ridge and Wildcat Hills
Swift Fox	State E	Shortgrass prairie, western mixed-grass prairie
Townsend's Big-eared Bat		Ponderosa pine forest and woodland, dry cliff or rock outcrop - requires caves
Wildcat Hills		
Matted Prickly-phlox		Rock Outcrop
Nuttall Desert Parsley		Rock Outcrops
Bald Eagle		Riparian woodlands associated with large rivers and lakes
Brewer's Sparrow		Sandsage prairie, shortgrass, mixed grass w/sandsage component, shrub associated species - low shrubs
Burrowing Owl		Prairie dog towns, shortgrass prairie, mixed grass prairie, heavily grazed grasslands

Ferruginous Hawk		Rock outcrop, shortgrass prairie, sandhills dune prairie, prairie dog towns, (may be using rock outcrops less now)
Long-billed Curlew		Sandhills dune prairie, sandhill valley prairie with mixed grass, prairie dog towns
Short-eared Owl		Open grasslands with standing cover and little disturbance
Rocky Mtn Bighorn Sheep		Rocky buttes of Pine Ridge and Wildcat Hills
Fringe-tailed Myotis		Ponderosa pine forest and woodland, green ash-elm bottom woodland
Swift Fox	State E	Shortgrass prairie, western mixed-grass prairie

* Species found in area during subsequent surveys after the NNLP was developed

Table 2. Plant communities, by Flagship BUL, that will be enhanced by management practices implemented through this project.

Flagship BUL	Plant Community Name	Global Rank	State Rank
Central Loess Hills	Loess mixed-grass prairie	G4	S3
	Tallgrass prairie	G2	S2
	Oak woodland	G1	S2
	Freshwater marsh	GU	S3
	Northern sedge wet meadow	G3G4	S3
	Northern cordgrass wet meadow	G2G3	S2
	Wet-mesic tallgrass prairie	G2	S2
	Sandbar/mudflat	G3?	S3
Loess Canyons	Loess mixed-grass prairie	G4	S3
Verdigre-Bazile Watershed	Tallgrass prairie	G2	S2
	Loess bluff prairie	G3?	S1
Middle Niobrara River Valley	Northern cordgrass wet prairie	G3G4	S3
	Western mixed-grass	G5	S3S4
	Paper birch Springbranch Canyon forest	GNR	S2
	Bur oak-basswood-ironwood forest	G3	S2

Global (G-ranking) and State (S-ranking) rank criteria can be found in Appendix 4 of the NNLP (page 184).