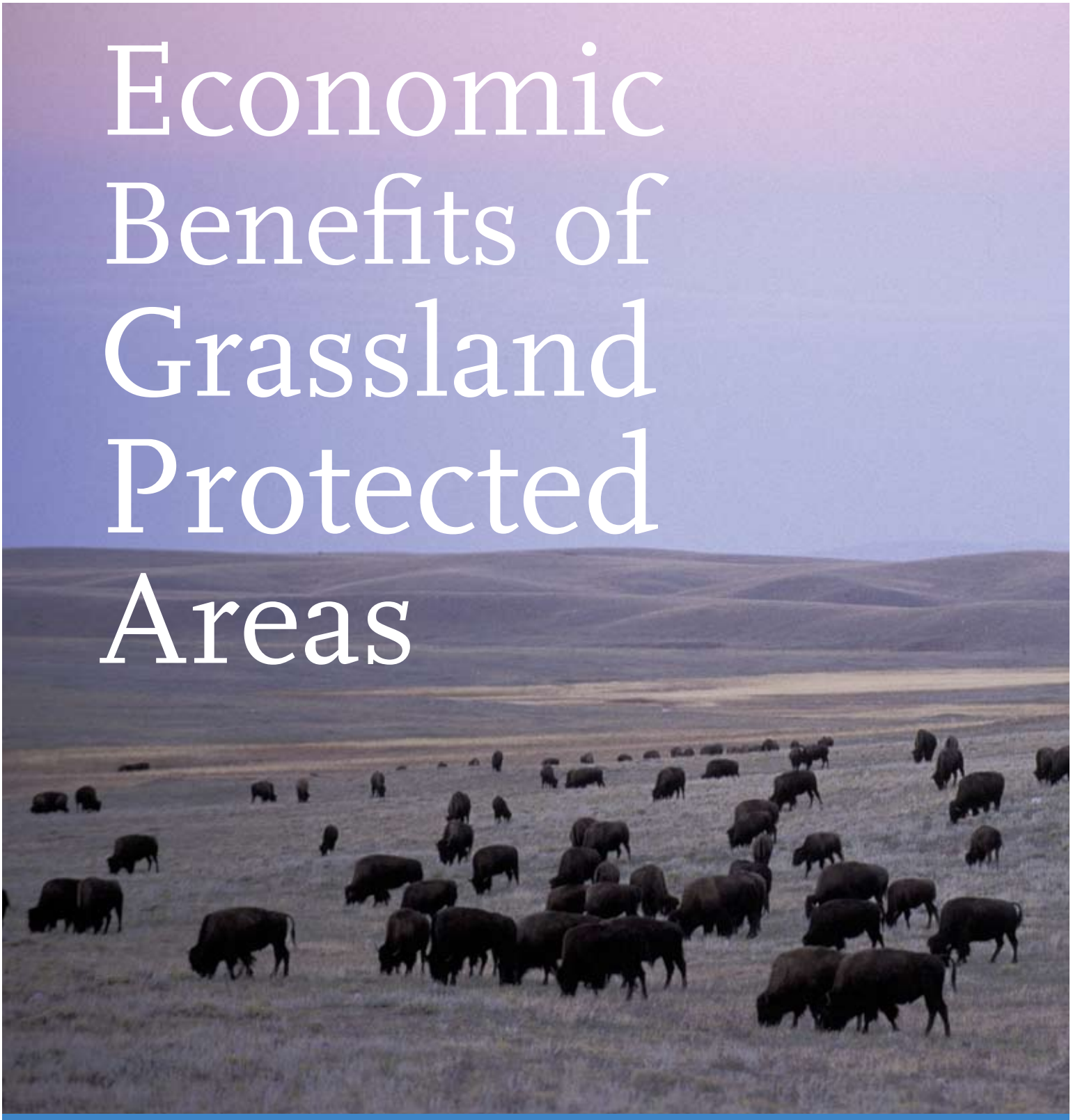
Economic Benefits of Grassland Protected Areas



GRASSLAND FOUNDATION

www.grasslandfoundation.org

August 2005

ABOVE: *Attention*. Red Fox pups, Keith County Nebraska, © Georg Joutras.
COVER: Bison grazing, © Joel Sartore.

GRASSLAND FOUNDATION

Contents

Acknowledgements

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We also thank our contributing photographers: Michael Forsberg (forsberg.com), Georg Joutras (joutras.com) and Joel Sartore (sartore.com)

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About the Grassland Foundation

The mission of the Grassland Foundation is to further the creation of protected grassland natural areas on the Northern Great Plains for biodiversity protection, recreation and rural development purposes through research, education and outreach. We promote the appreciation and understanding of prairie grasslands and the people who occupy them.

Our work seeks to merge the twin goals of protecting biodiversity, while benefiting local communities and people economically through community based conservation strategies.

We have three conservation objectives:

- Create a system of protected grassland natural areas on the Northern Great Plains based on conservation biology principles;
- Integrate grassland biodiversity protection and planning into local, state and federal public policy;
- Increase the amount of public and private funding to create and manage protected grassland natural areas.

We have three public policy goals:

- By 2010, establish a state natural areas program to help implement the Nebraska Natural Legacy Project's biodiversity conservation strategy;
- By 2015, have in place a management regime for a one-million acre Nebraska Prairie Preserve;
- By 2025, have in place habitat complexes on 10 percent of the remaining grasslands in the Northern Great Plains.

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The Grassland Foundation & Private Lands Ranching:

1. We do not intend to own conservation lands.
2. We believe the profitability of private lands ranching is essential to the conservation of grassland regions.
3. Generally speaking, we believe the conservation management of private lands should be the focus of conservation efforts, rather than land acquisition.
4. Any land ownership change should be locally driven, and should be targeted and incremental to achieve both conservation and community development objectives.
5. The private lands ranching heritage on the plains should be respected and its preservation should be an objective of public policy.

Explanation of Terms

Biosphere Reserve: This is a conceptual model of land use that is of special interest to sustainable rural development strategies. It fulfills three complementary functions: a conservation, preservation of resources and ecosystem function; a developmental function to foster sustainable economic and human development; and a logistic support function to support demonstration projects, environmental education and training, and research and monitoring related to local, national and global issues of conservation/sustainable development. Biosphere reserves typically are sites of exceptional plant and animal diversity and ecosystem function that have been nominated for recognition by the program administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Conservation Biology: In one sense, conservation biology is simply applied ecology. It developed as an integrated science in response to the challenge of biodiversity loss, and has three main goals: to document the full range of biodiversity on Earth; to investigate human impact on species, communities, and ecosystems; and to develop practical approaches to prevent the extinction of species, to maintain genetic variation within species, and to protect and restore biological communities and their associated ecosystem functions.

Ecosystem Management Plan: We use this term to define a voluntary, scientific-based, collaborative plan to preserve the ecological integrity of a habitat complex.

Grasslands: Unless the context suggests otherwise, we refer to native and non-native land that is dominated by grass as grassland.

Habitat Complex: We use this term to define a geographic region that includes protected areas and private land managed cooperatively to achieve both social and ecological objectives. The management objective in the protected area is biodiversity, but pri-

vate lands may include traditional land use objectives such as livestock grazing. We may at times refer to a protected area within a habitat complex as a core area, and the surrounding cooperatively managed private land as a buffer zone. When we use the term habitat complex, we are referring to cooperative management arrangement involving public and private land that is created voluntarily, but once created may be enforced through legal means.

Local Institution: This may be a town, county, Natural Resource District, Resource & Conservation District, etc., other than the state or federal government.

Natural Amenity Economy: We use this term to include wildlife recreation, nature-based activities, and related outdoor activities such as golf.

Nature Based Activities: This designation refers to the full spectrum of outdoor activities: wildlife recreation, hiking, horse back riding, rodeo, camping, picnicking, touring, environmental education, canoeing and boating, star-gazing and related activities.

Prairie: For our purposes, prairie is unplowed grassland dominated by native grass species managed primarily for species diversity rather than livestock grazing. Grazing historically is an evolutionary force that shaped prairie lands, and livestock grazing may be consistent with prairie management, but for our purposes, when the management objective is livestock grazing, we use the term range.

Protected Area: The IUCN (International Union for the Conservation of Nature) is widely considered to be the most authoritative international conservation organization. It defines a "protected area" as an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity and natural and associated cultural resources, and managed through legal or other effective means. We use the term to include parks, wildlife refuges and natural areas.

Public/Private Partnership: A contractual or other legal relationship between a unit of government and a private entity such as an individual landowner, corporation or non-profit entity.

Range: Range is unplowed grassland, and is dominated by native grass species, but typically livestock grazing is the primary management objective. The difference between range and prairie is part cultural, but for our purposes, mainly depends on the management objective for the land.

Wildlife Recreation: We use this term in reference to hunting, fishing, and wildlife viewing.

World Heritage Site: This is a specific site—such as a forest, mountain range, lake, desert, building, complex, or city—that has been nominated for the international World Heritage program administered by UNESCO. The program aims to catalogue, name, and preserve sites of outstanding importance, either cultural or natural, to the common heritage of humankind.

Pronghorn antelope. © Joel Sartore

Executive Summary

This report is not an economic analysis, but rather an attempt to assemble enough relevant information to demonstrate the economic importance of nature-based activities in the state and to advocate for the creation of protected grassland natural areas. We believe the information and evidence in this report and in other sources is sufficient to identify a number of economic implications and make preliminary recommendations about the direction of future public policy.

On balance, agriculture and rural development policies have not benefited small agricultural communities. Agriculturally dependent rural counties in Nebraska continue to experience population loss, greater and more widespread poverty, lower wages and greater reliance on unearned income. At least one study has estimated that the farm and ranch share of food system profit would reach zero by 2020, if current trends continue. These trends seem likely to continue as federal farm subsidies are reduced because of international trade agreements and as federal budget priorities are realigned to pay off the national debt. State policy has historically been lacking or nonexistent with respect to addressing the needs of these counties.

Many rural development advocates now realize land use and ownership change can play an important role in Nebraska's agriculturally based economy. However, this is not a proposal to replace traditional efforts to encourage value-added agriculture and agriculturally based entrepreneurial activities.

Rather, it should be viewed as a way to diversify and add to the economic opportunities in rural Nebraska. While changes in federal policy to encourage targeted and incremental land use and ownership change

could help create a more diverse rural economy, state and local policy change could also have a significant beneficial impact, particularly because they have the potential to be changed more rapidly than federal policies.

At one time nearly all of Nebraska was grassland. Its abundant and exotic wildlife enchanted visitors from around the world. Today, the tallgrass prairie is all but gone, and overall less than half of the state remains grassland. Regrettably, much of what remains has little plant diversity and contains a lot of non-native grasses and other plant species. Wildlife has similarly suffered, with some species reduced by as much as 98 percent, and a number are near extinction or on endangered lists. Today, tourists travel to the Rocky Mountains to view wildlife that once teemed in greater numbers and diversity on the Great Plains of Nebraska.

If Nebraskans can dedicate themselves to large-scale grassland preservation and restoration, the state's potential for species diversity—which is arguably greater than what exists in the Rocky Mountains—could give many rural communities a competitive advantage in today's fast-growing markets in ecotourism, agritourism and grassland research.

I hope you take the time to read this report and become an advocate for grassland restoration and preservation. Economically and ecologically, it proposes the highest-value use for some of our rural landscape, one that will pay dividends to rural communities and the state for many generations to come.

Tyler Sutton
President, Grassland Foundation

recommend

RECOMMENDATIONS

- The State and the University of Nebraska should conduct a comprehensive economic analysis of nature-based activities in Nebraska.
- The Nebraska Game and Parks Commission and other agencies should adopt a policy goal of placing 10 percent of remaining grasslands in a network of habitat complexes.
- The Game and Parks Commission and other state/federal agencies should implement management changes to improve opportunities for nature-based activities.
- The State should encourage a one million-acre grassland preserve of public/private land in Western Nebraska as a world-class site for tourism, hunting, and grassland research.
- The State should establish a $250 million bond pool to help purchase land by community-based conservation partnerships from willing sellers.
- The University should make the development of a program in grassland biodiversity conservation a priority.
- The State Museum, zoos, botanical gardens, and related institutions should coordinate programs with each other and with other state/federal agencies to improve biodiversity education and outreach.

part one

Introduction

CENTRAL THEMES OF THIS REPORT

- Agriculture should, and will continue to be the dominant land use in rural Nebraska, but where feasible, wildlife recreation and nature-based activities, especially in grasslands, should become part of a comprehensive rural development strategy.
- Development of a nature-based economy should include private lands (which perhaps should be the primary focus), but the creation of a network of protected areas based on conservation biology and sustainable development principles should also become a rural development and conservation priority for the State of Nebraska.
- Land use and ownership change should be driven by community-based efforts and local institutions, requiring new forms of private/public land management and partnerships, a major change in public attitudes, and a major shift in wildlife, rural development and agricultural policies.

Rural Nebraska is at an economic and ecological crossroads; agriculturally dependent communities struggle to survive as mechanization, land consolidation, an aging producer population, government policy and international markets reshape their economic and cultural landscape. For many Nebraska communities, particularly those in areas dominated by cattle grazing, economic development options are limited by a sparse population, remoteness from urban supply and commodity markets, scarcity of public lands and natural areas, entrenched cultural attitudes about government and wildlife conservation, and an economic system that promises in the future to return even less from agricultural commodities and federal farm subsidies.

Although wildlife recreation in the U.S. constitutes a multi-billion dollar industry, Nebraska's rural development advocates have been slow to address this potential as part of a sustainable rural development strategy.

At the same time, the prairie grassland landscape, once abundant with a diversity of plants and animals, is just a shadow of its former greatness. Much of the wildlife that once made Nebraska one of the most spectacular wildlife areas on earth was either pushed out or slaughtered in the name of progress. Like much of the Great Plains, Nebraska was passed over as the nation's great parks and wildlife areas were carved out of the public domain more than a century ago.

Our understanding of Nebraska's grasslands has revolved almost solely around its range or grazing value.

Many of the state's grasslands are ecologically degraded because of drought, years of poor land use practices—caused mainly by economic pressures—and years of relative neglect by national wildlife conservation groups. While the wildlife spectacle that

Elk in the tallgrass prairie, Kansas. © Joel Sartore.

once so moved Lewis & Clark as they made their way up the Missouri River is now mostly gone, much of the inland native grassland cover is still largely intact, making restoration of the state's rich natural heritage both possible and practical.

Although wildlife recreation in the U.S. constitutes a multi-billion dollar industry, Nebraska's rural development advocates have been slow to address this potential as part of a sustainable rural development strategy.

We know more about the surface of the moon than we do about our native prairies.

This is partly due to the fact that nearly all of Nebraska is privately owned and used for agriculture. Our understanding of Nebraska's grasslands, therefore, has revolved almost solely around its range or grazing value. This perspective dominates our public dialogue about uses of the natural landscape and defines the research, teaching and outreach agenda of the University of Nebraska. In many respects, we know more about the surface of the moon than we do about our native prairies.

If we are to successfully realize the economic potential of our grasslands, we must understand the important distinction between rangelands and native prairies. This distinction is at the heart of the conflict over how grasslands are used. A rancher manages rangelands first for the production of cattle and only secondarily for native floral and fauna diversity. The prairie enthusiast, on the other hand, envisions prairie as the opportunity to experience grasslands in all their native species diversity.

If we are to successfully realize the economic potential of our grasslands, we must understand the important distinction between rangelands and native prairies.

This issue becomes most controversial when considering the role of certain animal species, such as prai-

rie dogs, in the grassland ecosystem; to a rancher, a prairie dog is a weed to be exterminated because it is perceived to be interfering with the maximum productivity of the grasslands for cattle. To a prairie enthusiast or ecological researcher, however, the prairie dog is an essential component of a healthy and balanced prairie ecosystem.

Although there are inherent limitations, partly cultural and partly economic, on how private owners will manage range, persistent poverty, low income and population loss are changing attitudes, particularly in many western Nebraska small towns.

Although there are inherent limitations, partly cultural and partly economic, on how private owners will manage range, persistent poverty, low income and population loss are changing attitudes, particularly in many western Nebraska small towns. It is painfully clear that traditional approaches to rural development alone have not and will not work in many areas of the state. New thinking and new approaches are needed both for people and wildlife.

Although Nebraska does not have a national park, it does have some of the finest state park facilities in the nation. However, our state parks and state wildlife management areas are simply too small to be of much value for a full suite of prairie wildlife. Conservation science teaches that generally large contiguous or mostly contiguous areas of land are necessary for the long-term survival of most wildlife species. The economic development asset rural Nebraska lacks most is abundant public access and private lands dedicated to wildlife recreation and nature-based activities, including hunting, bird watching, horseback riding and hiking, and ecotourism.

The economic development asset rural Nebraska lacks most is abundant public access and private lands dedicated to wildlife recreation and nature-based activities.

Parks, wildlife refuges, wildlife and natural areas and other similar land uses create new business opportunities, new jobs, have multiplier effects for other businesses and can create the type of community environment that will attract new residents. Creating a network of habitat complexes in Nebraska based on conservation biology principles and utilizing innovative arrangements between private land owners and community based public-private partnerships is not just about wildlife habitat; it is also about creating new opportunities for people.

That is what this report is about. It is not so much an economic analysis as simply a report on ideas and trends that could help make a difference for many agriculturally dependant counties in Nebraska, particularly in counties where there still are significant amounts of native prairie grasslands that could be managed as preserves rather than as range. These are areas where land use change has the greatest potential for nature-based tourism, research and other activities.

Creating a network of habitat complexes is not just about wildlife habitat; it is also about creating new opportunities for people.

Colorado has the Rocky Mountains, but Nebraska still has millions of acres of native grasslands capable of restoring a wildlife spectacle that can rival that of the African continent. Nebraska simply needs the will and creativity to transform how the landscape is used in certain places by targeted, incremental land use and ownership change to allow the full potential of a wildlife recreation economy to develop.

We hope you will read the balance of this report. In it you will find these central themes:

- Agriculture should and will continue to be the dominant land use in rural Nebraska (cattle are and will always be king), but where feasible, wildlife recreation and nature-based activities should become part of a comprehensive rural development strategy, especially in grassland areas.
- While development of a nature-based economy should include private lands (and perhaps should be the primary focus), the creation of a network of protected areas (parks, wildlife refuges and natural areas) based on conservation biology and prin-

Two young children bring home groceries for Mom in Spaulding, Nebraska. © Joel Sartore

ciples of sustainable development should also become a rural development as well as conservation priority for Nebraska. The focus of the network should be on creating grassland habitat complexes because grasslands are the least protected habitat and the most in need of protection. Grasslands also possess the greatest potential for wildlife recreation activities.

- Land use and ownership change should be driven by community-based efforts and local institutions, and not by state or federal agencies. To be successful, however, these efforts will require new forms of private and public land management and partnerships, a major change in public attitudes, and a major shift in wildlife, rural development and agricultural policies.

As Nebraskans, let us preserve our great pioneer spirit and ranching heritage, but let us also build on that heritage by creating a future that makes room for the richness of our natural legacy and provides for public access, because more than ever the world is in need of beauty, and our youth are in need of hope.[1]

1. Kuki Gallman, *African Nights*, 2000.

What is a Protected Area?

Burrowing Owl, Buffalo Gap National Grassland, South Dakota. © Michael Forsberg

A "protected area" is a geographically defined area that is designated or regulated and managed to achieve broad biodiversity conservation objectives. The precise nature of a protected area depends on the legal means employed to establish and manage it. Protected areas can be established on public or private land and on combinations of public and private land.

In this country protected areas are typically thought of as national parks or wildlife refuges. State lands generally are not managed for biodiversity conservation and consequently do not satisfy the definition of a protected area.

Over time there has been a dramatic evolution in thinking about protected areas. Historically protected areas were conceived as government-owned, government-run areas set aside from resource extraction (including cattle grazing) and for compatible recreation. This is how national parks in the United States were created and managed historically.

Over the years this model has proved incomplete and inadequate. Conservationists therefore began to develop new models of land use protection that were more people-friendly. These models were not limited only to resource conservation, but rather were intended to achieve broader social objectives including sustainable rural development. They called for the creation and management of protected areas by community-based local institutions, rather than by government bureaucracies. These new approaches have changed the way protected areas are created and managed in this country and throughout the world.

Based on principles derived from conservation biology, government and private landowners are able to knit together large areas of land—with diverse management objectives—into a new type of management system that is people- and wildlife-friendly. We refer to these new areas as 'habitat complexes.'

This evolution in thinking was driven by changes in scientific understanding, developments in management practices, economic forces, and experiences on the ground in trying to establish and manage protected areas.

Perhaps one of the most profound influences on protected area thinking is the development of conservation biology, which seeks practical, applied and science-based solutions to conservation challenges. For example, it teaches that in the past most protected areas were too small to function ecologically, and they therefore need to be combined with a continuum of different land uses over large areas to preserve functional ecological systems.

In the last few years scientists have begun to work on landscape-scale "ecosystem management" plans to create conservation networks. These networks consist of core-protected areas that are managed primarily for biodiversity conservation, buffer zones where traditional land uses continue, and habitat corridors (usually waterways) to allow the movement of species from core areas through the buffer zones to other core areas.

There is growing appreciation among conservation planners that protected areas cannot be managed successfully without the cooperation of local communities.

Based on these principles, government and private landowners are able to knit together large areas of land—with diverse management objectives—into a new type of management system that is people- and wildlife-friendly. In many areas of the world these systems are now critical components in sustainable rural development strategies. We refer to these new areas as "habitat complexes."

There is growing appreciation among conservation planners that protected areas cannot be managed successfully without the cooperation of local populations and communities, making it necessary for planners to look beyond tourism as the only economic justification for creating them. Often local populations do not have all of the necessary skills to reap the economic benefits from tourism in protected areas, and therefore prefer to use land in traditional ways. Consequently, when biodiversity conservation goals and strategies are developed and implemented as part of a protected areas program, most conservation planners now recognize that rural stakeholders—that is, both landowners and residents of small towns—must be included in a broader discussion about sustainable rural development, which includes traditional land uses.

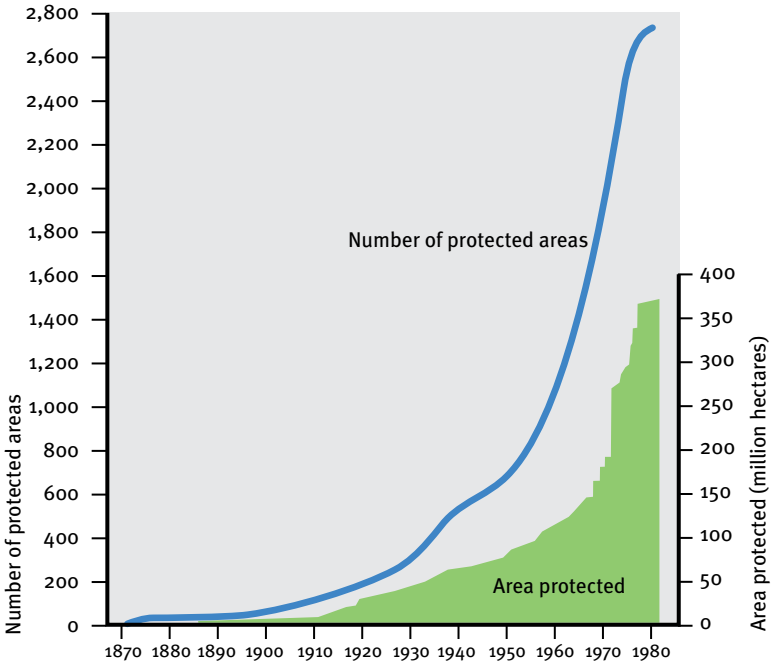
In grassland areas, many conservation scientists and planners now accept cattle grazing as compatible with protected area management, provided that grazing

WHAT IS A BIOSPHERE RESERVE?

This is a particular type of conceptual model of land use that is of special interest to sustainable rural development strategies. It fulfills three complementary functions: Conservation, including preservation of genetic resources, species, landscapes and ecosystems; Development, including fostering sustainable economic and human development; and Logistic Support, including support to demonstration projects, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development. Biosphere reserves typically are sites of exceptional plant and animal diversity and ecosystem function. The United States has a number of biosphere reserves, including Yellowstone National Park, though very few have been created in grassland areas. There are none in Nebraska, but Konza Prairie in Kansas is a joint venture between Kansas State University and The Nature Conservancy. The objective is to preserve a representative area of tallgrass prairie, and serves as a long term National Science Foundation Research site.

See conceptual diagram on page 15.

GROWTH IN NUMBER AND AREA OF PROTECTED AREAS WORLD-WIDE: 1870–1985



Source: IUCN (1985)

and wildlife interests are willing to work collaboratively to resolve wildlife and livestock conflict issues. There are a number of examples of this type of collaboration in the mixed public and private grazing land areas of the western United States, as well as in other grassland areas of the world.

Since about 1970 there has been an explosion globally in the creation of protected areas, partly to conserve biodiversity but also because of their importance to sustainable rural development.

Of course, the globalization of the economy has brought changes in land use economics, changes that grip western Nebraska just like they grip the famous Serengeti of western Tanzania, and these changes mean that wildlife recreation is an important new economic opportunity that cannot be ignored. Preserving and in some cases restoring a wildlife spectacle is now critically important to a sustainable rural development strategy. The issue for rural areas is how to balance the preference for traditional land uses with the growing demand for change brought about by the globalization of our economic system.

From tropical rainforests to temperate grasslands, global resource development is causing the loss of large amounts of habitat, prompting many scientists to call on nations to set aside at least 10 percent of each type of habitat found within their borders. Many countries are doing this. Some countries have set a goal of protecting up to 30 percent, while Mongolia, one of the last great intact grasslands on the planet, offered to set aside the entire country, provided the international community helped provide assistance to make it possible.

Since 1970 there has been an explosion globally in the creation of protected areas, partly to conserve biodiversity but also because of their importance to sustainable rural development. According to the World Conservation Union (IUCN), there are some 60,000 protected areas globally, though less than a quarter of these are large enough to be included in the United Nations' protected areas list.[1]

1. Adrian Phillips, "Turning Ideas on Their Head, A New Paradigm for Protected Areas," *The George Wright Forum*, No. 2, 2003.

While the rest of the world has been creating protected areas as part of a sustainable rural development strategy, Nebraska has stood by while its rural communities hemorrhaged people and lost their economic base because of changes in the economics of agriculture.

In the past, no one believed that large-scale protected areas were feasible on the North American plains, so this region has been slow to develop them. Nebraska is no exception. While the rest of the world has been creating new, more people-friendly protected areas as part of a sustainable rural development strategy, Nebraska has stood by while its rural communities hemorrhaged people and lost their economic base because of changes in the economics of agriculture.

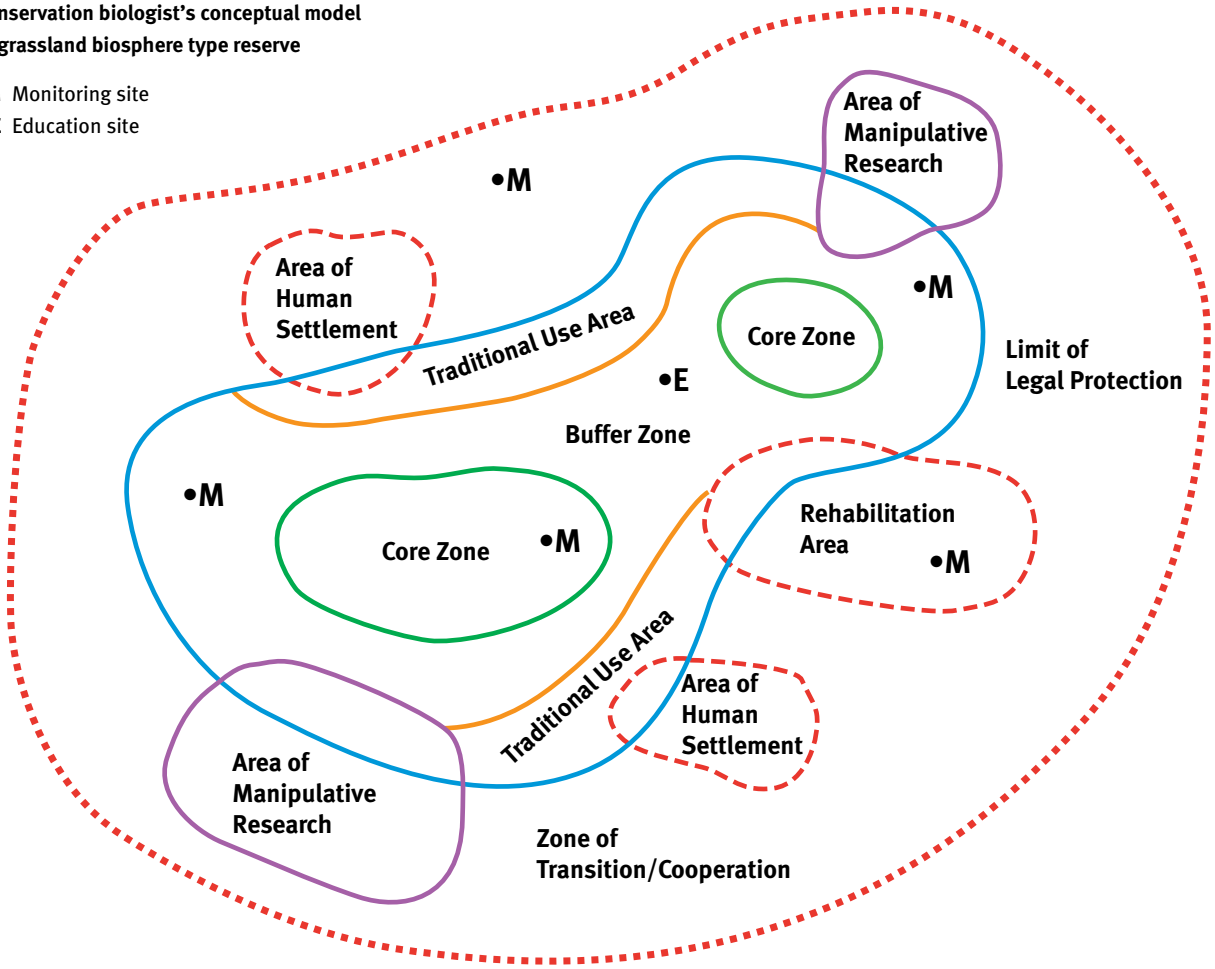
Yet the attitude towards protected areas is changing. In Canada, Parks Canada is successfully developing the Grasslands National Park in southern Saskatchewan.

In Montana, the American Prairie Foundation, with the help of the World Wildlife Fund's Northern Great Plains program, recently launched a project to acquire large acreages of private land that hopefully over time will be managed with more than one million acres of public land to restore a fully functioning prairie landscape complete with wild bison and other prairie species. In western Nebraska, though on a much more modest scale, Platte River Basins Environments is purchasing ecologically significant lands to create public recreation opportunities that are consistent with sound resource conservation practices.

Regrettably, Nebraska has few protected areas, and those that do exist are not large enough to be of national or global significance. One grassland excep-

Conservation biologist's conceptual model of grassland biosphere type reserve

•M Monitoring site
•E Education site



TYPES OF PROTECTED AREAS

IUCN CATEGORIES

The IUCN presently uses six categories of protected areas and two international designations (biosphere reserve and world heritage site). The categories represent different levels of protection and varying degrees of local, national and international significance:

- *Strict Nature Reserve/Wilderness Area:* managed for scientific purposes.
- *National Park:* managed for ecosystem protection and recreation.
- *Natural Monument/Landmark:* managed mostly for conservation of a specific natural phenomenon.
- *Habitats/Species Management Area:* mainly managed for conservation.
- *Protected Landscape/Seascape:* managed mostly for the conservation of a landscape/seascape.
- *Managed Resource Protected Area:* mainly managed for sustainable use of natural resources.

U.S. NATIONAL PARK MODELS

The U.S. National Park System has evolved along with the evolution in thinking about protected areas internationally. There are several different management models that can become part of the National Park System:

- *National Parks* are generally added to the National Park System to protect a number of resources over a large area of land.
- *National Monuments*, on the other hand, are intended to preserve at least one nationally significant resource and are usually smaller and lack the diversity of attractions of a National Park.
- *National Preserve* is a relatively new designation that is intended to protect natural values, but may allow for the continuation of hunting and fishing and extractive activities if they do not jeopardize the areas natural values.
- *National Reserves* are similar to National Preserves, except reserves may be transferred to local or state authorities for management.
- *National Wildlife Refuges and Special Legislation:* Protected areas can be created within the National Wildlife Refuge system and by special Congressional legislation.

tion is the Nature Conservancy's Niobrara Preserve, a 50,000-acre site near Valentine, Nebraska, which is managed for native biodiversity and research but is open to the public only with special permission. Nebraska does not have a national park, though it does have three national monuments, two of which consist of about 3,000 acres each. At the moment there are no active state programs to either create protected areas (other than wildlife management areas) or to manage existing state lands for biodiversity and sustainable rural development.

Historically, state game and fish agencies have not generally possessed the resources or the desire to create protected areas, although a number of states do have small biodiversity protection programs that can be used to protect small amounts of private and public land within a statewide land protection system. While Nebraska has such a program on paper, it has never been adequately funded.

Creating successful grassland protected areas in Nebraska will require us to think differently. Rather than working with traditional park models, we need to design and implement entirely new models based on partnerships between public and private landowners.

Wisconsin, on the other hand, has one of the most well developed state biodiversity conservation programs in the nation, with more than 150,000 acres of sensitive and biologically unique lands under management. Seventy of Wisconsin's 72 counties have land in the program, ranging in size from one to nearly

Bison on the prairie. © Joel Sartore

8,000 acres. Ecosystem management principles permit public access, however it is controlled for resource protection.

Unfortunately, most state programs are run with little community involvement or local benefit, and they have not been implemented as part of a state-led sustainable rural development strategy.

Creating successful grassland protected areas in Nebraska and in other states will require us to think differently about protected areas. Rather than working with traditional park models, we need to design and implement entirely new models based on partnerships between public and private landowners.

Why Protected Areas are Important

BENEFITS OF PROTECTED AREAS

- Create new, long-term economic opportunities for rural communities.
- Protect the diversity of life and maintain the integrity of ecosystems and watersheds.
- Create nature-based/cultural tourism and other economic opportunities.
- Provide open space as the raw material for artists, writers, and culture.
- Open up research and educational opportunities.
- Offer consumptive benefits from sustainable uses of natural resources.
- Protect sacred places and places of spiritual value.

The protected area movement began just over a century ago as an effort to preserve scenic landscapes—mainly for recreational uses—from resource development. When Yellowstone National Park was created in 1872, it was the first national park in the world. The national park movement grew slowly until after the Second World War, when rapid industrialization and population growth led to an increased need for protected natural areas.

As wild areas became increasingly scarce, and the world became more urbanized, natural areas became more valuable for recreation and as places to recharge and seek refuge from hectic urban and suburban lifestyles. In most places where natural areas were set aside, a nature-based economy developed to supplement or even replace extractive land uses such as logging, mining and grazing. In the areas surrounding Yellowstone National Park, for example, real income from extractive industries has trended downward since 1969, while real income from the rest of the economy—including recreation industries, tourism, service industries and new residents (including retirees)—has grown steadily, expanding by almost 200 percent.[1]

This also happened in several grassland areas of the world, like the Serengeti in Tanzania and on the steppes of Mongolia. In a recent study of tourism's value to rural areas surrounding Badlands National Park in South Dakota, researchers found that visitors spent nearly $24 million, which generated in total about $7 million in personal income and 500 jobs.[2] Across the country, national parks and wildlife refuges are worth billions of dollars to local economies.[3]

1. Richard B. Primach, *Essentials of Conservation Biology*, p. 90.

2. Dennis Propst et. al., "Economic Impacts of Badlands National Park Visitor Spending on the Local Economy, 2000," Michigan State University, Jan. 2002.

3. Tim Molloy, "Study Says National Parks are an Economic Boon," Associated Press, Nov. 13, 2003.

TOTAL ECONOMIC VALUES OF PROTECTED AREAS

USE VALUES			NON-USE VALUES	
Direct use value	**Indirect use value**	**Option value**	**Bequest values**	**Existence values**
Recreation	*Ecosystem services*	Future information	Use and non-use values for legacy	*Biodiversity*
Sustainable harvesting	*Climate stabilization*	Future uses (indirect and direct)		Ritual or spiritual values
Wildlife harvesting	*Flood control*			Culture, heritage
Fuel-wood	Ground-water recharge			Community values
Grazing	*Carbon sequestration*			Landscape
Agriculture	Habitat			
Gene harvesting	Nutrient retention			
Education	Natural disaster prevention			
Research	*Watershed protection* Natural services			

Source: Adapted from Barbier *et al.* (1997)

"The values which appear in italic in Box 4 are likely to be particularly important to protected areas. This guide has adopted a TEV approach for identifying the array of values that are attributed to protected areas because of its holistic perspective of values." *Source:* Task Force on Economic Benefits of Protected Areas (WCPA) of IUCN, Adrian Phillips, Editor, "Economic Values of Protected Areas, Guidelines for Protected Area Managers," 1998.

These economic benefits, particularly for rural communities, are the cornerstones on which our efforts are based to conserve our grassland ecosystems.

Over time, the protected area movement recognized that it was necessary both for human health and survival and for economic reasons to protect natural areas and the biological diversity they support, including entire ecosystems. This idea was slow to develop because for a long time natural areas were thought to be vast and without limit. But exploding human populations and advancing technological capacities have caused people to rethink the importance and benefits of protecting the natural world.

In recent years, the rapid loss of all types of habitat and species prompted a reexamination of protected area strategies. Initially, tropical rainforests were targeted because of their biological diversity, but more recently the protected areas movement turned its attention to other habitats such as oceans and grasslands.

Clearly in many areas of the world people believe protected areas are important for economic, ecological and cultural reasons.

Today, the reasons for protected areas are numerous:

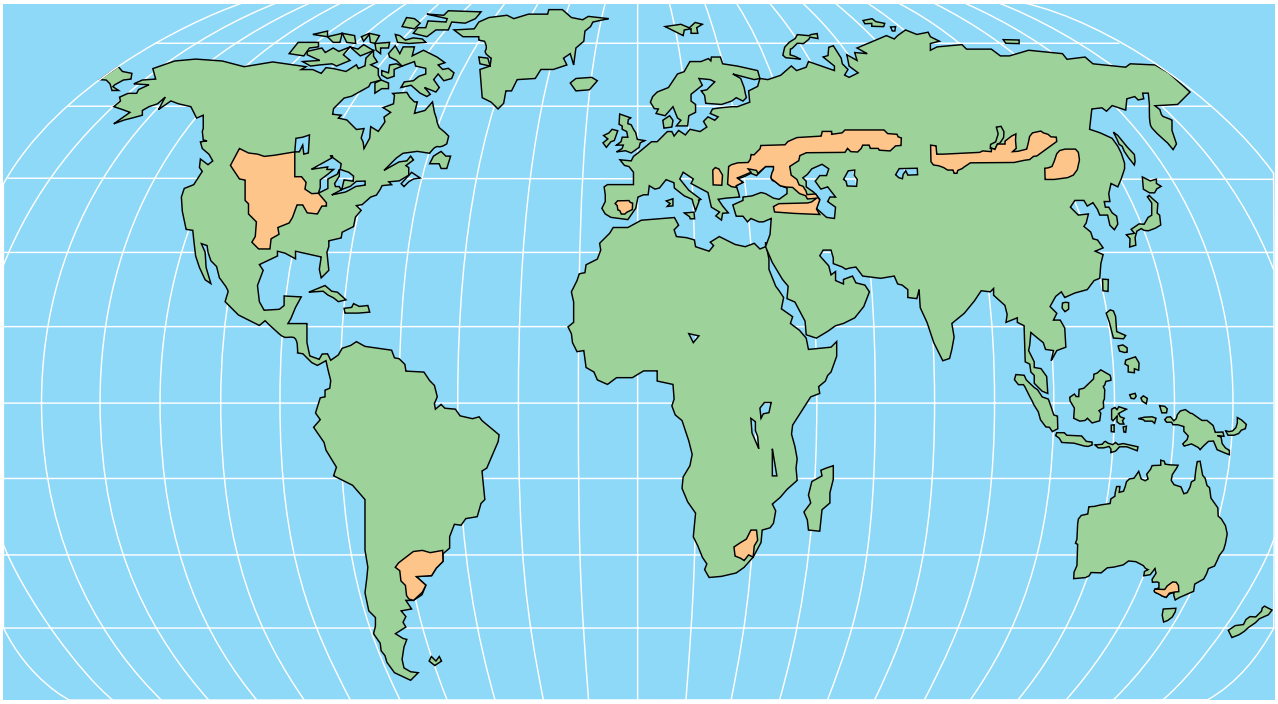
- Create new, long-term economic opportunities for rural communities.
- Protect the diversity of life and maintain the integrity of ecosystems and watersheds.
- Create nature-based/cultural tourism and other economic opportunities.
- Provide open space as the raw material for artists, writers, and culture.
- Open up research and educational opportunities.
- Offer consumptive benefits from sustainable uses of natural resources.
- Protect sacred places and places of spiritual value.

Some of these benefits can be quantified in dollar terms because they are traded on markets. Others, such as the value of water purification and flood control provided by wetlands, are more difficult to quantify.

However, resource economists have attempted to place a monetary value on these benefits, particularly benefits associated with ecosystem services. According to a recent study, natural habitats are worth far more left intact than if exploited. The report estimated that a global network of nature reserves would cost about $45 billion per year, and would ensure delivery of ecosystem goods and services (e.g. purifying water, cycling oxygen and carbon, maintaining soil fertility) with an annual value of $4.4 to $5.2 trillion per year. Today, the world spends only $6.5 billion each year on the existing reserve network.[4]

While these types of studies are sometimes disputed, there is little question that ecosystems provide tremendous benefits to local economies. These economic benefits, particularly for rural communities, are the cornerstones on which our efforts are based to conserve our grassland ecosystems.

4. Protected areas and benefits beyond boundaries, based on J. Bengtsson and others, "Reserves, Resilience and Dynamic Landscapes," Ambio (*The Journal of the Royal Swedish Academy of Sciences*), Vol. 32, No. 6, Sept. 2003.



The World's Temperate Grasslands: A Unique Biome
The most altered ecosystem on earth, the Temperate Grassland biome is found on every continent except Antarctica, covering about 9 percent of the earth's terrestrial surface. North American temperate grasslands, which constitute 17 percent of the global total, are considered to be the most degraded biome in North America.

Conservation Status of Global Temperate Grasslands

TEMPERATE GRASSLANDS:

NOT WHAT THEY USED TO BE

- Originally supported some of the greatest assemblages of wildlife ever known. Although severely stressed, they continue to support a high percentage of rare or endangered species. Floral diversity is threatened by habitat alteration and fragmentation.
- Grassland birds have experienced highest declines of all bird groups; globally, grasslands account for 30 percent of world's threatened birds.
- Temperate grasslands are the most altered ecosystem on earth, and the most endangered habitat in most countries where they occur.
- About 41 percent of temperate grasslands have been converted to intensive agriculture, and 13.5 percent to urbanization, industry and other disturbances.

Temperate grasslands are found on every continent except Antarctica. They are home to some of the greatest assemblages of wildlife on earth, including the great migration of wildebeest and zebra in the Serengeti of Tanzania.

But in nearly every case, wildlife in grassland areas of the world has been greatly diminished. This is certainly true in North America, once inhabited by as many as 30 million bison, 5 billion prairie dogs, and 100,000 wolves. Today there are no wolves, no wild bison, and prairie dog numbers have been reduced by as much as 98 percent.[1]

The reason for the loss of this wildlife heritage is generally attributable to the conversion of grasslands to agricultural uses. In most areas of the world grasslands are the most endangered biome. Globally, about

1. Dan S. Licht, *Ecology & Economics of the Great Plains*, University of Nebraska Press, 1997.

Swift Fox kits playing chase, Box Butte County, Nebraska.
© Michael Forsberg.

FOUR GLOBAL PRIORITIES FOR LANDSCAPE SCALE PROTECTED AREAS

- Eastern Steppes of Mongolia, Southern Siberia and Northern China.
- The Black Sea-Kazakh steppe.
- Patagonian grasslands.
- Northern Great Plains in North America.

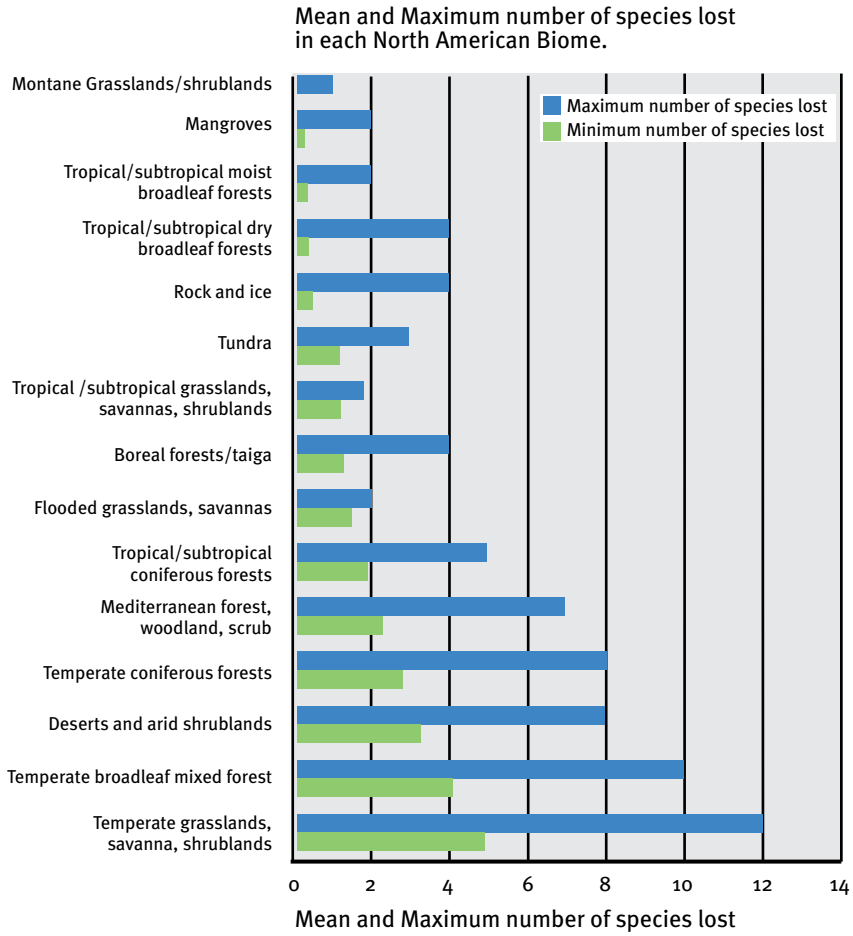
41 percent of temperate grasslands have been converted to intensive agriculture, another 6 percent to urbanization and 7–5 percent to other disturbances.[2]

2. William D. Henwood, "The Protection of Temperate Grasslands—A Global Perspective," Grassland Protected Areas Task Force, IUCN (WCPA)

North America was once inhabited by as many as 30 million bison, 5 billion prairie dogs, and 100,000 wolves. Today there are no wolves, no wild bison, and prairie dog numbers have been reduced by as much as 98 percent.

Today, only 4.6 percent of the world's temperate grasslands are currently protected within the global system of protected areas. The opportunity to protect significant representative and ecologically viable examples of this biome has been ignored historically, and in many cases now lost forever. Regrettably the grassland biome is the least protected biome on the planet and many of the world's leading scientists now believe it is the most in need of protection.

SPECIES LOSS BY BIOME



Source: Northern Great Plains Network, "Oceans of Grass: A Conservation Assessment for the Northern Great Plains," 2004.

The original Great Plains grassland of central North America was the second largest grassland next to the steppes of Eurasia. These grasslands today are considered by many scientists to be the most degraded biome in North America. Perhaps as much as 99 percent of the North American tallgrass prairie was lost to the plow, and while up to 60 percent of the Short Grass Prairie remains uncultivated, overgrazing and introduction of exotic species have significantly altered what remains. Less than 6 percent of the North American central grassland is in protected areas, though some researchers have calculated the amount at less than 2 percent.[3]

3. Northern Great Plains Conservation Network, "Oceans of Grass: A Conservaton Assessment for the Northern Great Plains," 2004.

The original Great Plains grassland was the world's second largest grassland. Today they are considered by many scientists to be the most degraded biome in North America. Perhaps as much as 99 percent of the North American tallgrass prairie was lost to the plow.

From a global perspective, the grasslands of Inner Asia (Mongolia mainly) are of special significance because, while they comprise only 6 percent of the world's grasslands, they constitute the largest and least disturbed area of temperate grasslands in the world. Though these grasslands are under threat, the potential for them to make a major contribution to the protection of the temperate grassland ecosystem, at a scale available nowhere else in the world, is very significant.

A number of scientists and international conservation groups, including the World Conservation Union (IUCN) Grassland Protected Areas Task Force, advocate increasing the amount of representative grasslands in protected areas to 10 percent by the year 2013.

IUCN/WCPA GRASSLAND PROTECTED AREAS TASK FORCE GOALS

- Facilitate protection of at least 10 percent of Temperate Grasslands biome by 2013.
- Identify opportunities and priorities for protection to achieve 10 percent goal.
- Focus on 10 priority grassland regions worldwide.

www.iucn.org/hemes/wcpa/theme/grasslands/grasslands.html

Because North America's grasslands constitute about 17 percent of the global biome, it can play a significant role in achieving the goal of representative protection. In fact, it is only one of three regional grasslands in the world where conservation and restoration is still possible on a landscape scale.

NORTH AMERICA'S ROLE IN GLOBAL RECOVERY OF TEMPERATE GRASSLANDS

- North America's grasslands constitute 17 percent of the global biome.
- Unique in the world—only we can protect the biodiversity they contain.
- The Northern Great Plains are a continental and international conservation priority.

www.iucn.org/hemes/wcpa/theme/grasslands/grasslands.html

Grasslands, Nebraska. © Georg Joutras

THREE SCENARIOS FOR TEMPERATE GRASSLAND PROTECTION

IUCN/WCPA Grassland Protected Areas Task Force restoration scenarios describe conditions in Nebraska's three grassland categories: Tall Grass, Mixed Grass and Short Grass Prairie. Restoration potential is greatest in western Nebraska's Short Grass region.

1. **Highly Modified & Fragmented Landscapes**
   (Tall Grass North American Prairie)
   - Small, isolated remnants, little or no ecosystem connectivity.
   - Restoration required.
   - Potential for species reintroduction limited.
   - Extinction/extirpation of species accepted.
   - Ultimate protection levels less than 5 percent.

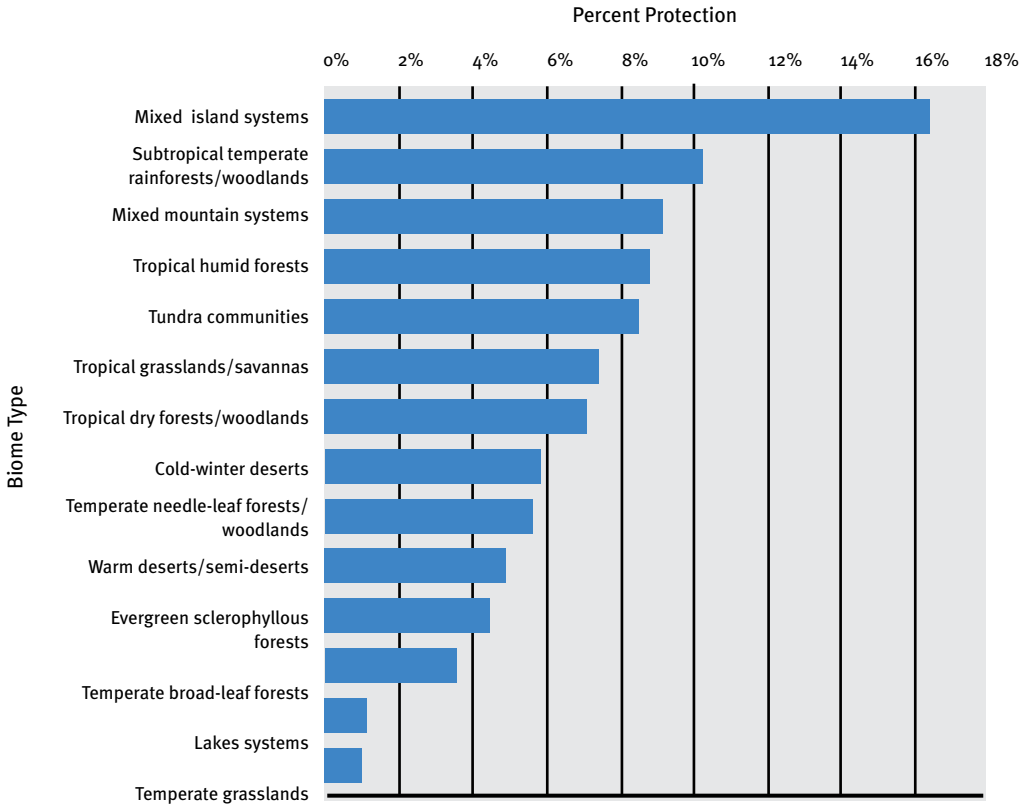
2. **Moderately Modified and Fragmented Landscapes**
   (Mixed Grass North American Prairie)
   - Larger, less-isolated remnants; potential for connectivity.
   - Greater potential for restoration of larger areas.
   - No or few extinctions/extirpations.
   - High potential for species reintroduction/recovery.
   - Ultimate protection levels of 5 to 10 percent.

3. **Large, Relatively Intact Landscapes**
   (Short Grass North American Prairie)
   - Potential to protect and restore large, functional grassland ecosystems.
   - No or few extinctions/extirpations.
   - High potential for species reintroduction, if necessary.
   - Ultimate protection levels greater than 10 percent.

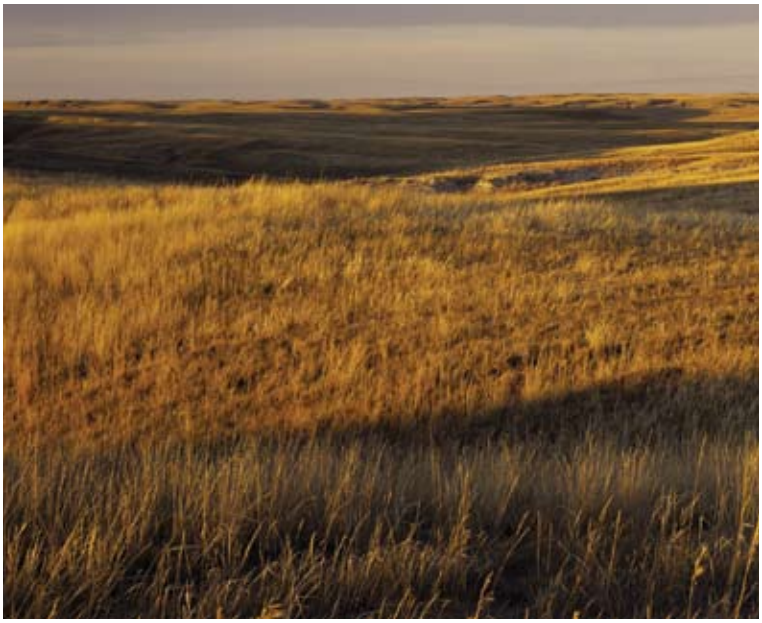
www.iucn.org/hemes/wcpa/theme/grasslands/grasslands.html

GLOBAL BIOME PROTECTION

Only 4.6 percent of the world's temperate grasslands are under some kind of protective status—9 times less than tropical grasslands and savannas. Of all the world's biomes, temperate grasslands have the least protection.



Source: Northern Great Plains Network, "Oceans of Grass: A Conservation Assessment for the Northern Great Plains," 2004.



Custer County, Nebraska. © 2005 Georg Joutras.

Conservation Status of Nebraska's Grasslands

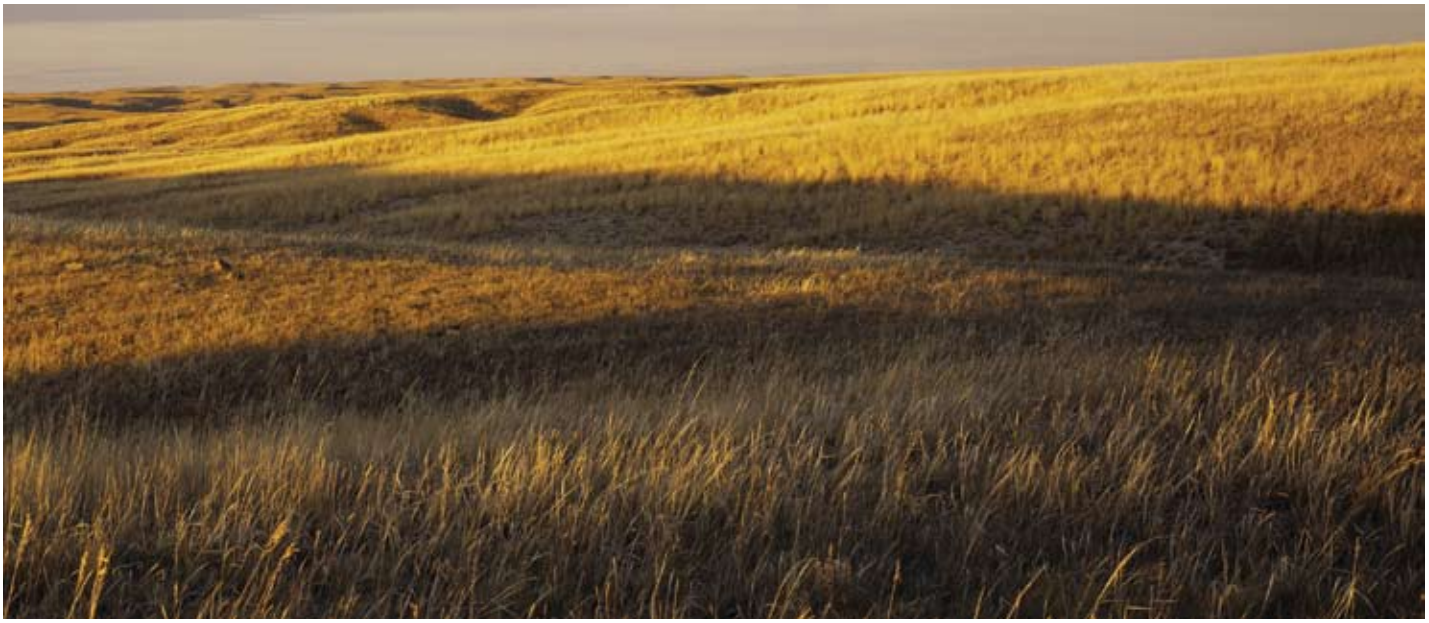
There are approximately 50 million acres in Nebraska.[1] At one time nearly all of it was grassland. Today a little less than half of the state remains grassland, but regrettably much of what remains has little plant diversity and contains a lot of non-native grasses and other plant species. The conversion of grassland to cropland for the most part occurred by the early part of the 20th century, though some conversion of native grassland still continues today.

Human intolerance and the conversion of a significant amount of these native grasslands have meant the extirpation or significant reduction in the number of many native wildlife species.

Native grassland traditionally has been categorized by the height of grass, with the eastern third of Nebraska being classified as tallgrass prairie and much of the rest of the state outside of the Sand Hills classified as mixed grass prairie. The Sand Hills occupies its own niche given its unique physical and biological characteristics.

All but about 1 to 2 percent of the tallgrass prairie was lost to the plow in Nebraska. In the central part of the state, all but about 30 percent of the mixed grass prairie is gone, and out west, in the Panhandle,

1. Much of the information in this section is based on a personal email from Gerry Steinhauer, botanist at the Nebraska Game and Parks Commission, February 2004.



about 50 percent of the mixed grass prairie is gone. In the Sand Hills, which consists of over 12 million acres—about 25 percent of the state's land base and nearly 50 percent of the total amount of grassland left—nearly 95 percent of it still survives. The Sand Hills of Nebraska are one of the largest and best examples of grasslands left in North America.

Large tracts of mixed grass prairie remain in the western part of the state, and though the native plant diversity is low, there has been limited invasion by exotic species. There are large areas that could be managed back to health.

The tallgrass prairie remaining is mostly in small, isolated parcels. A few larger examples consisting of 5,000 acres have limited plant diversity and are under threat from further conversion, exotic plant invasion, and herbicide use. Most of the central mixed grass prairie is in poor condition, and many of the larger blocks have been overgrazed for years and contain significant brome grass invasion. Large tracts of mixed grass prairie remain in the western part of the state, and though the native plant diversity is low, there has been limited invasion by exotic species. There are large areas that could be managed back to health.

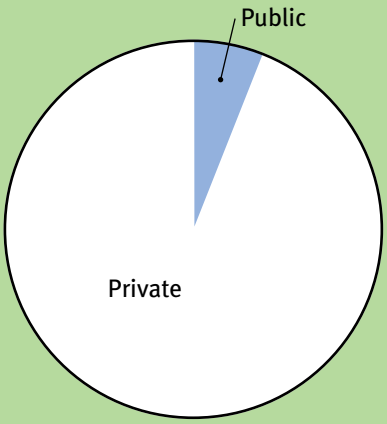
The upland Sand Hills prairies are mostly in good condition and intact. The wet meadows are in poor condition because they have been ditched and hayed for decades. These areas unfortunately have lost native plant diversity and are heavily infested with exotic cool-season grasses.

Human intolerance and the conversion of a significant amount of these native grasslands have meant the extirpation or significant reduction in the number of many native wildlife species from the region such as the bison, black-tailed prairie dog, black footed ferret, wolf, elk and numerous species of birds. In fact, grassland birds have shown a steeper, more consistent, and more geographically widespread decline than any other grouping of North American species. Nebraska currently has 27 species listed as endangered or threatened, of which five are mammals, six are birds, and seven are plants.[2]

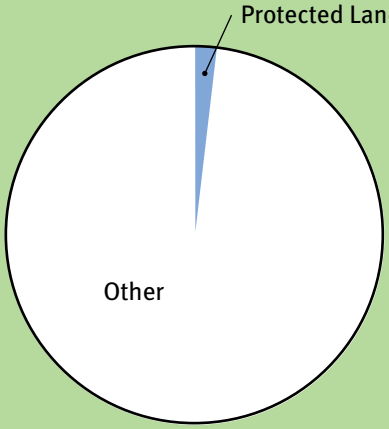
There are a number of historical and economic reasons for the loss of grassland habitat, and the concomitant loss or reduction in species diversity. Certainly part of the problem was our failure to put aside land in protected areas for conservation management when the state was first settled. Regrettably, the conservation movement during the early part of the 20th century focused on saving pristine forested environments in the mountains of the west, rather than grasslands.

2. Nebraska Game and Parks Commission web page, "Nongame and Endangered Species Program," 2005.

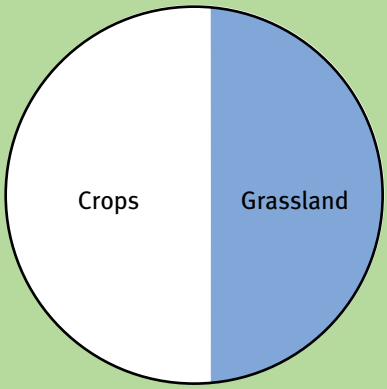
50 MILLION ACRES IN NEBRASKA: HOW IT DIVIDES UP



Public vs. Private Lands
Less than 5 percent of Nebraska land is in public ownership of any kind.



Agriculture, Cities, Roads, Other Uses vs. Protected Lands
Less than 1 percent of Nebraska land is in protected status.



Crops vs. Grassland
A little less than half of Nebraska remains grassland, however, much of it is severly degraded, has little plant diversity and contains non-native species.

However, even though early conservation visionaries of the 19th century such as George Catlin called for the creation of large reserves on the plains for bison and other wildlife, what little federal land that exists in Nebraska today was mostly acquired during the Great Depression and is managed for multiple uses, including grazing, and not strictly for wildlife conservation.

The sad fact today is that almost none of the private or public land in the state is in conservation management, that is, where the management objective is the conservation of biodiversity. None of the state's nearly 1.5 million acres of public school lands are managed for conservation, and very little of the approximately 275,000 acres of land managed by the Nebraska Game and Parks Commission is managed strictly for conservation. Nebraska parks and wildlife management areas are not legally required to achieve biodiversity conservation objectives. Wildlife management areas are maintained for just a few game species, not a full suite of native species, and therefore probably do not qualify as true protected areas. Nearly all of the roughly 600,000 acres owned by the U.S. Forest Service is managed for multiple uses, not conservation, so little of it qualifies as protected. The National Parks Service manages about 7,000 acres in three national monuments, which may qualify as protected areas, depending on the specifics of the individual management plans.

The sad fact today is that almost none of the private or public land in the state is in conservation management . . . Nebraska still possesses a significant amount of native grassland that could contribute to the goal of global representative protection.

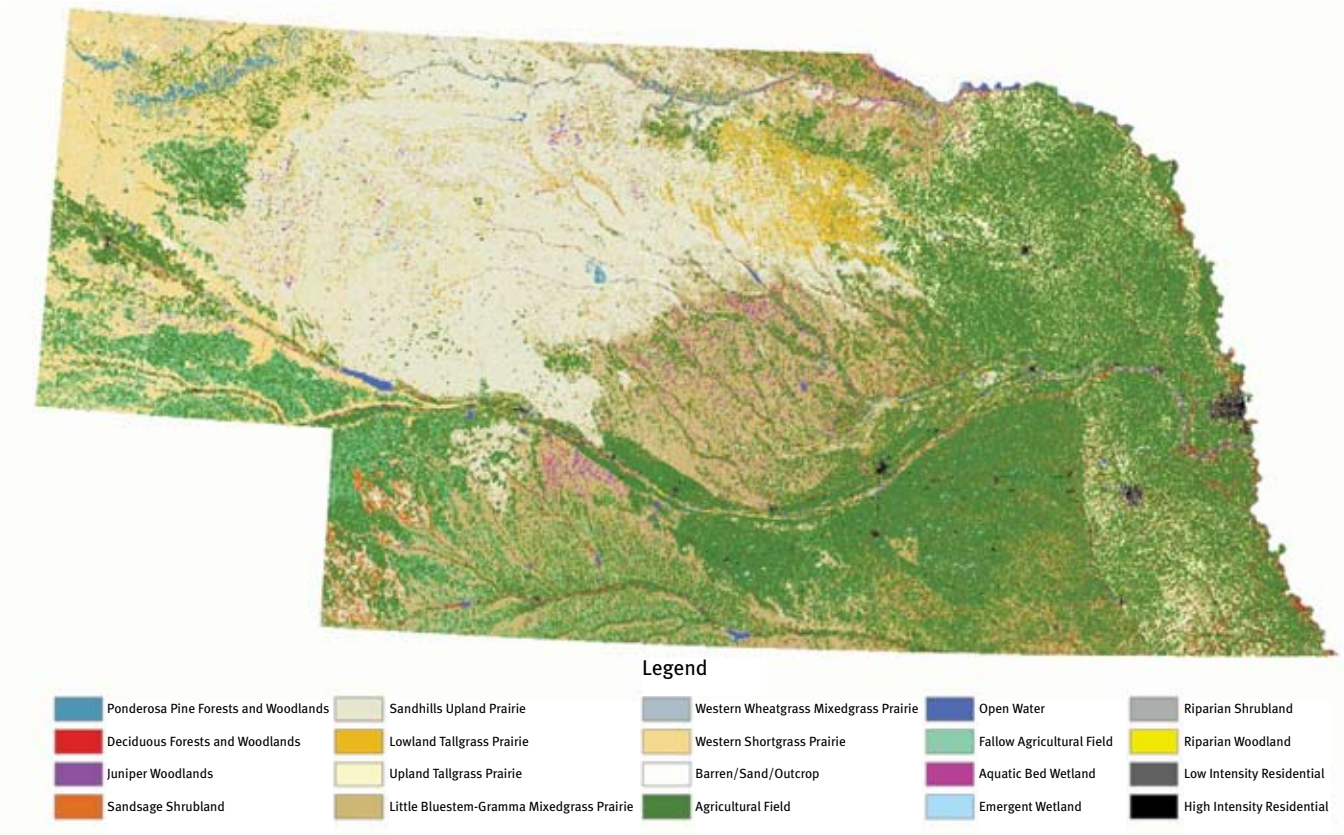
The nearly 175,000 acres of land managed by the U.S. Fish & Wildlife Service probably qualifies as protected, and several private groups like the Nature Conservancy manage land for conservation purposes, but altogether certainly less than 1 percent of the land based in Nebraska is in protected status—managed for biodiversity—and less than 5 percent is in public ownership of any kind.

If Nebraskans can dedicate themselves to large-scale grassland restoration, the state's greater potential for species diversity could give many rural communities a competitve advantage in today's growing ecotourism market.

The net result is that Nebraska has lost a significant amount of its grasslands, and the plant diversity of what remains outside of the Sand Hills has been significantly reduced. As a result of these losses—due to the lack of protected areas and current grazing practices—grassland species that were not extirpated are generally in decline. On the other hand, Nebraska still possesses a significant amount of native grassland that could contribute to the goal of global representative protection.

Ultimately, Nebraska could reap great economic benefits from grassland restoration and preservation. Today millions of tourists travel to the Rocky Mountains to view wildlife that once thrived in even greater numbers on Nebraska's grasslands. If Nebraskans can dedicate themselves to large-scale grassland restoration, the state's greater potential for species diversity could give many rural communities a competitve advantage in today's growing ecotourism market and could greatly increase hunting and other outdoor recreation opportunities.

NEBRASKA GAP CLASSIFICATION CHART



Nebraska's Grassland Spectacle

The Nebraska wildlife spectacle that once so moved Lewis & Clark as they made their way up the Missouri River is largely gone, yet much of the state's native prairie grasslands are still intact, and many species of prairie wildlife, though diminished, can still be found here, making restoration of our rich natural heritage possible. But for this to happen, the state's wildlife must become a natural amenity for the benefit of local communities and private landowners. This will require a sea change in public attitudes and public policy, but it is possible, if the people of our state want to reclaim their natural heritage for this generation and those that follow. Here is a glimpse of what remains of this spectacle.

CLOCKWISE FROM TOP LEFT: Elk near Valentine, Nebraska, © Joel Sartore; Swift Fox pups at play, and Ferruginous Hawk, Nebraska, © Michael Forsberg; Pronghorn, © Georg Joutras; Prairie Dog, and Western Diamondback Rattlesnake, © Joel Sartore; Prairie-chicken mating dance, © Georg Joutras.

CLOCKWISE FROM TOP LEFT: Oglala Overlook, Sioux County, Nebraska, © Georg Joutras; Bison wallowing in dust, © Michael Forsberg; Elk resting in grass, © Georg Joutras; Burrowing Owl, © Michael Forsberg; Male greater prairie-chicken booming, © Joel Sartore.

part two

Thinking Differently About Our Grasslands

TOTAL USDA – SUBSIDIES BY YEAR, NEBRASKA

YEAR	TOTAL USDA SUBSIDIES
1995	$506,385,484
1996	$388,162,091
1997	454,229,960
1998	$814,540,373
1999	$1,412,252,539
2000	$1,416,918,731
2001	$1,298,649,462
2002	$539,093,597
2003	$722,607,699
TOTAL	$7,552,839,936

Source: Environmental Working Group, Farm Subsidies Database website, 2005.

In many areas of Nebraska, agriculture alone is no longer able to sustain a viable economic base for rural communities. Despite receiving billions of dollars in subsidies over the last few years, Nebraska has some of the poorest counties in the nation. The globalization of agriculture promises to return even less to agricultural commodities and farm bill subsidies in the future.

Despite receiving billions of dollars in commodity subsidies over the last few years, Nebraska has some of the poorest counties in the nation.

Demographically, many of these rural areas have lost population for several decades, and continue to lose population. Many small towns are just a whisper of what they once were. Ecologically, many of the state's ecosystems and biodiversity have been degraded because of grassland conversion, poor land use practices and years of neglect by conservation organizations.

Various remedies are being suggested to reverse the economic and demographic decline, from bigger farm subsidies, to new transportation and communications infrastructure, to tax breaks and new products and marketing schemes for agriculture. The New Homestead Act promoted by Representative Tom Osborne and Senator Chuck Hagel calls for tax breaks and other benefits as inducements for people to move back to small towns in economically depressed areas of the plains.

But it is becoming clear that new approaches to rural development are needed because traditional approaches alone are not working . . . the problem in Nebraska is that many rural communities are enclaves, surrounded by a landscape that is inaccessible to the public, and used in ways most Americans do not find appealing.

But it is becoming clear that new approaches to ru-

ral development are needed because traditional approaches alone are not working and offer little long-term hope to the challenges of living in parts of rural Nebraska and particularly in remote, arid regions of the state.

A U.S. Department of Agriculture Economics Research Service report recently concluded that three factors largely account for the rapid loss of population from rural counties:

- *Low population density:* Counties with already low population density, particularly counties with fewer than two people per square mile, were more likely to lose people than counties with higher densities.
- *Remoteness from metro areas:* Counties not adjacent to major population centers show a much greater tendency to lose population.
- *Lack of natural amenities:* Counties that lack natural amenities for outdoor recreation were much more likely to have lost population than counties with good natural amenities.[1]

Of the three above factors, only the availability of natural amenities can be altered directly in Nebraska.

Natural amenities have traditionally been thought of as lakes, mountains, and climate, but any natural landscape can form the basis for retaining and attracting people. The problem in Nebraska is that many rural communities are enclaves, surrounded by a landscape that is inaccessible to the public, and used in ways most Americans do not find appealing. An accessible prairie landscape with abundant wildlife is a natural amenity that can compete with lakes, mountains, and climate.

1. David A. McGranahan and Calvin L. Beale, "Understanding Rural Population Loss," Rural America, Vol. 17, No. 4, Winter 2002.

Agriculturally Based Great Plains Counties Are Among the Nation's Poorest 50 Counties

County	Rank*	Per Capita Income ($)	% of National Avg.
McPherson	1	3,961	15.7
Keya Paha	2	5,666	22.4
Loup	3	6,163	24.4
Arthur	15	9,958	39.4
Grant	16	9,977	39.5
Blaine	21	10,915	43.2
Banner	24	11,075	43.8
Sioux	31	11,499	45.5

** of 3,110 counties in the United States, with 1 being the lowest per capita income in the nation.*

According to a report by the Center for Rural Affairs in 2000, three of the poorest counties in the nation were in rural Nebraska, and poverty rates in rural farm counties of Nebraska were 50 percent higher than in metropolitan counties. The report noted that the most troubling aspect of this rural economic disparity was its persistence. The report noted that in previous studies examining data from 1969 to 1986, rural areas of the northern Great Plains region had significantly lower incomes and significantly higher rates of poverty than did non-rural areas of the region. The report concluded that economic distress faced by these rural areas is chronic and longstanding, and that the troubles in America's Heartland are symptoms of much larger problems. The report identified one of these symptoms as "neglect by state and federal policymakers of the type of economic development that is needed in the rural areas of the region." *From Trampled Dreams, The Neglected Economy of the Rural Great Plains*, by Dr. Patricia E. Funk and Jon M. Bailey, Center for Rural Affairs, 2000.

Government Payments as a Percent of Net Farm Income in Nebraska

YEAR	1998	1999	2000	2001	2002	5-yr. average
Government Payments Received	$13,992	$51,153	$57,561	$52,694	$21,793	$43,239
Net Farm Income	$4,446	$46,996	$48,279	$36,025	$25,250	$32,199
% of Net Farm	742.1%	108.8%	119.2%	146.3%	86.3%	134.3%

From the 2002 Annual Report for the State of Nebraska, Nebraskaland Farm & Ranch Management Education program.

The Northern Great Plains once contained the greatest wildlife spectacle outside the continent of Africa and attracted travelers and adventurers from all over the world. The grasslands of Nebraska can capture the imagination of the nation once again, but it will require that we embrace the idea of land use and ownership change, something we have been reluctant to do. Our prairie grasslands must become more than simply range for cattle.

The Northern Great Plains once contained the greatest wildlife spectacle outside the continent of Africa and attracted travelers from all over the world . . . Nebraska can capture the imagination of the nation once again, but it will require that we embrace the idea of land use and ownership change.

The idea is not to replace farming and ranching as the primary economic activity in these areas, but rather to supplement it by creating a more diverse land use and ownership pattern that can bring about new, entrepreneurial opportunities for rural people. In fact, even in heavily agricultural dependant areas of the state, direct farm and ranch income makes up less than half of total income in a given county. The point is that even agricultural dependent counties are growing less and less dependent on income from farming and ranching. Regrettably, if federal subsidies are removed from the calculation of Nebraska net farm income, in many years there is little net farm income to count. With growing federal budget deficits and an agricultural economy fully integrated into a free trade system, federal commodity subsidies will undoubtedly shrink.

Protected areas generate economic activity for nearby communities in at least five possible ways:

- They attract and retain as residents people who bring business and money into the community; this includes businesses whose owners and employees want to be located near natural areas for recreation, as well as retirees and professional services (doctors, architects, etc.).
- They attract tourists and those interested in recreation with dollars they spend.
- Management of conservation areas results in local employment and expenditures for local goods and services.
- They attract federal and state spending relating to wildlife conservation, recreation and research.
- The purchase of land to create conservation areas can bring in public and private capital.

The relative importance of these factors will vary among communities and protected areas, but they are reasons to rethink land use patterns in many parts of rural Nebraska. We need to market Nebraska to the nation and the world as a place that contains some of the finest examples of prairie grasslands on the planet and as a place that intends to allow a wildlife spectacle to once again flourish.

The idea is not to replace farming and ranching as the primary economic activity in these areas, but rather to supplement it by creating a more diverse land use and ownership pattern that can bring about new, entrepreneurial opportunities for rural people

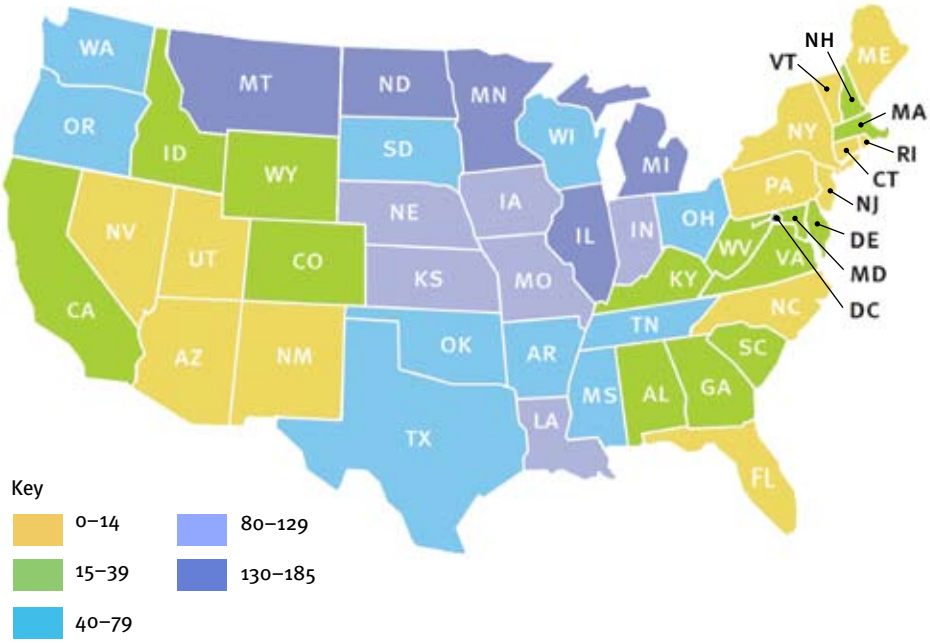
But the reasons for rethinking the landscape go beyond economic considerations. They go to our sense of place—and pride in place—as well.

Many writers have argued that there is a close link between natural landscapes and human imagination. There was a time when writers and philosophers such as Willa Cather and Roscoe Pound were inspired to great thoughts by Nebraska's natural landscape. Probably no writer in American history has captured the magic of the prairie in words better than Cather. Pound, one of the most important legal philosophers of the last century, was greatly influenced in his legal thinking by the lessons he learned exploring prairies on the outskirts of Lincoln as a young man at the end of the 19th century.

We need to create large grassland protected areas not just for economic reasons, but to help revitalize the pioneer spirit we seem to have lost in Nebraska.

Yet in the intervening century, the fencing and priva-

US GOVERNMENT AGRICULTURE SUPPORT PROGRAM PAYMENTS AS A PERCENTAGE OF STATE NET FARM INCOME, 2001



Source: Daryll S. Ray, et. al., "Rethinking U.S. Agricultural Policy: Changing Course to Serve Farmer Livelihoods Worldwide," 2003.

In 2001, eight states received government payments that were *more than 100 percent* of their net farm income (NFI).

Government payments were more than 40 percent of NFI of 21 of 48 states.

The states that experienced the largest percentage of their income from government programs are also the nation's biggest crop-producing states. This further illustrates the level of dependence of US crop farmers on government subsidies for income.

tization of so much of that landscape, along with the industrialization of agriculture, have fenced in our imagination as a people. We need to create large grassland protected areas, alive with wildlife, not just for economic reasons, but to help revitalize the pioneer spirit we seem to have lost in Nebraska.

Properly conceived, this objective could bring together rural and urban interests around a shared vision for the state that has been lacking and could become the catalyst for addressing many rural issues that have been ignored for too many years. Increasingly urban Nebraskans want more in the way of outdoor and wildlife recreation opportunities, and many rural communities are trapped economically by current land use practices. A protected areas strategy could form the basis around which a new relationship could develop between rural and urban Nebraska and a new way of marketing the state to the nation and world.

Case Studies In Land Use Change

Nebraskans Are Thinking Differently About the Land

Nebraska has taken for granted its natural environment, says Tom Tabor, ecotourism consultant for the Nebraska Travel and Tourism Division, who notes the state's diverse topography—which includes two major river valleys and many scenic and navigatable smaller rivers and streams—and such unique features as the Pine Ridge and the vast Sand Hills region.

"There are many opportunities for nature-based tourism and other activities," he says. "Just a few years ago no one realized the potential for crane viewing, and now that accounts for millions of dollars in new revenue for the state."

Tabor believes it is economically important for Nebraskans to preserve and build on their natural resource legacy, and he sees unlimited potential for protected grassland areas.

'There have been great declines in many native species such as bison, and in species that depend on prairie dogs such as the burrowing owl or the black-footed ferret . . . to people visiting from outside of the state, these are exotic species living in an exotic place. Nebraska's wildlife is a tremendous draw, but we could do so much more.'

"There have been great declines in many native species such as bison, and in species that depend on prairie dogs such as the burrowing owl or the black-footed ferret," Tabor says. "To people visiting from outside of the state, these are exotic species living in an exotic place. Nebraska's wildlife is a tremendous draw, but we could do so much more."

Although examples of communities benefiting from nature-based activities are far too few, Tabor cites towns such as Valentine as a good example of the economic potential of natural areas: "They have the Cowboy Trail, canoeing activities, Merritt reservoir. Out in the Sand Hills there are great opportunities simply to star gaze—but we take all of this for granted. We need to remember that we live in an urbanized world where there are fewer opportunities to do these things."

Valentine and other communities along the Niobrara River are just beginning to understand the potential of river recreation, he said. "Nebraska has so many rivers that are navigable—parts of the Missouri, the Middle Loop, the Republican and Calamus—ecotourism is helping to support the economies and culture of communities along rivers and streams as well as those located near land-based features."

Ecotourism and agritourism are also helping to support Nebraska's farm and ranch families and ultimately local communities such as Bayard and Fullerton.

FLYING BEE RANCH

In 1998 Conrad and Louise Kinnaman opened up their Flying Bee Ranch for tourists interested in trail riding, birdwatching, camping or just simply to get away from it all and enjoy the quiet views of the Wildcat Hills and Chimney Rock near Bayard.

The Kinnamans' working ranch offers bed and breakfast and cabin accommodations as well as hookups for RVs and boarding facilities for horses.

"We are kind of a horse motel for travelers," says Louise Kinnaman. The Flying Bee also hosts hikers, birdwatchers and "people who are just looking for peace and quiet."

'There are so many attractions in the state that nobody knows about . . . we would like the state to promote what we have to offer and partner with us and with other private tourism enterprises.'

Many challenges and obstacles remain, however, for private enterprises like Flying Bee. Kinnaman says one of the biggest roadblocks to the success of eco- and agritourism in Nebraska is the lack of promotion and marketing from the state.

"There are so many attractions in the state that nobody knows about," she says. "We promote the state parks to the tourists who visit our ranch, so we would like the state to promote what we have to offer and partner with us and with other private tourism enterprises."

Kinnaman says the State of Nebraska could also help private ecotourism and agritourism enterprises through tax incentives and through legislation that would help private enterprises deal with some of the risks—such as liability insurance—that are associated with tourism on farms and ranches.

"The liability insurance on horse riding alone could put you out of business," she says. "So you risk losing your place by trying to save it."

BROKEN ARROW WILDERNESS

Doug Russell, a sixth-generation farmer from rural Fullerton, maintains that another major obstacle to success of ecotourism and agritourism is found in the attitude of some farmers and ranchers who are averse to land use change.

"Commodity farming won't be enough anymore to save the family farm or our small communities," Russell says. "Families can continue to farm, but they need to manage the land in a different way—the land that produces corn and beans can also produce tourism dollars. We need to do a better job of educating rural people about this great new commodity."

Doug and his wife, Darla, are owner-operators of Broken Arrow Wilderness and Nebraska Outfitter. Commodity farming—corn, soybeans—have sustained the Russell family farm for nearly 130 years, but the Russells know those commodities alone will not sustain their way of life much longer. So they are marketing their way of life to tourists, hunters or anyone who wants to experience both the natural world and a way of life that is all but gone in much of the world.

The Russells have adapted their farm to accommodate many uses. Broken Arrow offers a number of camping options ranging from furnished cabins to teepees, and it is also a popular destination for conferences, retreats, weddings and other events. Through Nebraska Outfitters the Russells also offer guided hunting on their working farm.

'Farmers need to learn to manage their land differently if they want to save our family farms and our small communities.'

"Hunting is probably the biggest income potential for most farmers, but what you learn is that most hunters who come from the cities or from out of state aren't here just for the kill—there's a better chance they won't kill anything—what most come for is the experience, being outdoors on a real working farm," he says. "After a hunt we'll take them to the New Frontier Saloon in Belgrade—it's a great atmosphere where everybody knows everybody else—the hunters from out of state just love it. It reminds them of a rural past that's now gone in so many places."

Russell says agritourism provides a way for farmers to pass along the land to their next generation. The Russells' oldest son now operates the traditional grain farming operation, while their youngest son coordinates the hunting and fishing side of the business. Their daughter and son-in-law help manage events and business accounts. "Farmers need to learn to manage their land differently if they want to save our family farms and our small communities," he says.

PRAIRIE/PLAINS RESOURCE INSTITUTE

In a similar light, Bill Whitney, executive director of Prairie/Plains Resource Institute in Aurora, says the full potential of rural Nebraska will not be realized if we are restricted to seeing our landscape solely as a commodity.

The Prairie/Plains Resource Institute is an educational, non-profit land trust involved in prairie restoration. Although grassland restoration encourages us to look at the land as something more than a commodity, it nevertheless is an approach that can bring economic opportunities to many rural landowners and rural communities.

'Emerging parts of the land are going back to recreation uses . . . as part of a preserve or as a public/private partnership. They will attract recreation dollars...it's all about making the most of what you have already by adding value to your land.'

"There is a lot that can be done in prairie restoration," Whitney says. "There is an emerging or potential industry in seeds that are produced specifically for prairie restoration. There are people all over trying to plant to prairie—we hope to spawn many seed-related restoration businesses."

Whitney offers the example of one Aurora farmer who is fabricating and selling specialized harvesters that collect seed from native grasses: "Just in terms of niche marketing there is a big potential for native plant nurseries and related support businesses."

He says that increasing the quality of existing grasslands would also add economic production values as well as wildlife value to many areas of the state.

"Emerging parts of the land are going back to recreation uses," Whitney says, and notes that many landowners have odd tracts of land along rivers and streams that are difficult to farm and could be more productive as natural areas—especially if they are joined with other tracts of land in a continuous corridor large enough to function as an ecosystem.

"They can have a higher use as part of a preserve or as a public/private partnership, he says. "They will attract recreation dollars . . . it's all about making the most of what you have already by adding value to your land."

Whitney says the prime motivation for land use change has to be community-based; it has to come from people who live in the vicinity of natural areas: "Improving the land can be done without extreme measures—it's mostly about knowledge and information and thinking about things a little differently."

The first sign of a sustainable community, he says, "is the desire to make your place a better place. Those better places have a certain vitality that attracts more people and investment. It all rests on the progressive people who have a strong sense of place—it's a matter believing and liking where you live."

PLATTE RIVER BASIN ENVIRONMENT

Hod Kosman likes where he lives. As one of the leaders of the Platte River Basin Environment (PRBE), this third-generation member of a Scottsbluff-area banking family is building on the legacy of the late Clive Ostenberg, who provided the initial funding from his estate for the PRBE. He also left a challenge for his friends, including Kosman, to acquire and protect land in his beloved Wildcat Hills for public use.

Since then major grants and gifts from environmental, hunting and conservation groups have allowed PRBE—working with the U.S. Fish and Wildlife Service, the Nebraska Game and Parks Commission and other conservation groups—to acquire nine Panhandle-area properties for the public domain. These properties include the Cedar Canyon Wildlife Management Area, the Kiowa WMA, the Facus Spring WMA and the Chadron Creek WMA. Recently, PRBE closed on more than 4,000 acres of the Bead Mountain Ranch in the Wildcat Hills. Seven of the nine properties are mostly contiguous in the Wildcat Hills near Scottsbluff.

The Bead Mountain properties are significant because they include more than 40 miles of the Wildcat Hill's spring-fed canyons and draws. Bead Mountain also borders the D.H. Murphy property, recently deeded to the Nature Conservancy. The Murphy property is between the Buffalo Creek WMA and the Wildcat Hills SRA.

"There are 12,000 acres of wooded escarpment," says Kosman. "We are in a planning process with the (Nature) Conservancy and Game and Parks to get an overall use plan, and we have reintroduced bighorn sheep. We have some paleontology sites and Indian sites and unique natural structures, so we want to create a comprehensive plan to encourage use of the site correctly. We also have number of wetland projects along the river—sloughs and riparian areas in quite large blocks—these are always extremely valuable when managing birds and waterfowl."

Kosman says the PRBE takes a balanced approach to land use. "We believe that agriculture and conservation uses are compatible and complementary to one another," Kosman says. "If we can find cooperating neighbors in a region and have enough of this type of property managed in a more cohesive way with regional neighbors—hunting, bird watching, fishing—there certainly can be some economic benefit from it."

'Agriculture and conservation uses are compatible and complementary to one another . . . there are a significant number of incentives out there to help landowners . . . these properties are always worth more with wildlife management enhancement.'

He says these opportunities are growing. "The farm bill is quite generous in dollar allotments to a number of programs—conservation reserve, wildlife enhancement programs—some of them pay a one-time or annual payment on a property used for wildlife purposes, and some have a substantial cost share factor approaching maximum wildlife resource areas—there are a significant number of incentives out there to help landowners."

But Kosman says that "we all need to do our part" on important ecological issues such as carbon sequestration and clean water. "We can make it a financial win-win; if we have to address problems in the future it will more than likely end up on our tax plate. This is smart money, because declining agricultural values will cost us more down the road in taxes."

He adds he doesn't think he has ever come across an enhanced wildlife property with easements in place that depreciated in value as a result. "These properties are always worth more with wildlife management enhancement and not less. If the landowner gets an easement payment it's a bonus."

Kosman says natural areas bring many benefits to local communities. "In Scottsbluff, the waterfowl migration comes through here, and we've done significant projects that have created refuges and water enhancements for waterfowl. That brings a lot of people to our stores, restaurants, and motels. There are significant dollars flowing into and through the community."

"We see more opportunities as these wildlife attractions become apparent to us," he says. "In just 10 years you see the big increase in the numbers of crane watchers. Since we already have thousands of people coming here for the cranes, so it's not much of stretch to tag on to that and say, "I bet you've never looked at a native pasture, either."

Kosman says there are also important social and cultural implications for a renewed focus on the land: "We are entering into generations that have no tie to the land. A person in this most recent generation probably has an uncle or grandfather who farmed, but now no significant part of the population has a tie to land—if the next generations can come out and see the interaction of an ecosystem, that's a plus for our economy and for our cultural values."

'We see more opportunities as these wildlife attractions become apparent to us . . . we already have thousands of people coming here for the cranes, so it's not much of stretch to tag on to that and say, 'I bet you've never looked at a native pasture, either' . . . if the next generations can come out and see the interaction of an ecosystem, that's a plus for our economy and for our cultural values.'

He says natural areas conservation is an important step for Nebraska to take toward the future. "The state is uniquely situated—we haven't had a soaring population that has outstripped our ability to protect some these areas. We don't need to own it all; we just need to work with landowners with the same vision."

CRANE-WATCHING IS BIG BUSINESS

"Even those with a casual interest in wildlife know that a half-million cranes migrate through central Nebraska each spring," writes Joe Duggan in an article in the Lincoln Journal Star (March 31, 2005). "A four-year-old survey estimates that 60,000 people visit central Nebraska annually to see the cranes,

which is worth between $22 million and $48 million to the region's economy."

That 2001 survey by the U.S. Fish and Wildlife Service found that 46 million Americans consider themselves birders. And about 18 million of those reported that they travel annually to pursue their passion.

Duggan describes a visit by five women from Arizona to the Massie Lagoon, a federally owned marsh near Clay Center: "They had driven 1,300 miles and left 70-degree weather for a chance to see cranes and other birds in Nebraska." He quotes one of the women, Greer Warren from Tucson: "This is fabulous . . . Among bird watchers, this is one of the places that's known."

Duggan also quotes Ryan Heiniger, conservation program manager for Ducks Unlimited in Nebraska, who notes that convenience stores, restaurants and merchants—especially those in Rainwater Basin communities—could use some of the estimated $32 billion that birders spend annually: "I think there's tremendous untapped potential for Rainwater Basin communities to benefit from something that's in their back yard."

CONSERVATION SUGGESTS NEW LAND USES

Bob Bettger works in many back yards on behalf of Nebraska Congressman Tom Osborne. The Fairmont-based Bettger focuses on agriculture and environmental issues with an emphasis on habitat conservation. He said the drought is a big factor in determining how people manage land.

Unlike the old Conservation Reserve Program, which focused on erosion, Bettger says the new Conservation Reserve Enhancement Program (CREP) also emphasizes water quality and quantity.

"It takes land out of production to conserve water, and requires the planting of grasses along streams, says Bettger. "It's a good opportunity to promote other uses. It demonstrates to farmers and rural communities that there are other ways to make an income from hunting, bird watching, or farm tours."

Bettger says that before the drought conservation uses had a tough time competing: "If you couldn't crop or pasture then the land was seen as waste. But conservation uses are becoming more attractive especially in areas like the Rainwater Basin."

"These towns need community-based projects," says Bettger, who works with community economic development groups in developing natural areas activities and encouraging communities to work with local landowners to develop nature-based economic opportunities.

COMMUNITY BENEFITS FROM HUNTING CLUB

Bettger says a good example is the Huntley Hunting Club. For more than 30 years, the Lions Club in that south-central Nebraska town of 67 has provided hunting access to thousands of acres of private land in Harlan County.

The Huntley Lions Club started the hunting club as a fundraiser. Each fall Lions Club members contact landowners and ask them to enroll their land in the hunt. About 200 hunters pay $30 to hunt on private land registered by the Lions Club, which also distributes a map to hunters of the area farmlands enrolled in the hunting club for that season.

The hunt club attracts hunters from all over the U.S., who not only help fund the Huntley Lions Club but also spend their dollars in the local economy.

The Pacific Northwest: Where The Sky Did Not Fall

Whenever a change is proposed in our way of thinking or behaving, or in the way we manage our physical surroundings, there is bound to be controversy. But fears and uncertainties that result from change are sometimes based more on our comfort in habits than on the facts.

Such is the case in 1991 involving a ban on new timber sales on 24 million acres in 17 national forests in the Pacific Northwest. The ban pitted environmentalists against loggers, who viewed the decision as the beginning of the end for their way of life and a

blow to the region's economy. However, according to economist Ernie Niemi, who along with Ed Whitelaw and Andrew Johnston wrote the 1999 report, "The Sky Did Not Fall: The Pacific Northwest's Response to Logging Reductions," the logging industry had been in decline well before the ban. In fact, the growing emphasis on environmental quality in the region led to an economic boom in nature-based activities.

Fears and uncertainties that result from change are sometimes based more on our comfort in habits than on the facts.

The report noted predictions at the time of the ban that "as many as 150,000 workers would lose their timber-related jobs, hundreds of communities would become economic wastelands, and the region as a whole would fall into a depression that would take years, if not decades, to reverse."

These dire predictions, however, did not materialize, concluded the writers of the report: "Instead of collapsing, the region's economy expanded. Both Oregon and Washington consistently outperformed the national economy throughout the 1990s. Between 1988 and 1996, timber harvests fell 86 percent on federal lands and 47 percent overall. Employment in the lumber and wood-products industry, which makes up the bulk of the timber industry in the region, fell 22 percent. Yet total employment rose 27 percent."

The report posed the question: "Why was the total impact of the logging ban so much less than predicted?" Its authors noted that logging's influence on the economy had already decreased—timber harvest-employment declined by more than 27,000 between 1979 and 1989—and although logging had been crucial to the historic development of the region's economy, lumber and wood product-related jobs represented only 1.9 percent of total employment in 1996.

In the end, the authors of the report concluded, "the timber industry found that it did not have to log massive amounts of acreage to prosper." The vitality of the region's economy depended more on forests that are left intact.

Although every case is different, land use change does not have to be a divisive process that involves winners and losers. Rather, managing the land in new ways can bring benefits to all stakeholders who live in Nebraska's rural communities. If there is one thing we can all agree on, it is that these communities are sorely in need of new economic opportunities.

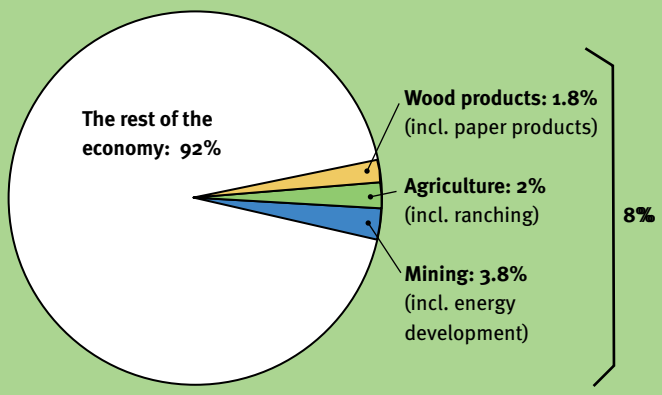
Nebraska and U.S. Trends Support Protected Area Creation

THE RURAL WEST HAS CHANGED DRAMATICALLY

Most of the concern about the economic effects of conservation on public lands comes from rural areas. While it is commonly believed that these areas depend on resource industries—mining, oil and gas development, logging and wood products—these industries actually represent less than 8 percent of total personal income in 2000. Farming and ranching represent only 2 percent of the total.

These industries (down 20 percent since 1970) are and remain an important part of the West's diverse economy, but they are exceptions. Local communities that understand the enormous economic changes that have taken place will be best positioned to grow and thrive in the coming years.

Source: Sonoran Institute, Prosperity in the 21st Century West



Economic and demographic trends across the nation show that communities with protected areas are increasingly in demand by tourists seeking wildlife recreation and by permanent residents seeking open space and accessible wildlife and other outdoor recreation. With a global and knowledge-based economy, and with high-speed communications, many people now have the disposable income and free time for greater recreation and to live permanently where they choose. Jobs now chase highly skilled people, rather than people chasing jobs.

These trends are important because wildlife recreation constitutes a multi-billion dollar industry in the United States. In 2001, 82 million Americans participated in wildlife-related recreation, and the largest number, 66 million, took part in wildlife watching. During the same year, those engaged in wildlife recreation spent $108 billion, and while wildlife watching is the most popular activity, hunters and anglers spent the most amount of money, roughly $70 billion, with the balance spent by wildlife watchers.[1]

The total amount of money spent on wildlife recreation in the U.S. is more than the total amount of cash receipts received by the U.S. livestock industry.

According to a recent report by the Federal Reserve Bank of Kansas City, the total amount of money spent on wildlife recreation in the U.S. is more than the total amount of cash receipts received by the U.S. livestock industry.[2]

Americans are also on the move seeking new places to live, not just places to visit. Millions of Americans are migrating from cities to communities that have a

1. National Survey of Fishing, Hunting & Wildlife-Associated Recreation, U.S. Fish & Wildlife Service, 2001.

2. Jason Henderson, "Wildlife Recreation: Rural America's Newest Billion-Dollar Industry," The Main Street Economist, April 2004.

NEBRASKA VISITATION STATISTICS

U.S. Fish & Wildlife Service

- Four National Wildlife Refuges.
- Employment for 64 persons.
- Nearly $4 million budget for service activities in Nebraska.
- Annual visitation of nearly 300,000 to refuges and management districts.

Nebraska Game & Parks Commission

- Nebraska State Parks had nearly 10 million visitors in 2003.
- The Commission spent more than $11 million on capital construction, mostly outside of Lincoln and Omaha.
- The Commission has nearly 500 permanent employees, over half of which live outside of Lincoln and Omaha.

Source: U.S. Fish & Wildlife Service and Nebraska Game and Parks Commission. Figures for Nebraska National Park visits were not available due to lack of response from the regional office of the National Park Service.

NATIONAL VISITATION STATISTICS

U.S. Fish & Wildlife Service

- More than 35 million visits in 2002.
- More than $800 million in regional sales.
- Nearly 19,000 people employed as a result of this spending, generating $315 million in employment income.

U.S. National Parks

- Park visits resulted in more than $10 billion in spending.
- This spending supports more than 200,000 jobs.

Source: Andrew Laughland and James Caudill, "Banking on Nature 2002: The Economic Benefits to Local Communities of Natural Wildlife Refuge Visitation," 2002.

healthy environment and access to natural attractions, like parks, wildlife refuges and wildlands. These so-called gateway communities have become magnets for Americans looking to either escape urban or suburban life or to spend their retirement years in places with outdoor recreation and natural amenities. Estes Park, Colorado, for example is a gateway to Rocky Mountain National Park, as Bozeman, Montana, is a gateway to Yellowstone National Park and Ely, Minnesota, to the Boundary Waters Wilderness Area.

Not all gateway communities need be near large national parks or wilderness areas. Often smaller wildlife refuges and other types of protected areas provide significant economic benefits to a local community.

Americans are seeking new places to live that have a healthy environment and access to natural attractions.

One good example is Tyrell County, North Carolina, which lies in the middle of a half-million acre network of national wildlife refuges in one of the state's poorest counties. In 1990, the Richard King Mellon Foundation gave over 100,000 acres of wetlands to the U.S. Fish & Wildlife Service for a new refuge. The Foundation hoped to jumpstart an effort to use this network of public land as the centerpiece for ecotourism. Congress authorized the construction of a state-of-the-art visitor center to offset the impact of taking private land off the tax rolls. The center included research facilities, and the local community used this as an opportunity to enter into a public-private partnership with a community development corporation and the University of North Carolina for a comprehensive development plan that takes advantage of the surrounding natural environment. Nearby communities have become involved by building other interpretive centers, each focusing on different aspects of the unique natural and cultural environment.

Given that communities with protected areas and wildlands nearby are in the best position to benefit from wildlife recreation, it should come as no surprise that many communities in the Rocky Mountain West, with its abundant public lands, have benefited greatly from nature-based tourism and in-migra-

tion of residents. In fact, counties in the western U.S. with protected public lands or that are close to protected public lands are growing at the fastest rates. The economy of the western U.S., even in rural areas, is no longer dependent on extractive industries like logging, mining, and agriculture—roughly 2 percent of the personal income in the west now comes from agriculture—the biggest source of income growth is in non-labor income (investments and transfer payments) and service-related industries.[3]

The picture in rural, western Nebraska, however, is much different from the high growth areas of the west. Many counties in western Nebraska are still heavily dependent on agriculture, and are on the decline economically. People there move out, not in.

Certainly one factor that accounts for the demographic and economic differences is the fact Nebraska has little public land of any type and even less in protected areas. This fact limits the opportunities for wildlife recreation, and thereby limits the attractiveness of these areas to Americans seeking to visit or to relocate.

Nature has always been a strong foundation for rural America. Now, wildlife recreation appears to be the newest opportunity.

Obviously, the reason why people re-locate to or visit an area is more complicated than a simple desire to have access to wildlife recreation and protected areas, but natural amenities are certainly an important factor. According to a report by the Federal Reserve Bank of Kansas City, "Nature has always been a strong foundation for rural America. Now, wildlife recreation appears to be the newest opportunity."[4] Regrettably, to date Nebraskans have done little to respond to this opportunity.

Nebraskans have been reluctant to tackle the issue of land use and ownership change even though many know change is necessary. Part of the reason for this reluctance is that historically people in Nebraska oppose government land ownership and to date no one has brought forward creative proposals that would minimize the amount of government land ownership needed to restore the region's rich natural heritage.

Many of the fears and concerns that plagued land use and ownership change in the past can be answered with new protected area models that rely on local involvement and control. To capture the full potential of natural areas, communities and landowners will need to work cooperatively across property boundaries to create large 'habitat complexes.'

But many of the fears and concerns that plagued land use and ownership change in the past can be answered with new protected area models that rely on local involvement and control.

Economics of land use are being driven by global forces—forces that require creative and innovative responses at the local level. Making room for wildlife recreation and nature-based activities is a response many small communities will want to make once they understand that they, and not outside interests, will drive the process. Further, we are not suggesting the livestock economy be replaced, just that it be supplemented by incremental and targeted land use and ownership change.

CREATING A NETWORK OF GRASSLAND-PROTECTED AREAS WILL BENEFIT THE RURAL ECONOMY BY:

- providing new imagery with which to market the state to the nation and the world;
- assisting community and regional economic development efforts;
- providing economic diversification and improved stability;
- re-distributing some of the economic benefits of government investment in conservation and tourism to rural Nebraska.

3. Sonoran Institute, "Prosperity in the 21st Century West, the Role of Protected Public Lands," 2004.

4. Jason Henderson, "Wildlife Recreation: Rural America's Newest Billion Dollar Industry," *The Main Street Economist*, April, 2004.

WILDLIFE-ASSOCIATED RECREATION ALONG THE MIDDLE PLATTE

In the initial assessment of the economic value of wildlife watching along just the middle section of the Platte River in Nebraska (Eubanks et al., 1998), the survey results indicated that, depending on the economic multiplier used, the annual gross economic value of wildlife watching along the Middle Platte River ranged between $27.9 million and $57.5 million. Now, combined with the contributions of hunting and fishing, the cumulative annual gross economic value in 1996/1997 of wildlife-associated recreation in the region is projected to have ranged between $70.6 million and $115.8 million. Even at its most conservative estimate (with cautious estimates of participants, economic stimulation, and equipment-related investments), wildlife-associated recreation along the Middle Platte must be recognized as an industry of significant economic importance and potential.

Recreation	1.9x Multiplier	2.7x Multiplier
Hunting	$14.3 million	$19.5 million
Fishing	$28.4 million	$38.8 million
Wildlife Watching	$27.9 million	$57.5 million
Total Economic Value	**$70.6 million**	**$115.8 million**

Source: Ted Lee Eubanks, Wildlife Associated Recreation Along Nebraska's Platte River, Fermata, Inc, 1999.

ECONOMIC VALUE OF WILDLIFE RECREATION IN NEBRASKA IN 2001

Recreation	Retail Sales	1.9x Multiplier
Hunting	$198 million	$376 million
Fishing	$146 million	$277 million
Wildlife Watching	$130 million	$247 million
Total Economic Value	**$474 million**	**$901 million**

Source: U.S. Fish & Wildlife Service, 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation, incorporating Eubanks multiplier.

As noted in the previous section, many private landowners in Nebraska have already changed how they manage land by offering hunting and ecotourism experiences. We expect to see more of these operations on private land in the future.

But while these types of activities on private land can help supplement the income of private landowners, working independently they cannot hope to capture the full potential of a wildlife recreation-based economy for themselves or for their communities. To capture the full potential, they will need to work cooperatively across property boundaries, to create large "habitat complexes."

Why? Part of the answer is simply scale. Conservation biology teaches that large contiguous or mostly contiguous areas of land are necessary to provide for the long-term survival of many species, particularly big game species that are especially valuable for hunting and ecotourism. Private land owners operating alone generally do not control enough land to manage effectively many wildlife species or to create the type of wildlife experience much of the big game and ecotourism market demands. Without large areas, the wildlife experience is indistinguishable from a fenced safari park. Only when private landowners work cooperatively with other private landowners and with managers of protected areas can wildlife management arrangements be created that will fully capture the region's wildlife recreation potential.

Second, there are inherent management conflicts on private land between wildlife and livestock. There needs to be areas in the state where the land management priority is wildlife, not livestock.

Towns, cities, counties, NRDs and local nonprofits can acquire and manage protected areas and develop voluntary "ecosystem management plans" with surrounding private landowners.

This does not mean that the federal government must become involved in the acquisition or management of protected areas or must dictate management regimes involving private landowners. Towns, cities,

NEBRASKA TRAVEL & TOURISM FACTS

- Tourism is Nebraska's third largest earner of revenue from outside the state.
- Wildlife-related recreation generated about $475 million in 2001.
- Travelers spent more than $2.8 billion in Nebraska during 2003 on trips away from home with overnight stays in paid accommodations and on trips to places of 100 miles or more (this annual spending amount has increased by $1.2 billion since 1990).
- More than 43,000 jobs are attributable to travel spending in Nebraska.
- Each dollar spent by tourists in Nebraska is respent in the state to produce an additional $1.70 in business and income.

Source: Nebraska Department of Economic Development

counties, NRDs and local non-profits can acquire and manage protected areas and develop voluntary "ecosystem management plans" with surrounding private landowners. It will be easier to develop successful arrangements in partnership with state and/or federal agencies because of their expertise and funding, but there is nothing that requires it.

This does not mean that wildlife recreation can only succeed on protected areas. Some of the best hunting and ecotourism concessions in southern and eastern Africa are on private concessions, usually former cattle ranches, but most are managed in cooperation with large protected areas. The key to developing the full potential of wildlife recreation is to develop a network of habitat complexes that are large enough to manage a complete spectrum of prairie wildlife.

Tourism is already big business in Nebraska, generating close to $3 billion in annual revenue for the state.

That said, tourism is already big business in Nebraska, generating close to $3 billion in annual revenue for the state. It is not clear what amount of that revenue is for wildlife tourism, but we know there is significant interest in that aspect of tourism.[5]

In 2001, wildlife recreation in Nebraska in total generated nearly $475 million in expenditures. Of that amount, roughly $130 million was for wildlife viewing, the balance for hunting and fishing.[6]

There is a tremendous amount of economic upside to wildlife recreation if Nebraskans can devise strategies to increase the amount of land in protected areas and private land used for wildlife recreation, given that in Colorado—a state with significantly more public land and protected areas than Nebraska—more than $600 million is spent for wildlife viewing alone. If the total economic impact of these expenditures is included, the amount spent in Colorado for wildlife viewing is more than $1.3 billion and supports nearly 13,000 full- and part-time jobs.[7]

The wildlife potential of the Great Plains is actually greater than that of the Rocky Mountains.

The wildlife potential of the Great Plains is actually greater than that of the Rocky Mountains. Most of the large mammals people flock to hunt and see in the mountains lived on the plains at one time, but were forced out because previous generations of Nebraskans failed to make room for them. Some of those species, such as elk and big horn sheep, already have made a comeback, but would benefit from more habitat. Other species, particularly certain bird species and species dependent on the prairie dog ecosystem, exist here and not in the mountains, giving the plains a competitive advantage when it comes to wildlife recreation.

Though the examples are few, some Nebraska communities are using surrounding public lands and protected areas as development assets. Perhaps the best example of a gateway-type community in Ne-

5. *Nebraska Travel and Tourism Facts*, Department of Economic Development.

6. *National Survey of Fishing, Hunting & Wildlife-Associated Recreation, Nebraska*, U.S. Fish and Wildlife Service, 2001.

7. Todd Malmsbury, "Wildlife Viewing Generates Millions to Colorado's Economy," Colorado Division of Wildlife, 2003.

braska is Valentine. The community is located near the Niobrara National Scenic River, Merritt Reservoir, Samuel R. McKelvie National Forest and the Ft. Niobrara-Valentine National Wildlife Refuge Complex. While many communities in the area have declined, Valentine has prospered, attracting both seasonal tourism and permanent residents who enjoy the quality of life.

But given the limited amount of land in Nebraska devoted to wildlife conservation and with limited public access land, unless the state incorporates the creation of protected areas into a rural development strategy, most western Nebraska communities will remain dependent on agriculture and will continue to suffer as a result.

The lack of a comprehensive economic analysis of data for Nebraska is a continuing issue that needs to be addressed immediately as a first step to tackling economic development challenges of rural Nebraska.

Jessica Milne watching Attwater's prairie-chickens boom near Houston, Texas. © Joel Sartore

Western Prairie fringed orchid in a Nebraska Sandhills meadow. © Joel Sartore.

Buying Arthur County

Proposals to create protected areas on the plains in the past have been controversial. Most were stopped by local opposition before getting off the ground because they were pushed by outsiders and involved the purchase of land by the federal government, typically the National Park Service. On the Great Plains, it is a toss up as to which will rile people more, talking about conserving prairie dogs or the federal government and outsiders buying land. Proposals for protected areas that did get off the ground, like the Tall Grass Prairie Preserve in the Kansas Flint Hills, are too small to be of much ecological benefit, and their rural economic development potential are similarly limited.

New protected area models rely on local government and people to drive them, and these models can accommodate traditional land uses like grazing as part of a broader land use vision, a vision that is compatible with local values and aspirations.

The Popper's famous "Buffalo Commons" proposal did not help matters. Though the Poppers were right about the economic and demographic changes sweeping the region, their metaphor regrettably suggested a huge federal land grab; that the solution was about buffalo, not people. Plains people were rightfully angered by the implication of the metaphor for their history, culture and future.

Rural communities have jointly developed water recreation projects with Natural Resource Districts for the economic opportunities they offer. Similarly, a joint venture of local institutions could develop a grassland preserve in western Nebraska, thereby assuring local control.

However, many residents in small communities and other rural people understand that in certain areas agriculture alone can no longer support the commu-

nity, and they are looking for alternatives to help their towns survive. New protected area models rely on local government and people to drive them, and these models can accommodate traditional land uses like grazing as part of a broader land use vision, a vision that is compatible with local values and aspirations.

There are recent examples in Nebraska where rural communities have jointly developed water recreation projects with Natural Resource Districts for the economic opportunities they offer to the local area. Similarly, a joint venture of local institutions could develop a grassland preserve in western Nebraska, thereby assuring local control. A limited federal role could also be accommodated, if there was local support for it.

For example, assume the town of Arthur, Nebraska, population 145, decided to form a joint venture with the Twin Platte Natural Resource District to develop a grassland wildlife project, as opposed to building a dam for water recreation. A grassland preserve is much more compatible with principles of sustainable development than a dam, and less susceptible to drought cycles.

Assume the project bought all the surrounding grasslands in Arthur County from willing sellers in order to create a large prairie preserve, to enhance wildlife recreation (hunting and ecotourism) and as a long term mixed grass prairie research site for the University of Nebraska. Let us refer to the joint venture as the Arthur Conservation Trust. In this somewhat fanciful and hypothetical scenario—which we offer for discussion purposes only—let us then examine the potential economics.

According to 2002 government data, in Arthur County there were 61 agricultural operations with over $25,000 in gross sales. About 70 people were employed directly in farming and ranching, and the average age of people operating farms and ranches was slightly over 58 years. Arthur County frequently shows up as one of the lowest income counties in the nation, reporting $15,810 per capita income in 2002, according to the U.S. Census Bureau.

A prairie preserve of 400,000 acres would immediately create international and national attention given the conservation status of temperate grasslands globally and the lack of a prairie preserve of comparable size in North America.

Arthur County contains approximately 436,000 acres of land, of which 88 percent is grassland, or slightly less than 400,000 acres. For purposes of our discussion, let's assume it is 400,000 acres. If we further assume the Arthur Conservation Trust purchased all 400,000 acres with the intent of turning it into a prairie preserve, it would be the largest of its kind in North America. Badlands National Park in South Dakota is around 250,000 acres, and Grassland National Park in Canada currently is just over 100,000 acres. A prairie preserve of 400,000 acres would immediately create international and national attention given the conservation status of temperate grasslands globally and the lack of a prairie preserve of comparable size in North America.

Let's also assume that the grasslands can be purchased on average for $250 per acre, or a total of $100 million. In 2002, the land was valued at around $75 million for tax purposes, according to the Nebraska Department of Assessment and Taxation, so $100 million would be a generous figure. Sounds like a hefty price tag until you consider that the State of Nebraska and the USDA will spend over $150 million to buy out the water rights and (for about 10 years) temporarily seed to grass less than 100,000 acres of cropland in the Republican and Platte River Valleys under the new CREP program. Or until you consider that just a few years ago a by-partisan effort in the U.S. Congress led to a special appropriation of $100 million to create the Valles Calderas Trust, which purchased and now manages a 100,000-acre preserve for wildlife recreation and grazing in New Mexico. Or until you consider that Nebraska on average receives close to $1 billion in farm subsidies each year.

Although saving water and improving pheasant habitat are worthwhile goals, by comparison, $150 million could permanently buy out all 400,000 acres of na-

tive grassland habitat in Arthur County, leaving a $50 million balance that could be invested by the Arthur Conservation Trust, with the earnings used to manage the preserve. From the standpoint of grassland wildlife and wildlife recreation there is no question that the permanent acquisition of 400,000 acres of native prairie would be far superior to the temporary conversion of cropland to seeded grass.

Assume that over the long term the Trust earned an 8 percent annual return on the $50 million, or $4 million a year. Naturally, the county would want to maintain its schools and other public services. In 2002, residents of Arthur County paid a little over $1 million in property taxes, which if subtracted from the annual earnings would leave about $3 million in trust income to manage the preserve in perpetuity. Without a more sophisticated cost/benefit analysis, we cannot estimate what it would cost to manage the preserve, but presumably much of this income could go to hire people who were formerly involved in farming and ranching, and therefore a portion of the $3 million would be converted into direct personal income for those no longer involved in agriculture.

In 2002, government figures indicate that net farm income in Arthur County was $405,000, but the county received $449,000 in federal farm subsidies, leaving a minus $44,000 in net farm income without the subsidies, according to 2002 Census of Agriculture figures. According to a different government data source, the amount of farm subsidies, which were mostly disaster subsidies, were reportedly over $1.2 million[1], resulting in a minus $830,000 in net farm income.

It seems plausible that direct personal income from the conservation trust alone would provide higher incomes for the roughly 70 people in the county who were engaged directly in agriculture. But further assume that the 61 commercial agriculture operations that voluntarily sold their land to the Arthur Conservation Trust invested those proceeds, and that they earned a 8 percent annual return, or $8 million annually. If the investment income is included in the benefit calculation, obviously the agriculturalists are far better off financially having sold their land to the conservation trust.

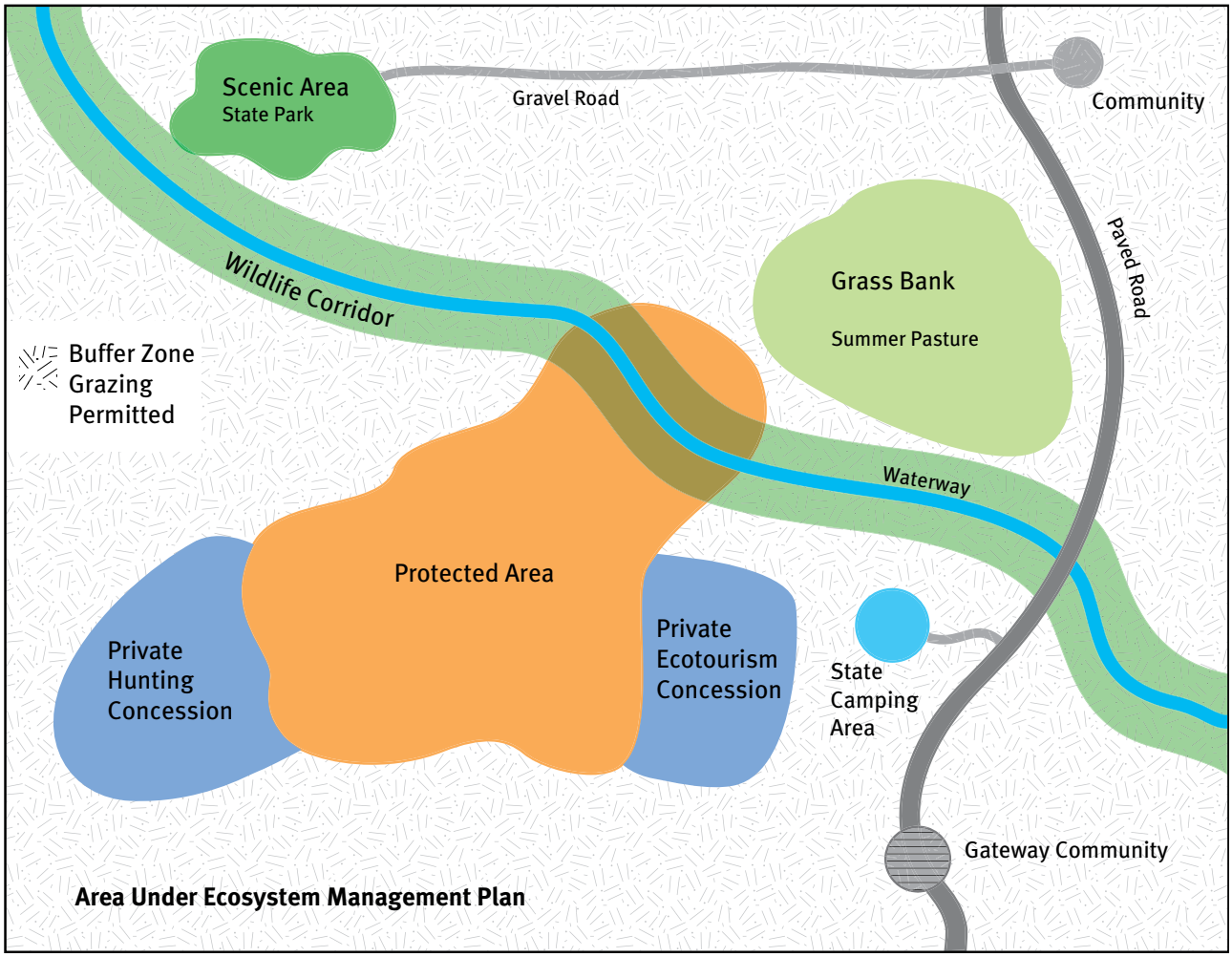
At this time we make no attempt to determine what the operation of the preserve would generate in terms of local income, though we do know that a recent study of Badlands National Park in South Dakota showed that park visitors annually spend at least $19 million in the local area (within a 60-mile radius), generating $5.2 million in direct personal income (wages and salaries) for local residents and supporting 438 tourism related jobs. Through secondary effects, park visitor spending supported an additional 72 area jobs, involving $4.6 million in additional sales and $1.5 million in personal income. In total, this study demonstrated that Badlands generated about $6.7 million in direct personal income and about 500 jobs in the surrounding area.[2] Because Arthur is the only town in the county, presumably much of this spending and personal income would benefit residents of the town and surrounding area.

Also assume that the hypothetical prairie preserve became a long-term research site for the University of Nebraska. Residents of the county would benefit directly and indirectly from state spending associated with the operation of such a facility, much in the same way rural communities now benefit from spending at agricultural experiment stations. Further, the preserve would undoubtedly attract federal and state wildlife and conservation spending that would have similar economic benefits.

While we are not proposing the Arthur Conservation Trust actually buy all the grassland in the county, and at this point we can only speculate about the actually costs and benefits of such a transaction, there is every reason to believe the residents of the county would be better off economically if the town of Arthur and the NRD bought and shifted the use of the surrounding grasslands from cattle ranching to wildlife recreation.

1. Environmental Working Group, Farm Subsidy Data Base, Arthur County.

2. Dennis Propst, et. al., *Economic Impacts of Badlands National Park Visitor Spending in Local Economy*, 2000.



If the preserve were jointly managed with private land under an "ecosystem" management plan, additional benefits would accrue to private landowners and to the surrounding community.

Of course, the economics depends on the original $150 million. Keep in mind, however, that between 1995-2003 Nebraska received about $7.5 billion in federal farm subsidies, and that pressure from international trade agreements make it unlikely that commodity-based subsidies will continue at anywhere near their past levels. In Europe, as members of the European Union phase out commodity subsidies, they are increasing funding for land use change from agriculture to biodiversity conservation and wildlife recreation. The fact that funding for this type of project may not available today does not close the door on funding for it in the future, particularly if residents in western Nebraska put their support behind it.

Cattle will always be king in Nebraska. Larger social focuses like MTV and the World Trade Organization are more threatening to the continuation of the cattle culture than shifting 400,000 acres of grazing land to wildlife recreation.

People in Arthur County might be concerned that with a project like this their cattle-based lifestyle would disappear. In reality, the creation of a grassland preserve would take a decade or two, perhaps longer, so the cultural change would be gradual. But this is actually a false dichotomy because cattle grazing could continue on the preserve, provided it was consistent with the conservation objectives of the preserve. Moreover, cattle will always be king in Nebraska. Larger social focuses like MTV and the World Trade Organization are more threatening to the continuation of the cattle culture than shifting 400,000 acres of grazing land to wildlife recreation.

On the land near Valentine, Nebraska. © Joel Sartore

Of course there is no reason for the Arthur Conservation Trust to buy all 400,000 acres in Arthur County or to purchase it all at once. Perhaps the Trust would purchase 100,000 acres, leaving three other towns in neighboring counties to likewise buy 100,000 acres. From a wildlife conservation standpoint, four 100,000-acre preserves strategically placed according to conservation biology principles in the western part of the state would likely be of more ecological and economic value to the region anyway.

We can have both a strong cattle industry and a world-class prairie preserve network built on conservation biology principles. The economics are there, and the conservation need is there. The issue is whether enough people in western Nebraska want change.

People also might wonder about the impact on the Nebraska cattle industry of removing 400,000 acres from grazing in the western part of the state. There is no question the cattle industry is critically important to the state's economy. Of the approximately $10 billion in annual cash receipts from agriculture in Nebraska, nearly $7 billion comes from livestock and about $5 billion from cattle.

There is no reason to remove cattle immediately from the preserve. But just for the sake of discussion, assume that did happen. There are nearly 2 million cows in the state and only about 20,000 head—or one percent of the state's breeding herd—is in Arthur County. About 5 million slaughter cattle are fed annually, so removing 20,000 cows from Arthur County would have even less impact on the cattle feeding industry.

We can have both a strong cattle industry and a world-class prairie preserve network built on conservation biology principles, if people in western Nebraska want both. The economics are there, and the conservation need is there. The issue is whether enough people in western Nebraska want change.

Conclusions

This report is one small step down a long road to understand better the importance of nature based activities to the economy and general welfare of the State of Nebraska. Even at this stage, we can draw a number of significant conclusions:

- Neither the Nebraska Game and Parks Commission nor the Nebraska Department of Economic Development has done a comprehensive analysis of the economic important of wildlife recreation in the state. To the best of our knowledge, neither has the University of Nebraska.

- Nevertheless, the evidence suggests that wildlife recreation is already a valuable part of the Nebraska rural economy and has tremendous growth potential, if policymakers can improve habitat for prairie wildlife.

Part of the challenge for Nebraska policymakers is for them to understand that our grassland resource is globally significant.

- Part of the challenge for Nebraska policymakers is for them to understand that our grassland resource is globally significant, not just for cattle grazing, but also for the biodiversity it contains and the potential it has to create wealth through wildlife recreation.

- With less than 1 percent of Nebraska's land base in protected areas, to take full advantage of the economic potential of our grassland resource, policymakers need to:
  - create more protected areas;
  - develop ways for private landowners to voluntarily work together and with protected areas;
  - manage existing state lands for a broader spectrum of prairie species.

- New protected area models rely on local government and people to drive them, and these models can accommodate traditional land uses like grazing as part of a broader land use vision, a vision that is compatible with local values and aspirations. In other words, the evidence suggests it is possible for wildlife recreation to supplement agricultural uses of land, without replacing the livestock economy of the state.

- Large habitat complexes can be developed without harming the Nebraska cattle industry or the dominance of the cattle culture in western Nebraska.

- Though the economics of land use and ownership change needs further study, we can say as a preliminary matter that targeted, incremental land use change will benefit many grassland communities, particularly communities in western Nebraska.

- The creation of a wildlife economy and the creation of wildlife habitat complexes has not been part of Nebraska's past rural development strategy, but should become part of a future sustainable rural development strategy.

- The University of Nebraska can assist communities in making this transition by helping to develop voluntary "ecosystem management plans" and doing research on the economics of land use change, as well as research on the habitat and other needs of prairie grasslands and wildlife.

recommend

Recommendations

A PLAN FOR CHANGE: RECOMMENDATIONS

1 The State and the University of Nebraska should conduct a comprehensive economic analysis of nature-based activities in Nebraska.

2 The Nebraska Game and Parks Commission and other agencies should adopt a policy goal of placing 10 percent of remaining grasslands in a network of habitat complexes.

3 The Game and Parks Commission and other state/federal agencies should implement management changes to improve opportunities for nature-based activities.

4 The State should encourage a one million-acre grassland preserve of public/private land in Western Nebraska as a world-class site for tourism, hunting, and grassland research.

5 The State should establish a $250 million bond pool to help purchase land by community-based conservation partnerships from willing sellers.

6 The University should make the development of a program in grassland biodiversity conservation a priority.

7 The State Museum, zoos, botanical gardens, and related institutions should coordinate programs with each other and with other state/federal agencies to improve biodiversity education and outreach.

Many rural development advocates now realize that land use and ownership change can play an important role in a state rural development strategy. It should not replace traditional efforts to encourage value-added agriculture and agricultural-based entrepreneurial activities, but rather, should be viewed as a way to diversify economic opportunity in rural Nebraska.

Many rural development advocates now realize that land use and ownership change can play an important role in a state rural development strategy.

New federal policies to encourage targeted and incremental land use and ownership change could help create a more diverse rural economy, and state and local policy change also could have a significant beneficial impact and in theory could be enacted with greater speed than federal policies. What follows are a few suggestions for changes in state policy that could help Nebraska make a smooth yet timely transition to an economy based in part on its natural amenities:

Recommendation 1: *The State of Nebraska and the University of Nebraska should conduct a comprehensive analysis of the economic benefits of protected areas.*

Wildlife recreation is already big business in Nebraska, and it could become even bigger if encouraged by supportive state rural development and wildlife policies. We are not aware of any comprehensive analysis ever being conducted on the economic benefits of wildlife recreation in this state. We do know, however, that far too little research has been done on wildlife recreation, land use and ownership change. This is due to a prevailing attitude in the past that agriculture could carry rural Nebraska economically; moreover, few believed land use change was politically feasible. After decades of population loss and with few

other options, however, many rural development leaders believe new ideas must be considered.

Given that less than 1 percent of Nebraska's grasslands are in conservation management, that protected areas have important economic benefits for communities, and many grassland counties are in economic distress, there is an opportunity and a need to increase that amount for the benefit of both people and biodiversity.

The responsible departments in state government (particularly the Nebraska Department of Economic Development and Nebraska Game and Parks Commission) and in the University of Nebraska (particularly the Institute of Agriculture and Natural Resources) should jointly develop a research agenda to gather the necessary data and information to analyze the growth potential of wildlife recreation and nature-based activities in the state. This agenda should include an analysis of federal and state wildlife, rural development and agricultural policies that inhibit the growth of a nature-based economy, and policy changes that can help grow it. Although the following are not intended to be comprehensive, research topics should include:

- What is the socio-economic value to Nebraska of our existing state parks, federal wildlife refuges and other wildlife and natural areas?
- What is the total economic value of wildlife recreation and nature-based activities (including hunting and fishing) to the Nebraska economy?
- What are the economics of targeted, incremental land use change from agriculture to wildlife recreation and nature-based activities? Of large, landscape-scale land use and ownership change?
- What legal arrangements are presently available to private landowners, community institutions and governmental agencies to create habitat complexes for wildlife recreation and nature-based activities, and what are some legislative models from other states and countries that might be appropriate for Nebraska to consider?
- What federal and state funding and other resources are available to community-based and state-led initiatives to create habitat complexes for wildlife recreation and nature based activities?
- What federal and state wildlife, agriculture and rural development policies inhibit the growth of wildlife recreation and nature-based activities in the state, and what policies will help grow the state's nature-based economy?

Recommendation 2: *The Nebraska Game and Parks Commission and other relevant state agencies should adopt a policy goal of setting aside 10 percent of remaining grasslands in a network of protected areas throughout the state—particularly in agriculturally dependent counties in western Nebraska—and incorporate that goal into a comprehensive marketing and rural development strategy for the state.*

Protected areas benefit both people and wildlife. The international conservation community seeks to set aside in representative protected areas 10 percent of each of the earth's biomes. The IUCN/WCPA Grassland Task Force was established in 1996 with a mission to increase to 10 percent by 2013 the amount of grasslands in protected areas. Several U.S. conservation organizations have identified temperate grasslands as the least protected and most in need of protection of any biome on the planet. Nebraska has some of the largest and best examples of prairie grasslands left in North America. There is growing national and international interest in increasing the amount of native grasslands managed for biodiversity conservation. That is not to say grazing must be eliminated on protected lands, just that on conservation lands grazing must be consistent with a conservation objective. Given that less than 1 percent of Nebraska's grasslands are in wildlife management, that protected areas have important economic benefits for nearby communities, and many grassland counties in the state are in economic distress from drought and economic factors, there is both an opportunity and a need to increase that amount for the benefit of both people and biodiversity.

The Nebraska Legacy Project will provide much needed biological information to determine the best conservation targets in the state.

A statewide-protected areas strategy should be based on principles of conservation biology as well as economic feasibility. The Nebraska Legacy Project, which is currently underway within the Nebraska Game and Parks Commission, will provide much needed biological information to determine the best conservation targets in the state. When complete this information could provide the starting point for a protected areas initiative.

As part of a strategy, planners might consider designating protected areas adjacent to Nebraska highways as part of circle travel routes that would incorporate other Nebraska tourism features. Such a network of protected areas could become an important part of marketing a package of nature-based activities in the state.

Nebraska's prairie grasslands are our Rocky Mountains. We need to feature them as part of a bold new vision for the state.

Recommendation 3: *The Nebraska Game and Parks Commission and other appropriate state and federal agencies should review their current management objectives on land under their control and implement changes to improve biodiversity management, as well opportunities for nature-based activities when consistent with the ecological integrity of the areas.*

State and federal agencies could help increase the amount of land in protected areas by changing the management objective of land already under their control. At present none of the nearly 275,000 acres owned by the Nebraska Game and Parks Commission is managed for biodiversity conservation. The Commission has a natural areas program, but the program has never been promoted or adequately funded.

The Commission should consider what changes can be made to their land management programs to improve biodiversity management and nature based recreation opportunities in the state. In addition, there are nearly 1,500,000 acres of state school lands which may contain biologically significant land. The State of Nebraska should study what management changes can be made to these lands in order to conserve their biological integrity and at the same time improve nature based recreational opportunities. This may involve land swaps or the creation of grass banks so as to not disturb existing grazing opportunities for local residents.

Further, state and federal agencies should consider arrangements between their public lands and surrounding private lands that could create habitat complexes to improve wildlife recreation opportunities and generate financial benefits to the surrounding private landowners. There are models for this in other states and foreign countries. The Nebraska Game and Parks Commission has experimented with similar arrangements on a limited basis in the past.

Strategies to improve the biodiversity management of state lands should be part of the plan currently under development by the Nebraska Natural Legacy Project. Two geographic areas that deserve special consideration are those lands surrounding Ft. Robison State Park, Oglala National Grassland, and the Crescent Lake National Wildlife Refuge.

Recommendation 4: *The State of Nebraska should encourage the development of a one million-acre grassland prairie preserve of public and private land in western Nebraska as a world-class ecotourism and hunting destination, as well as a long-term prairie research site.*

Conservation biology teaches that generally large contiguous or mostly contiguous areas of land are necessary to provide for the long-term survival of many species. At the same time, to compete in a global ecotourism marketplace, conservation areas will need to be large enough to allow for the reintroduction of a full suite of prairie species, as well as a full suite of ecotourism experiences.

Large contiguous areas of land are necessary to provide for the long-term survival of many species and to compete in a global ecotourism marketplace.

It would be possible to build such a preserve through local units of government and public-private partnerships, with minimal state or federal government involvement.

The first step in such a project should be the development of an ecosystem management plan through local community and landowner partners. There are successful models in Nebraska for this type of cooperative stakeholder approach on a smaller scale. Consideration should be given at the outset to incentives for private landowners to participate. This might be achieved through creating an "ecosystem management district" whereby cooperating landowners received local property tax relief through state aide, similar to how state aide is currently delivered to public schools.

The University of Nebraska's Institute of Agriculture and Natural Resources should be encouraged to partner with local institutions and stakeholders to help develop an ecosystem management plan and to set-up some long-term research projects associated with the plan. This initiative could be used to develop a site similar to what exists at the Konza Prairie site in Kansas, a joint venture between The Nature Conservancy and Kansas State University.

Recommendation 5: *The State of Nebraska should establish a $250 million bond pool to help fund the purchase of land by community-based conservation partnerships from willing sellers.*

Nebraska political and policy leaders should seek changes in the farm bill to provide funding to community-based projects that seek to create habitat complexes for wildlife recreation and nature-based activities. As international trade agreements cause federal commodity subsidies to decline, Nebraska will need to find new ways to replace the revenue lost to the state. One way to do that will be to make funding available for community-based habitat conservation projects.

The State of Nebraska should make funds available to communities that want to develop habitat complexes to improve wildlife recreation opportunities.

In the meantime, the State of Nebraska should make funds available to communities that want to develop habitat complexes to improve wildlife recreation opportunities. One way to do that is through a pool of money raised by selling bonds that are retired through a broadly based revenue stream. These funds would be used to supplement funds otherwise available through the Environmental Trust for the purchase of conservation lands. Similar programs exist in other states to conserve open space and environmentally sensitive lands. The proceeds of this pool should be used to help create a statewide network of grassland-protected areas.

Recommendation 6: *The University of Nebraska should make the development of a program in grassland biodiversity conservation a teaching, research and outreach priority.*

The University of Nebraska has a long and rich history of excellence in grazing research and teaching. The University should build on that history to expand the program to include the field of grassland biodiversity conservation. At the present time, conservation biology programs are just developing at land grant institutions, yet temperate grassland conservation is now a global conservation priority. Given the limited number of rural development options for agriculturally dependent areas, making this a University of Nebraska priority would not only make Nebraska a leader in a new and developing academic field, but it would also have economic development implications for the state.

Making this a University of Nebraska priority would not only make Nebraska a leader in a new and developing academic field, but it would also have economic development implications for the state.

In addition, the State of Nebraska Department of Education should assess whether enough emphasis is being placed on biodiversity conservation education in the state's K-12 schools. Future Nebraska leaders will need to have a strong background in the science of conservation biology to help shape our future.

Recommendation 7: *The Nebraska State Museum, zoos, botanical gardens, and related institutions should be encouraged to strengthen and coordinate their programs with each other and other state and federal agencies.*

Collection-based institutions have significant conservation expertise and resources. Nationally, zoos spend $1 billion in operating expenses annually. All of these institutions claim a conservation justification for their existence, and in fact would not exist without wild flora and fauna. In a number of states collection institutions are active in education and conservation programs in surrounding communities. Commentators have suggested that cooperation among collection-based institutions is an effective approach to conservation issues. The Henry Doorly Zoo in Omaha—one of the finest zoos in the country—operates Safari Park, an education and collection exhibit of Great Plains wildlife, and has an active conservation research program. At the same time, the Nebraska State Museum and departments of the University of Nebraska have active wildlife and community development programs that are in need of better coordination and focus.

The State of Nebraska should encourage the Henry Doorly Zoo, University of Nebraska and the Nebraska State Museum to evaluate their programs to determine how they can cooperate to improve biodiversity conservation and enhance wildlife recreation opportunities in the state. There are models in other states that could inform such an assessment.

Further Reading

Richard B. Primack, *Essentials of Conservation Biology* (3rd Ed., Sinauer, 2002)

Paul A. Johnsgard, *The Nature of Nebraska* (University of Nebraska Press, 2001)

Reed F. Noss & Allen Y. Cooperrider, *Saving Nature's Legacy* (Island Press, 1994)

Craig R. Graves, *Drafting a Conservation Blueprint* (Island Press 2003)

John A. Dixon & Paul B. Sherman, *Economics of Protected Areas* (Island Press 1990)

Richard Manning, *Grassland* (Penguin Books, 1997)

Appendix

U.S. EXAMPLES OF PROTECTED AREAS

Congressional or state legislation is sometimes used to support the creation of large-scale protected areas. However, these areas can also be created through agreements between private landowners or through public-private partnerships at the local level. A few examples of U.S. protected areas involving federal or state legislation include:

The Pinelands National Reserve, New Jersey

A National Reserve and a U.S. Biosphere Reserve, Pinelands includes portions of seven southern New Jersey counties. It includes more than one million acres of farms, forests, wetlands and scenic towns. In 1978 Congress established the Pinelands National Reserve and asked the State of New Jersey to create a planning agency to preserve, protect and enhance the region's unique natural and cultural resources.

In 1979 the New Jersey State Legislature enacted the Pinelands Protection Act creating the Pinelands Commission. Charged with the development and implementation of the Comprehensive Management Plan (CMP) for the Pinelands, the commission is a partnership of the U.S. Department of the Interior, the State of New Jersey, and local governments in the Pinelands Region. The CMP manages the Pinelands in a manner that maintains its unique ecology—including a number of rare, endangered or threatened plant and animal species—while accommodating and encouraging farming and permitting compatible development.

The CMP created a 295,0000-acre Preservation Area District where conventional residential, commercial and industrial development is largely prohibited. In general, only new land uses compatible with the ecology of the central Pines are allowed. The 1979 Pinelands Protection Act envisioned that local governments would be primarily responsible for implementing the CMP. To attain that degree of local involvement and responsibility, the Pinelands Protection Act set forth

a procedure under which county and municipal master plans and land use ordinances are made consistent with the CMP. While some of the plan's provisions are mandatory, such as the density limitations and the requirement that growth areas accept development credits, many other aspects are intended to give municipalities resource management goals to work toward as they revise their land use regulations.

Nearly 500,000 acres are now under permanent protection. The effectiveness of the Pinelands program as a growth management plan is best demonstrated by the fact that, since its inception, more than 86 percent of all development approved in the region has been located in defined areas and in Pineland towns and villages. For more information visit the website at http://www.state.nj.us/pinelands.cmp.htm

Valles Caldera National Preserve, New Mexico
Federal legislation provided for the purchase of the 89,000-acre Baca Ranch in the Jemez Mountains of northern New Mexico and designate it the Valles Caldera National Preserve (VCNP). A nine-member board of trustees is responsible for the protection, management and development of the VCNP and provide for an effective land and wildlife management program for this resource within the Department of Agriculture.

The VCNP is managed to allow for sustainable resource use while ensuring public access and full protection of the ranch's natural assets. Recreational activities include hunting, fishing, skiing, birdwatching and hiking. The second largest elk herd in New Mexico grazes in the preserve, which also functions as a working cattle ranch. The VCNP emphasizes the stewardship of resources as the foundation for both ecological and economic sustainability.

A 501(c)(3) organization, VCNP trustees must generate revenue from the environmental marketplace while continuing to operate as a working cattle ranch. The VCNP is also charged with protecting and preserving scientific, scenic, geologic, wildlife, historic, cultural and public recreational values of the preserve while providing economic benefits to local communities and small businesses. The trustees coordinate management objectives with surrounding National Forest System lands. For more information visit the website at: http://www.vallescaldera.gov/

Adirondack Park, New York
Adirondack Park is the largest publicly protected area in the contiguous United States, greater in size than Yellowstone, Everglades, Glacier, and Grand Canyon National Parks combined. The park is a mixture of public and private lands. Forty-three percent of the park is owned by the State of New York, and the remaining private land and is used for timber, businesses, camping, settlements, farming, and homes—130,000 people live year-round in its 105 villages and towns.

The Adirondack Park Forest Preserve was created by an act of the state legislature in 1885 to preserve the water and timber resources of the region. Although it is managed by the Department of Environmental Conservation (DEC), the Adirondack Park Agency (APA) is responsible for developing and maintaining a master plan for the use of all state lands in the park.

The single largest area in the Park is wild forest, where a variety of outdoor recreation activities are allowed. For more information, visit: http://www.dec.state.ny.us/website/dlf/publands/adk/

Tallgrass Prairie National Preserve, Kansas
The Tallgrass Prairie National Preserve is primarily owned by the National Park Trust, and is committed to preserving what little is left of the tallgrass prairie ecosystem. The National Park Trust (NPT) primarily owns the 11,000-acre preserve. The National Park Service (NPS) owns a fraction of the land, and the legislation calls for the entire acreage to be managed cooperatively by the NPS and the NPT.

The preserve was created in 1996 through federal legislation designed to promote better representation of tallgrass prairie, the only major ecosystem in the United States that was not adequately represented in the National Park System. Tallgrass prairie once covered nearly 400,000 square miles of North America. Today, less than one percent of this ecosystem remains, much of it in the untilled expanse of grass in Kansas known as the Flint Hills.

The approach to conservation outlined in the Tallgrass Prairie National Preserve Act leverages capital from NPT, a private conservation organization, with limited funds from the federal government to create a national park unit open to the public. Bird watching, wildlife viewing, bus tours and nature walks are popular activities in the preserve. For more information visit: http://www.nps.gov/tapr/

The Columbia River Gorge National Scenic Area, Washington & Oregon

Federal legislation in 1986 created the 292,500-acre Columbia River Gorge National Scenic Area. The National Scenic Area Act does not create a wilderness or park, but rather allows for existing rural and scenic characteristics to be retained, while encouraging compatible growth and economic development within urban areas. More than $90 million in federal dollars have flowed into the Scenic Area as a result of Congress' recognition of its importance as a national resource.

Those dollars have gone to a variety of economic development, recreation, county, and other functions. More than 70,000 people live in the Gorge area, and more than 2 million people visit each year. The Scenic Area includes vital habitat, ancient Indian rock art and other cultural and historical sites, forestlands, farmland and orchards, and many hiking/biking trails.

Managed on a partnership basis by six Gorge counties, the state of Oregon and Washington, the U.S. Forest Service and the Gorge Commission, the USFS manages nearly half of the 300,000 acres within the Gorge Area. For more information visit: http://www.gorgecommission.org/Purposes.htm

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