

Habitats of North Dakota

PRAIRIE



By Gwyn Herman and Laverne Johnson



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Presented by the
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ABOUT HABITATS OF NORTH DAKOTA

Distribution of these **Habitats of North Dakota** units is made possible by the North Dakota Game and Fish Department in collaboration with the North Dakota Center for Distance Education.

The information presented in **Habitats of North Dakota** seeks to promote teaching and learning about the wildlife and conservation topics of North Dakota. Five separate units have been developed to discuss the habitats. They are *Wetlands*, *Prairie*, *Badlands*, *Woodlands*, and *Riparian Areas*.

The **Habitats of North Dakota** units have been produced, published, and distributed by the North Dakota Center for Distance Education.

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Dr. Gwyn Herman and Ms. Laverne Johnson were born and raised in rural North Dakota, and both have a deep love for their home state. They are educators who have over 60 years of combined teaching experience at all grade levels, including the teaching of North Dakota Studies to both fourth and eighth grade students.

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Gwyn Herman (left) and Laverne Johnson (right)

Welcome

Welcome to the study of *Prairies of North Dakota!* This book is filled with interesting and useful information about prairies—what they are, what types there are, where they are located, which animals and plants depend on them, how they are threatened, and why they must be protected for future generations. Through reading and engaging in a variety of activities that accompany this text, you will find yourself on a dynamic and educational journey. **Read on....**

WILDLIFE HABITATS AND CONSERVATION

HISTORY by Chris Grondahl, Wildlife Biologist

Wildlife has long been an important part of the North Dakota prairies. American Indians depended on this abundant resource for their food, clothing, and shelter for thousands of years before Euro-Americans arrived in the area.

In European countries, wildlife resources were scarce. The only people who were allowed to hunt in Europe were wealthy landowners and members of royal families.

In the 1800s, Euro-Americans immigrated to North Dakota. The earliest settlers depended on hunting and trapping game animals to help feed their families and make a living. At the same time, market hunting for these wildlife resources began.

Market hunters killed large numbers of wildlife for furs and feathers, which they sold to people in the clothing industry on the East Coast and in Europe. They also sold meat to restaurants.

No laws existed to protect wildlife in North Dakota in those early years. Populations of wildlife such as the white-tailed deer, bighorn sheep, elk, and pronghorn decreased to very low numbers.

In 1883, Theodore Roosevelt came from New York to the Badlands of northern Dakota Territory to hunt. He liked the area so much that he bought two ranches in the Badlands and spent summers enjoying the wildlife and wide-open spaces of North Dakota.

Theodore Roosevelt's adventures in a land of wildlife and open spaces inspired his interest in wildlife conservation. Conservation is defined as caring for, managing, and protecting natural resources, including wildlife. When Theodore Roosevelt became President of the United States in the early 1900s, one of his major goals was to preserve and protect these natural resources. He set aside 230 million acres of land throughout the United States in the form of national parks, national forests, and other areas for conservation and public use. Other conservationists during this time realized the importance of protecting habitat and wildlife and developed plans to manage these resources.

During the 1900s, laws were passed to protect wildlife. In 1930, the North Dakota Game and Fish Department was created. Its purpose was to manage the state's wildlife resources for public enjoyment. Hunting was an important part of this management plan.

In order to pay for managing wildlife conservation, the U.S. government began collecting a special tax on hunting equipment such as guns and bullets. The money collected was given to state wildlife agencies for wildlife and conservation programs. A similar system was also adopted to fund fisheries programs. In this way, the group that uses and enjoys the resource pays for its management.

The state Game and Fish Department has used these funds along with money collected from sales of hunting and fishing licenses to purchase tracts of land that could be used by hunters and anglers. These public areas are called “Wildlife Management Areas,” or WMAs. Public lands that were purchased by the federal government included National Grasslands, waterfowl production areas, and wildlife refuges. These lands were purchased for the public, not only for protecting habitats for wildlife, but also for providing places for people to enjoy all kinds of outdoor recreation. Habitat (food, water, shelter, and space) is the key to sustaining healthy wildlife populations, and quality habitats have been created and preserved by individuals, conservation organizations, and governments.

An example of a very important habitat development for wildlife in North Dakota is a program called the “Conservation Reserve Program” (CRP). CRP was established by the U.S. government and farmers to plant grass on some less fertile land that had been plowed for crop-raising. For 10 to 20 years, these grass habitats have replaced low production farm ground. CRP has increased populations of wildlife such as white-tailed deer, pheasants, ducks, and nongame species.



Figure 1. Teddy Roosevelt traveled to North Dakota over 100 years ago. Here, he learned to enjoy and appreciate the wide open spaces and the importance of hunting and conservation. (*State Historical Society of North Dakota, 0410-127*)

The “North American Model of Wildlife Conservation” was developed as a result of all the effort wildlife conservationists put forth in the last 100 years to create good wildlife habitat and keep wildlife available for everyone to use. This model promotes equal access to wildlife for everyone and is in contrast to the European model in which wildlife was controlled and used only by wealthy people.

Just like what happened 100 years ago when some people sold wildlife for personal profit, there are commercial interests doing that today. The public owns the wildlife in North America. Our North American wildlife conservation system has been extremely successful. Activities that prevent access to wildlife by the public destroy the framework of this system. The more that people of all ages understand the importance of the North American model, the better chance present and future generations will have of enjoying this great American resource.

PRAIRIE

Which of the following has something to do with Prairies of North Dakota?

-  A gigantic “bulldozer”
-  A sea of grass
-  A paintbrush that never touches paint
-  Prairie smoke with no fire
-  The largest land animal on the continent
-  Animals with pockets
-  A wolf that is not a wolf
-  A rabbit that is not a rabbit
-  Animals with no ears
-  Horns made of feathers
-  A grasshopper that is not an insect
-  Black blizzards

So which of the choices above has something to do with Prairies of North Dakota? **Answer: All of them!**

Introduction

Most of North Dakota’s landscape was shaped by the **Wisconsinan** (wis-Kon-sin-an) **glacier**. This gigantic mass of ice entered the area from Canada about 40,000 years ago and covered all of North Dakota except for the southwest corner.

The Wisconsinan glacier advanced and retreated several times over the next 28,000 years. It acted like a giant bulldozer, scraping the land and moving huge amounts of earth. By the time the glacier melted about 12,000 years ago, it had completely changed the landscape in several states and Canadian provinces.

The **Badlands**, located in southwestern North Dakota, were not formed by the Wisconsinan glacier. The Badlands were carved out of the landscape by the actions of the Little Missouri River, as well as by thousands of years of wind erosion.

Thousands of square miles of land had been flattened by the enormous glacial “bulldozer.” The masses of material the glacier had been carrying were deposited in various places, forming rolling hills and millions of potholes. Over time, a prairie, or grassland, developed on the flat and rolling plains.

French trappers and explorers who entered the center of North America in the 1700s observed that the land looked like a “sea of grass.” They used the French word “prairie” to describe this grassland. The word originally meant a grassy clearing in a forest. The thousands of square miles of grasslands in North America

North Dakota is divided into three major natural regions from east to west—the Red River Valley, the Drift Prairie, and the Missouri Plateau (pla-Toe). These regions are almost like three sloping stair steps as they go up in **elevation** (land height) from east to west.

The **Red River Valley** is the floor of the ancient Lake Agassiz (Ag-ah-see), which was formed when glaciers in Canada blocked the flow of water trying to flow north. This lake has been gone for thousands of years, but its remaining lakebed, the Red River Valley, is extremely flat.

The **Drift Prairie** is the second-highest land in North Dakota. “Drift” consists of the soil, rocks, and other materials that were deposited by glaciers. The

Drift Prairie is sometimes called the “Glaciated (Glay-she-ate-ed) Plains.”



Figure 2. Prairie exists in all regions of the state. The type of prairie, and the wildlife found there, was determined largely by the formation of the soils. *(Graphic by Cassie Theurer)*

The **Missouri Plateau** (pla-Toe), the highest land in the state, lies west of the Drift Prairie and reaches to the Montana border. The eastern part of the Missouri Plateau is called the **Missouri Coteau** (koe-Toe). “Coteau” is a French word meaning “little hill.”



Figure 3. Missouri Coteau Prairie. Prairie habitats don't, at first glance, appear to be beneficial to wildlife but actually are similar to the ocean in their importance to terrestrial (land) wildlife. Prairies support many more species than a habitat such as a pine forest in the mountains. In North Dakota, the number of ground-nesting birds alone that rely on prairie is amazing.

were not at all like the grassy meadows in France; therefore, the word “prairie” took on a new meaning.

A **prairie** is a large, treeless region covered with grasses and forbs, or wildflowers. North Dakota lies in the heart of the Prairie Pothole Region, which includes the potholes and prairie lands created by the Wisconsinan glacier.

Prairies, or grasslands, developed and thrived because of their deep underground root systems. These extremely long, downward-reaching plant parts enabled the grasses to withstand certain conditions that trees and other woody plants could not survive. These conditions included the following: (1) low amounts of precipitation; (2) long, cold winters, hot summers, and strong winds; (3) frequent fires; and (4) grazing (grass-eating) animals.



Figure 4. This graphic illustrates that prairie plants have evolved very deep root systems allowing them to survive.

Grasslands, rather than forests, developed in North Dakota because of the low amounts of precipitation received. Much less moisture is required to support grasslands than is needed for forests. The extensive root systems of prairie grasses allowed these plants to survive the harsh and changeable weather conditions of the state.

From time to time, each part of the prairie was cleared by fire. A prairie fire was usually started by lightning. As the fire was whipped by winds, it became a wall of flames that galloped across the prairie at a great rate of speed. Because it moved so quickly, the fire did not penetrate very far into the soil, so it did not kill the prairie grasses. It did, however, burn old, built-up vegetation, brush, shrubs, and sprouting trees. That is why the prairie had few trees until Euro-Americans settled there and began suppressing (stopping) fires. (Euro-Americans are Americans with European ancestors; sometimes called “whites.”)

Nutrients called “minerals” were added to the soil from the ashes of burned vegetation; therefore, the new grass that sprang up following a fire was more nutritious (new-Trish-us) than the old growth. The grass was also able to get a fresh start since the dead grass and other vegetation no longer formed layers, called “litter,” that blocked sunlight and moisture from prairie grasses.

Grazing animals such as bison, deer, rabbits, and prairie dogs were important for maintaining healthy grasslands. These animals ate the tops off the prairie plants,



Figure 5. Fire was a natural and normal part of the prairie before Euro-Americans settled the land. Prairie fires killed most young trees, and therefore, few trees were found. Fire is beneficial since it revives prairie by removing the dead grasses and plants that prevent new grass growth.



Figure 6. Prairie plants come back quickly after a fire, and the new growth is nutritious to animals. Even though fire is good for the prairie, most are put out because they can damage farms, towns, and other property. Wildlife agencies conduct “controlled burns” on their property to mimic the natural system of fires which historically occurred across the prairie.

which resulted in new growth. Because grass grows from growth points under the surface of the ground, the grass quickly grew back after being nipped off by the grazers. The new growth had more nutrients, was thicker, and was easier to digest than was the old growth.

The amount of grazing on the prairies was significant. Millions of bison covered the plains, and each animal ate about 30 pounds of grass per day. Besides mowing the grass, grazers helped the prairie in other ways. For example, the waste products of the millions of grazing animals added natural fertilizer to the soil. This system of grazing can be accomplished on the prairie today, as long as it is managed correctly.

Prairie dogs and other burrowing animals helped the prairie by digging huge underground tunnel systems. Tunnels allowed air and water to enter deep into the soil, which was good for plant roots.

Before Euro-Americans began settling in the center of North America, **native** (naturally occurring) prairie covered an area stretching from the forests of the East to the Rocky Mountains in the West. Numerous kinds and numbers of wildlife inhabited the grasslands, and the forces of nature kept the prairie ecosystem in balance. An **ecosystem** is an area that contains organisms (living things) interacting with one another and with their non-living environment. Almost all of North Dakota was covered by some type of prairie. Most of the native prairie is gone today. This has significantly decreased the populations of ground-nesting birds that rely on prairie.

Types of Prairie

Prairies are classified into three types—tallgrass prairie, mixed-grass prairie, and shortgrass prairie. North Dakota includes all three major prairie types. Each prairie community is made up of a variety of grass species with a sprinkling of colorful forbs, or wildflowers.

The type of prairie that develops in a region depends on the amount of precipitation the region receives, as well as the fertility and type of soil. Tallgrass prairie needs the most moisture, while shortgrass prairie needs the least.

The climate of North Dakota varies from east to west. Eastern North Dakota gets much more moisture than does the western part of the state. Also, the northeastern part of the state has colder temperatures than the southwest. It was mainly these climate factors, along with the fertility of the soil, that determined the type of prairie that would develop in each part of the state.

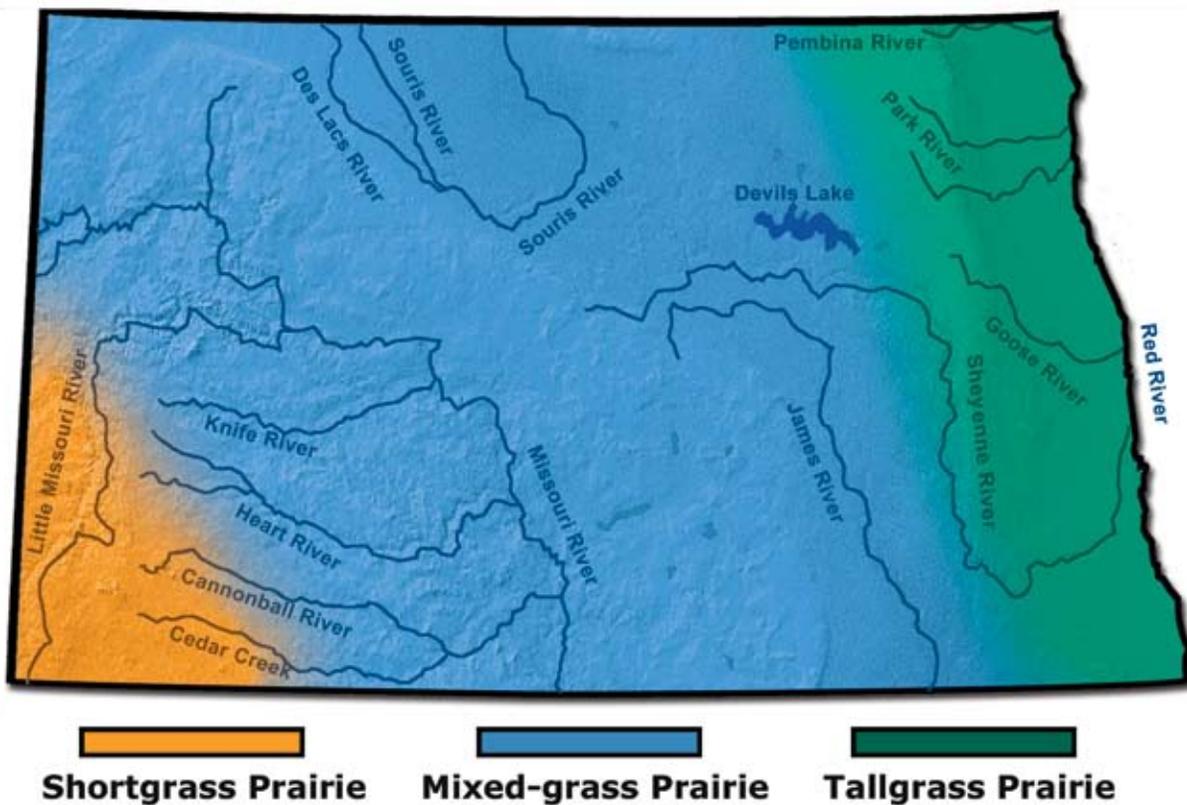
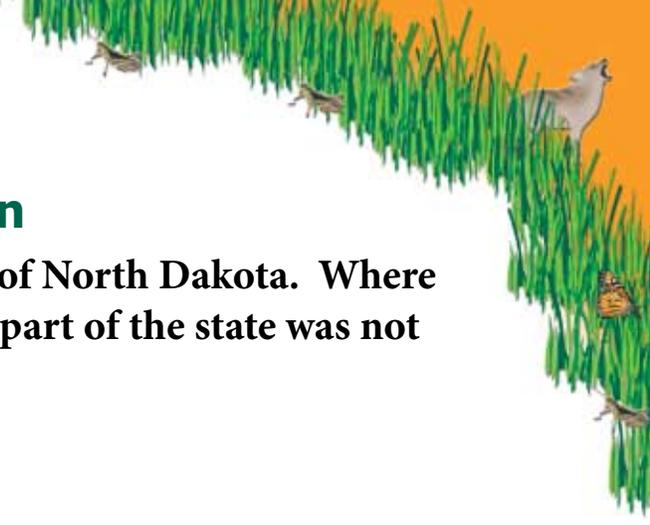


Figure 7. The three prairie types in North Dakota are determined by climate factors such as rain and temperature, as well as the fertility of the soil. (Graphic by Cassie Theurer)



Comprehension

1. Name the three major natural regions of North Dakota. Where is the Missouri Coteau located? What part of the state was not formed by the Wisconsinan glacier?
 2. Name four conditions that enabled prairie grasses, but not trees and other woody plants, to survive.
 3. What has significantly decreased the populations of ground-nesting birds in North Dakota?
 4. What are the three types of prairies in North Dakota? What determined the type of prairie that developed in each part of the state?
- 

Critical Thinking

1. French trappers and explorers used the term “sea of grass” to describe the prairies. What other terms might have been fitting for them to use? Explain.

Tallgrass Prairie

It is estimated that before Euro-American settlers began farming the land, North Dakota had over 2 million acres of tallgrass prairie. An **acre** is approximately the size of a football field. In the span of about 100 years, over 90 percent of the state's native tallgrass prairie was lost.

North Dakota's tallgrass prairie developed in the Red River Valley, where the precipitation averages 18 to 22 inches a year. The **tallgrass prairie** obviously got its name because of the height of its grasses. Examples of native grasses that reached heights of 6 to 7 feet included big bluestem and Indiangrass.

Tallgrass prairie is made up of several species of both sod-forming grasses and bunch grasses. **Sod** is grass-covered soil, which is held together by matted roots. **Sod-forming grasses** spread by sending out horizontal stems both above and below the surface of the ground. Sod-forming grasses produce a web of plants that hold soil tightly together. Areas covered by grass and other vegetation prevent soil from eroding (wearing away by wind or water).

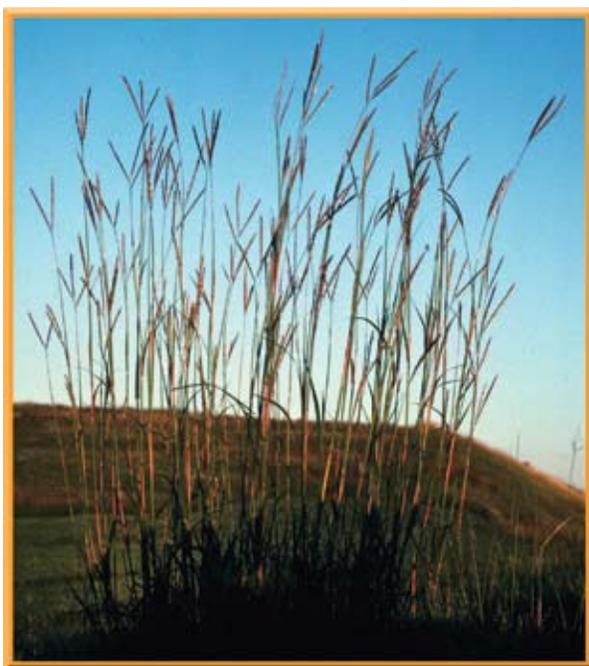


Figure 8. Tallgrass species such as big bluestem, Indiangrass, and switch grass were once common in the Red River Valley. Today, little prairie remains in this fertile region, which was converted to agricultural use in the late 1800s and early 1900s.

Bunch grasses grow in bunches, or clumps, and are spread by seeds. These plants have extremely long roots that stretch downward many feet below the surface of the ground. Because the roots can reach moisture that is deep underground, bunch grasses are able to survive in dry areas where other plants wither and die.

Over many centuries, the soil of the tallgrass prairie region became more and more fertile. There is a reason for this. As part of their life cycles, the grasses and forbs died, decomposed, and returned to the soil. This process built up humus (Hyoo-mus) in the soil.

Humus is the organic (from living things) matter in the soil. It is

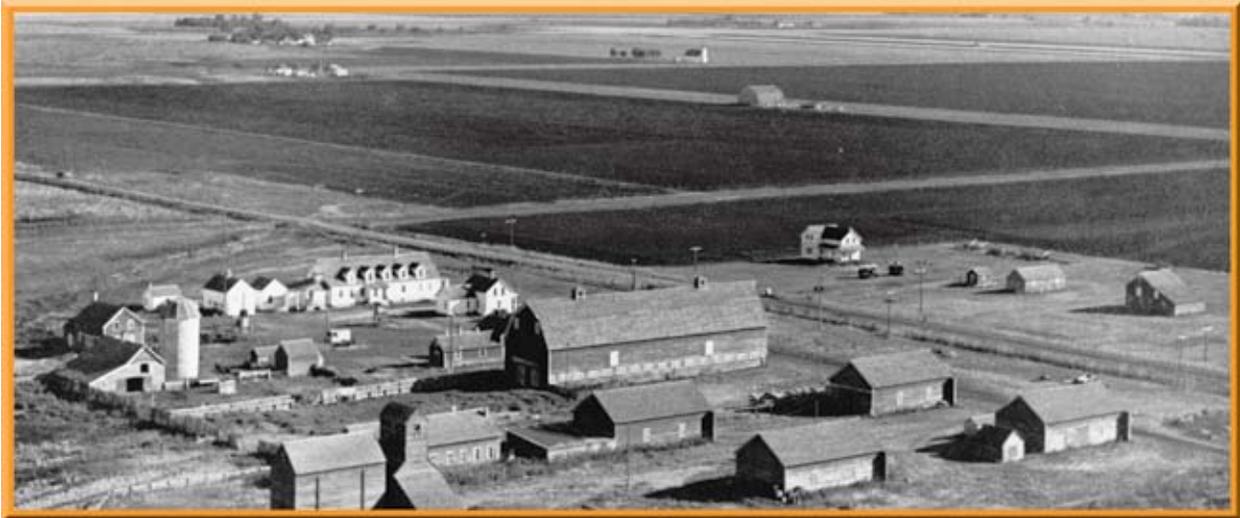


Figure 9. The Red River Valley is flat with very fertile soils which were developed into large operations called bonanza farms. Today, there is almost no prairie left in the Red River Valley. Mature tree rows are the primary habitat present on the landscape and were planted to prevent soil erosion in the early 1900s. (*State Historical Society of North Dakota, 00699-01*)

important because it provides nutrients for plants, loosens the soil so that air can enter, and holds moisture in the soil. The more humus the soil contains, the more fertile it is. The Red River Valley contains a thick layer of humus.

For thousands of years, the tallgrass prairie was a rich and diverse ecosystem that provided ideal habitats for hundreds of plant and animal species. A **habitat** is an environment that provides the food, water, shelter, and space for wildlife to make their homes. The forces of nature kept the communities in balance.

It is ironic (eye-Ron-ik) (the opposite of what is expected) that the same factor responsible for the success of the tallgrass prairie was the factor that led to its near-extinction. That factor was the extremely fertile soil.

The rich soil attracted bonanza farmers who arrived in the Red River Valley in the 1870s. **Bonanza farms** were gigantic wheat farms in northern Dakota. They ranged in size from 3,000 acres to over 75,000 acres. These huge farms, which made massive profits (a lot of money) for their owners, struck the first death-blow for the tallgrass prairie.

Hundreds of horse-drawn implements advanced over the prairie, digging into the sod and plowing down the habitats of millions of animals. By 1900, most of the bonanza farms were being split and divided into smaller tracts. These tracts

of land were sold to settlers who established their own farms. The destruction of prairie habitats continued.

The Red River Valley has some of the most fertile soil and best farmland in the world. Today, its extremely rich soil provides nourishment, not for prairie grasses and forbs, but for farm crops.

The beautiful tallgrass prairie, which had existed for thousands of years, has been almost totally destroyed. It is one of the most endangered habitat types in the world.

Most of the tallgrass prairie remaining in North Dakota is located in the **Sheyenne National Grassland**. National grasslands are public lands, which mean they belong to all of us. They are managed by the U.S. Forest Service, a federal government agency, which is a part of the United States Department of Agriculture.

The **Sheyenne National Grassland** is located in Ransom and Richland counties in southeastern North Dakota. It consists of over 70,000 acres of public land made up of tallgrass prairie, mixed-grass prairie, and shortgrass prairie. Cattle from nearby ranches graze in the Sheyenne National Grassland.

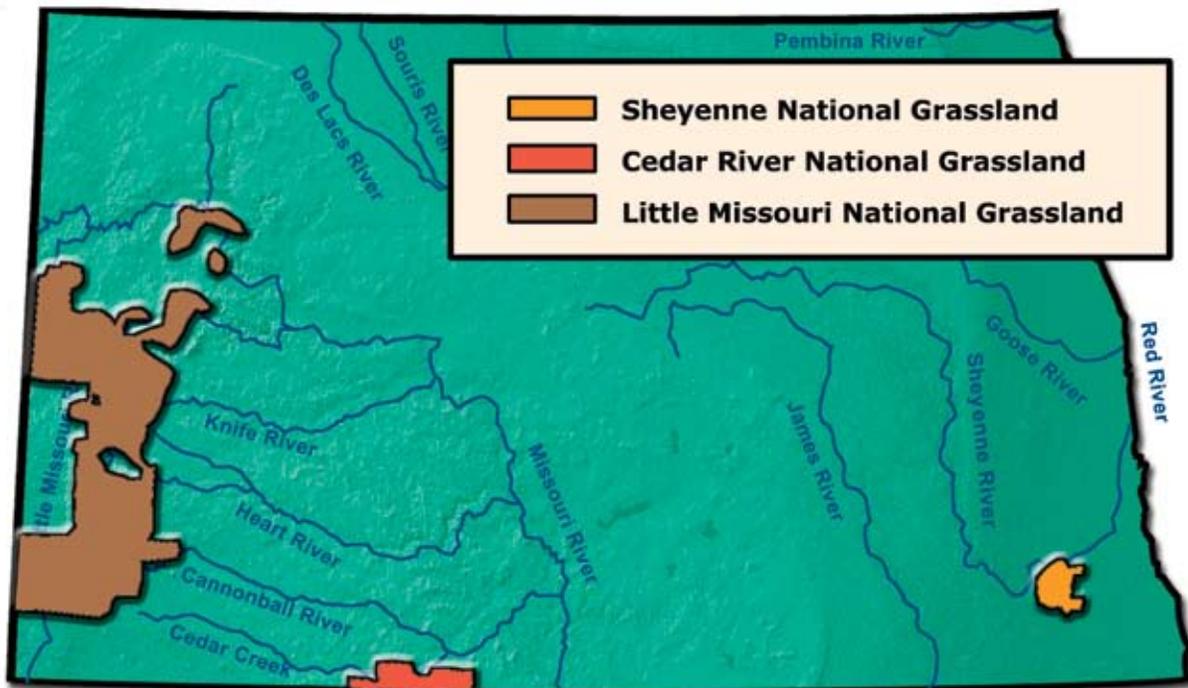
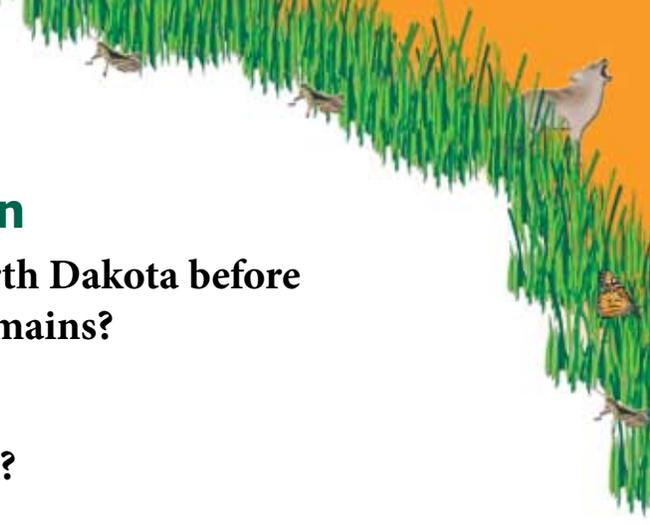


Figure 10. The **Sheyenne National Grassland** located in southeastern North Dakota is owned and managed by the U.S. Forest Service. It is one of the few remaining prairies in this part of the state. National Grasslands are public property (owned by everyone) and, therefore, good places for field trips. (Graphic by Cassie Theurer)



Comprehension

1. How much tallgrass prairie was in North Dakota before Euro-Americans came? How much remains?
2. How tall do native tallgrass species get?
3. How do sod-forming grasses spread? How do bunch grasses spread?
4. How was humus built up in the soil? Which region of the state has the most fertile soil?
5. What were bonanza farms?
6. What is one of the most endangered habitat types in the world? Where in North Dakota is most of this habitat type located?

Critical Thinking

1. Why was the tallgrass prairie the first prairie type to be destroyed in North Dakota?

Mixed-grass Prairie

As the elevation starts to rise west of the Red River Valley, various species of shortgrasses gradually begin to mix with the different varieties of tallgrasses. The **mixed-grass prairie** is a combination of tallgrass and shortgrass species.

A national grassland of mainly mixed-grass prairie in North Dakota is **Cedar River National Grassland**. It is located in Sioux county. Cedar River National Grassland consists of 6,700 acres and connects with the Grand River National Grassland of South Dakota.

One of the best-known grasses of the mixed prairie is western wheatgrass. This tough, native grass once covered almost all of North Dakota. It is still found in every county of the state. In 1977, **western wheatgrass** became the official state grass of North Dakota.

Western wheatgrass is a sod-forming grass that reaches a height of 1 to 3 feet. In the spring, when it is fresh and tender, it is good for cattle grazing. Later in the summer, its stems become tough, and then cattle do not like to eat it. These tough stems found in native grasses are very important for wildlife habitat. They provide wildlife winter habitat since they remain standing. These standing grasses are also important for ground-nesting birds in the spring. Non-native grasses such as brome grass do not have tough stems and get pushed down in a flat mat of vegetation making it less desirable for wildlife habitat.



Figure 11. The **mixed-grass prairie** makes up the largest prairie type in the state. It begins at the edge of the Red River Valley and extends westward beyond the Missouri River system. This mix of grasses and forbs is critical for prairie wildlife species, particularly ground-nesting birds.

Both sod-forming grasses and bunch grasses are found in mixed-prairie regions. Many colorful forbs are also present. Many more plant species are found in mixed-grass prairies than in tallgrass or shortgrass prairies.

Before Euro-American farmers started breaking up the sod, mixed-grass prairie covered about 85 percent of North Dakota. Today, mixed-grass prairie exists in about 30 percent of the state and is the most common prairie type in North Dakota. Both the Drift Prairie and the Missouri Plateau contain mixed-grass prairie regions.



Figure 12. Conversion of prairie to cropland (farming land) has occurred in North Dakota since the area was first settled by Euro-Americans. Today, high prices for agricultural crops and the use of corn in the production of ethanol for fuel continue to make it financially attractive to convert more prairie into cropland.

Farming practices destroyed a great deal of mixed-grass prairie, particularly on the Drift Prairie; however, mixed-grass prairies did not suffer the almost total destruction that the tallgrass prairies suffered. There are a couple reasons for this.

Some of the mixed-grass prairies are located on land that is too hilly, too rocky, or otherwise unsuitable for farming. Others are found in wetlands regions that are not dry for a long enough time during the summer for crops to mature.

Cattle ranching is the main activity on much of the remaining mixed-grass prairie in the state today. Grasslands are important for maintaining the livestock industry. Almost 80 percent of the diets of cattle in North Dakota is made up of forage.

Forage consists of grass and other plants that grazing animals eat.

If prairie grasses are managed correctly, they provide a continual source of food for cattle. Before Euro-American settlement, this periodic grazing occurred naturally by herds of bison, which never stayed on a piece of prairie too long. If prairie is overgrazed, it can take a long time to recover (grow back). Exposed soils, caused by too much animal traffic, can start soil erosion and invite unwanted weeds to grow.

Shortgrass Prairie

The shortgrass prairie region is located in the southwestern part of North Dakota where the precipitation averages 10 to 12 inches a year. Less moisture along with shallower, less fertile soils prevent some grasses from growing.

Shortgrasses are grasses with a height of 3 to 7 inches. One of these species is blue grama. Other grasses are part of the shortgrass prairie but have a medium height. These include little bluestem and side oats grama. The shortgrass prairie is used as rangeland for grazing cattle. Wildlife also flourishes in the shortgrass prairie.

The **Little Missouri National Grassland** in southwestern North Dakota covers over 1 million acres and consists of both short and medium-height prairie grasses. It is the largest grassland in the United States. This national grassland is not all connected because some privately-owned land is scattered throughout it.

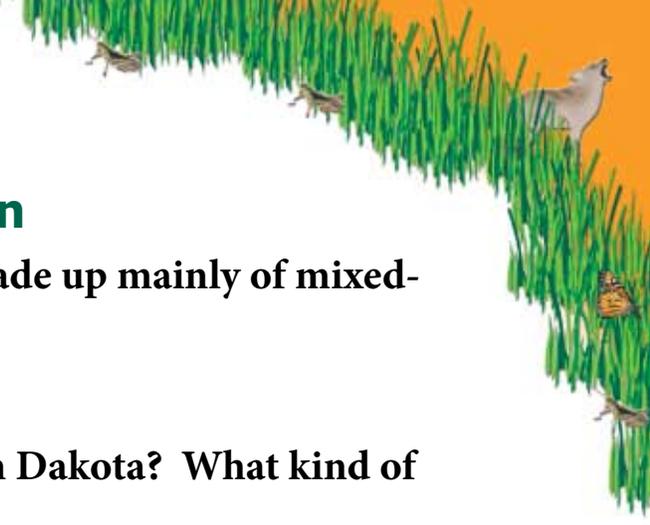


Figure 13. Blue grama is a prairie grass categorized as a shortgrass. It is found in both the mixed- and shortgrass prairies.

Theodore Roosevelt National Park, with its colorful Badlands, is located within the Little Missouri National Grassland. The highest point in North Dakota, **White Butte**, is located in the southeastern corner of this national grassland. Its elevation is about 3,500 feet, which is still not very high compared with states to the west that have major mountain ranges.



Figure 14. The Little Missouri National Grassland is comprised of both mixed-grass and shortgrass prairie. These western grasslands contain a variety of grasses as well as wildflowers, junipers, cactus, sagebrush, yucca, and areas called woody draws that contain trees.



Comprehension

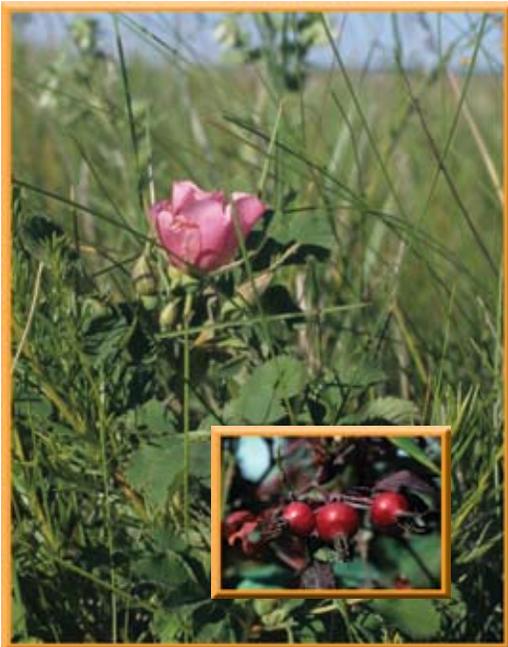
1. Name the national grassland that is made up mainly of mixed-grass prairie. Where is it located?
2. What is the official state grass of North Dakota? What kind of grass is it?
3. What types of grasses are found in mixed-prairie regions?
4. What percent of North Dakota was covered by mixed-prairie grasses before Euro-Americans started breaking up the sod? What percent exists today?
5. What is the main activity on much of North Dakota's mixed-grass prairie today?
6. Why was the prairie not overgrazed when herds of bison grazed?
7. Name one species of shortgrass. How tall does this species get? How are shortgrass prairies used by ranchers?
8. What is the largest grassland in the United States? What national attraction is located within this grassland?

Critical Thinking

1. Explain why national grasslands are so important.



Figures 15 & 16. Prairie crocus is the first wildflower to bloom in the spring.



Figures 17 & 18. The wild prairie rose is the official state flower. The plant grows about 18 inches tall. Its flowers are generally pink. The fruit of the plant is called rose “hips” and can be eaten by wildlife and people.

Forbs

Forbs are native prairie wildflowers with deep roots. There are more than a thousand species found across the state. These prairie plants bloom at various times during the spring and summer, dotting the prairie with splashes of bright color from early spring through late summer. Most forbs have thick leaves, which help hold moisture in dry prairie conditions. The majority are **perennials**, meaning that they come back from the root year after year.

North Dakota’s earliest-blooming spring wildflower is the **prairie crocus**. A Dakota Indian story said that this flower had the special power to awaken other plants in the spring. The prairie crocus is also called pasque (pask) flower, wild crocus, wind flower, and May flower.

Besides adding color to the prairie, some forbs provide a direct food source for wildlife. Their colors attract insects, and by doing so, they provide a food source for birds. This is an example of the start of a food chain or “web of life.” Some forbs can be used in food or in health supplements.

In 1907, the **wild prairie rose** was named the official state flower of North Dakota. It grows along roadsides and in prairie pastures all over the state. The rose hips, or fruits, of this flower were used by Plains Indians as food and as a treatment for many illnesses. It is used today in tea, as Vitamin A and Vitamin C supplements, and in air fresheners. Rose hips are also eaten in the winter by birds such as sharp-tailed grouse.

American Plains Indians used roots and other plant parts of various forbs in their medicines.

- ▶ white penstemon toothache pain
- ▶ western wallflower stomach cramps
- ▶ prairie smoke mouth sores, sore throat, coughs, open wounds, sore eyes
- ▶ purple coneflower snake bites, bee stings, toothaches, coughs, sore mouth and gums, neck pain, mumps, measles, smallpox, arthritis, other conditions
- ▶ prairie lily spider bites
- ▶ yellow coneflower headaches, rattlesnake bites, poison ivy
- ▶ common yarrow stop bleeding
- ▶ blanket flower upset stomach, eye or ear problems
- ▶ scarlet globemallow kill pain
- ▶ dotted blazing star bring down swelling, heal wounds
- ▶ Missouri goldenrod sore throats, toothaches
- ▶ wild licorice flu, upset stomach
- ▶ curlycup gumweed asthma, coughs, skin rashes



Figure 19. Prairie Smoke got its name from the hair-like strands that resemble smoke. These strands remain attached to the flower head after blooming.



Figure 20. Purple coneflower is a common forb of the mixed and shortgrass prairies. The plant was used by American Indians for toothaches, bee stings, and other pains because it contains substances that have a numbing effect.



Figure 21. Rocky Mountain bee-plant is not a perennial. The plant dies after one season and comes back the next year from seeds that dropped after flowering.

The scientific name for **purple coneflower** is *Echinacea* (ek-ah-Nay-sha). The roots of this plant are used by some people today as a health supplement to prevent colds and to strengthen the immune system. **Wild bergamot** is used today in a tea called “Earl Gray.”

Plains Indians used parts of other forbs because they tasted good and provided nutrients. Examples are **breadroot**, **Rocky Mountain bee-plant**, and **spiderwort**.

Showy milkweed is a plant that is not often eaten by grazing animals because it tastes bad. On the other hand, milkweed plants are necessary in the life cycle of **Monarch butterflies**. These colorful insects lay their eggs on milkweed plants. Each egg develops into a larva (Lar-vah), which is the caterpillar form of the developing butterfly.

Milkweed plants are the only food caterpillars will eat. Caterpillars eat milkweed leaves until the caterpillars are a little bigger around than a pencil. The toxins in the milkweed plant do not harm the caterpillars but instead provide protection. Birds do not eat the caterpillars since they taste bad.

At the end of the larva stage, the caterpillar transforms into a chrysalis. A **chrysalis** is a cocoon, or protective



Figures 22, 23, & 24. Monarch Caterpillar (left); Monarch Chrysalis (center); and Adult Monarch Butterfly (right).

case, that holds the insect as it is transforming from the larva to the adult stage. It remains as a chrysalis for about two weeks before emerging into a butterfly to continue the cycle. The process of changing from the larva stage to the adult stage is called **metamorphosis** (met-ah-Mor-fus-is).

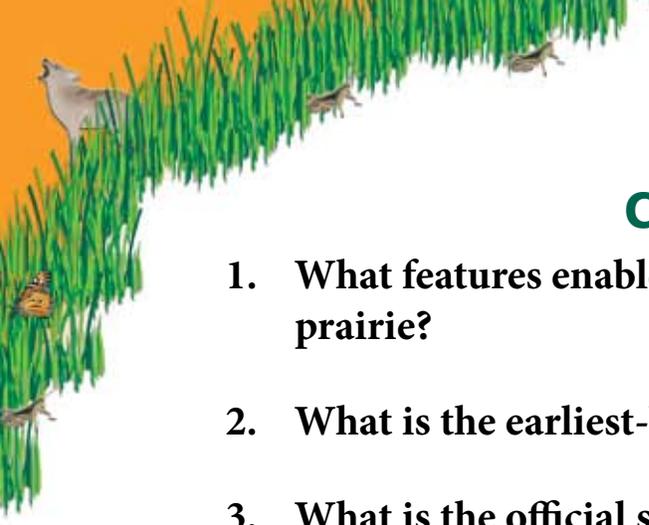
Many forbs need to be pollinated.

Pollen is powder produced by certain plants and must be carried from plant to plant in order for the plant to reproduce. When bees and other insects land on a flower, pollen sticks to their legs. Some of this pollen falls off when they land on another flower. In this way, pollen is carried from one flower to another. This process is called **pollination**. Pollination is necessary for the formation of fruits including chokecherries, plums, and juneberries.



Figure 25. The tenpetal blazingstar is a unique western plant which has flowers that bloom at night to be pollinated by night-flying insects.

Some insects are attracted to specific forbs. The **yucca** is pollinated only by the yucca moth. The **gumbo lily** and **tenpetal blazingstar** are pollinated only by night-flying insects.



Comprehension

1. What features enable forbs to get enough moisture from the prairie?
2. What is the earliest-blooming spring forb in North Dakota?
3. What is the official state flower of North Dakota? Where does it grow? How was it used by Plains Indians? How is it used today?
4. What is the scientific name for purple coneflower? How is it used today?
5. Which plant is necessary in the life cycle of Monarch butterflies? Why do grazing animals not eat Monarch butterfly caterpillars?
6. Name the three stages in metamorphosis of the Monarch butterfly.
7. How are plants pollinated?

Critical Thinking

1. For how many years has the wild prairie rose been the official state flower of North Dakota?

PRAIRIE IN A NUTSHELL

-  A prairie, or grassland, developed on the flat, rolling plains created by the Wisconsin glacier.
-  Prairies were maintained by the natural conditions of low precipitation, strong winds, extremes in temperature, frequent fires, and grazing animals.
-  The three types of prairies are tallgrass prairie, mixed-grass prairie, and shortgrass prairie.
-  Large regions of tallgrass prairie in the Red River Valley were destroyed by bonanza farmers, beginning in the 1870s.
-  North Dakota's tallgrass prairie has been decreased by over 90 percent.
-  Two types of grasses are found on the prairie—sod-forming grasses and bunch grasses.
-  National Grasslands are public lands managed by the U.S. Forest Service.
-  Western wheatgrass is the official state grass of North Dakota.
-  Mixed-grass prairie once covered about 85 percent of North Dakota; it now exists in about 30 percent of the state.
-  The height of tallgrasses reaches 6 to 7 feet; the height of shortgrasses is about 3 to 7 inches.
-  Mixed-grass prairie is a combination of tallgrass and shortgrass species.
-  Cattle ranching is the main activity on the mixed-grass prairie today.
-  The Little Missouri National Grassland covers over 1 million acres and is the largest grassland in the United States.
-  Theodore Roosevelt National Park is located within the Little Missouri National Grassland.
-  Forbs have deep roots and thick leaves for getting and holding moisture.
-  The wild prairie rose is the official state flower of North Dakota.
-  Milkweed plants are necessary in the life cycle of Monarch butterflies as they go through metamorphosis.

PRAIRIE VOCABULARY

Acre:

 Area of land approximately the size of a football field

Bonanza farms:

 Gigantic wheat farms in eastern North Dakota that began in the 1870s

 Ranged in size from 3,000 acres to over 75,000 acres

Bunch grasses:

 Grass species that grow in bunches, or clumps, and are spread by seeds

 Have extremely long roots that stretch downward many feet below the surface of the ground

Chrysalis:

 Cocoon, or protective case, that holds an insect as it is transforming from the larva to the adult stage

Ecosystem:

 An area that contains organisms (living things) interacting with one another and with their non-living environment

Elevation:

 Land height

Forage:

 Grass and other plants that grazing animals eat

Forbs:

 Native prairie wildflowers with deep roots

Habitat:

 Environment that provides the food, water, shelter, and space for wildlife to make their homes

Humus:

 Organic (from living things) matter in the soil

Metamorphosis:

 Process of changing from the larva stage to the adult stage

 Amphibians and some insects, such as butterflies, go through metamorphosis

Mixed-grass prairie:

 Combination of tallgrass and shortgrass species

Native:

 Naturally occurring

Perennial:

 A plant that grows back year after year from the same root

Pollen:

 A powder produced by certain plants and must be carried from plant to plant in order for the plant to reproduce

Pollination:

 Process of pollen being carried from one flower to another

 Carried out when pollen sticks to the legs of bees and other insects

Prairie:

 Large, treeless region covered with grasses and forbs

Sod:

 Grass-covered soil that is held together by matted roots

Sod-forming grasses:

 Grass species that spread by sending out horizontal stems both above and below the surface of the ground

 Produce a web of plants that hold soil tightly together

Tallgrass prairie:

-  Native prairie grasses that reach 6 to 7 feet in height
-  Made up of several species of both sod-forming grasses and bunch grasses

Western wheatgrass:

-  Tough, native grass that once covered most of North Dakota
-  Official state grass of North Dakota

Wisconsinan glacier:

-  Last glacier that moved over North Dakota
-  Stayed about 28,000 years
-  Melted away about 12,000 years ago
-  Covered all of North Dakota, except for the southwest corner

Other Vocabulary I Want to Know:

PRAIRIE WILDLIFE

Prairie Dwellers

The prairies provide homes for hundreds of different species of wildlife. These prairie dwellers are adapted to an environment that has a great range of weather conditions and very few trees.

Mammals

For thousands of years, the North Dakota prairies were dominated by the largest land animal on the continent of North America. Millions of these shaggy beasts roamed the plains, grazing together in large herds that sometimes covered many square miles. This huge and majestic “ruler of the prairies” was the **American bison**.

People of the American Indian tribes who lived on the plains depended on the bison for food, shelter, and clothing. These people hunted to survive and did not waste any part of the animal.

Bison are part of the same animal family as cattle and goats. They are not related to the buffalo family of animals found in Asia and Africa. However, when early European explorers saw bison for the first time in North America, they misnamed them by calling them “buffalo.” Some people still use this word when referring to bison.

A bison has a big head with short horns; a hump on its shoulders; shaggy, brown fur with a mane (long, coarse hair on the neck); a beard under its chin; and a long tail with a tuft of hair at the end. The bull (male) can stand



Figure 26. American bison is the correct name for the largest land animal on the North American continent. Bison can be found within the Theodore Roosevelt National Park in western North Dakota.

6 feet tall from hoof to shoulder, measure 12 feet in length, and weigh up to 1 ton (2,000 pounds). The cow (female) stands about 5 feet tall and can weigh half a ton.

When Euro-Americans began settling on the plains in the 1800s, the slaughter (Slaw-ter) of these magnificent animals began. Fur traders, railroad companies, the federal government, and sport hunters caused the near-extinction of the bison. It has been estimated that by 1900, only about 300 bison were left in the world. The Plains Indian tribes were overpowered by Euro-Americans when the Indians' food supply was eliminated.

Today, a small population of bison lives within the boundaries of Theodore Roosevelt National Park in western North Dakota. Fences and other obstacles developed by people prevent bison from being free-roaming animals today. Some bison are privately owned and not considered "wildlife" under North Dakota law.

The grizzly bear and gray wolf were other mammals that once resided on the North Dakota prairies. Even though these animals no longer roam freely in the state, many other mammals are still common.

A large, grazing mammal found in the state today is the **elk**. Historically, the prairie was the predominant habitat for elk, not mountainous habitat where they moved when the prairies were settled. White-tailed deer, even though they browse in woody vegetation, are found throughout the state. Mule deer are located in rougher prairies of the west. Pronghorn also inhabit the western prairies. These are **game**

animals, which means that they may be hunted. Smaller prairie mammals include the red fox, coyote, badger, jackrabbit, pocket gopher, ground squirrel, and many other species.



Figure 27. Red foxes are furbearers, meaning their fur is a valuable resource used by humans. Their fur is thick and has evolved for survival during cold winters. They stay active year round and primarily eat small mammals like meadow voles and deer mice.

The **red fox** is a small dog-like **omnivore**, which means that it eats both plants and animals. Its diet consists mainly of small mammals, birds, insects, crayfish, corn, berries, and other vegetation. It is primarily **nocturnal** (nok-Ter-nal), or active at night. A red fox uses its sharp senses

of hearing and smell to find its prey. A red fox can hear the squeak of a mouse from a great distance.

An adult red fox measures about 3 feet in length and has a long, bushy, white-tipped tail. It weighs from 10 to 14 pounds. A red fox's long, bushy tail and thick fur coat make it look larger than it actually is. During the winter, a red fox sometimes curls up in a ball and uses its tail as a blanket to keep warm.

Foxes have their young underground in a den, which is often a complex of holes left by another animal such as a badger. Young foxes come above ground to play in the spring until they are old enough to go out on their own in the fall.

Another predator of the prairies is the **coyote**. Even though it is not a wolf, the coyote has sometimes been called a "prairie wolf." Coyotes, like foxes, are **canids**, or members of the dog family, but coyotes are quite a bit larger than foxes. The coyote's length, including the tail, can be up to 5 feet long. A coyote can weigh up to 40 pounds.

The diet of coyotes consists mainly of small mammals such as rabbits, ground squirrels, and mice. They also eat insects, reptiles, fruit, and **carrion** (Kair-ee-un), or dead animals that have been killed by other animals, by vehicles, or by other means.

A common mammal of the prairie that most people do not like to get close to is the **striped skunk**. These animals are heavy-bodied but have short legs. They weigh up to 10 pounds. The black body contains two white stripes that meet at the head.

Skunks are omnivores that eat small mammals, fish, insects, eggs, carrion, and vegetation. They are primarily nocturnal, sleeping in their dens during the day and hunting at night.



Figure 28. The **coyote** is a member of the dog family. When coyotes live in an area, foxes are normally not present since coyotes will not tolerate them.

Predators that prey on skunks include coyotes, foxes, and badgers. For protection, the striped skunk sprays its predators with a strong-smelling fluid that stings the eyes of the predator. This tactic gives the skunk time to escape from danger. Skunks spray only when they are threatened. Turning and running away is their preferred way of escaping predators.

The **American badger** is a **carnivore** (meat eater) with short legs and a wide, flat body. Its average weight ranges from 12 to 16 pounds. Badgers, with their strong front legs and sharp claws, are excellent diggers. Their underground dens consist of tunnels that range from 6 to 15 feet deep and contain bedrooms and separate toilet rooms.

The badger is noted for its fierce nature. When it is threatened by a predator, it growls, hisses, and squeals. It uses its sharp teeth and long claws to fight when attacked.

Badgers eat mainly ground squirrels and pocket gophers, which they dig out of the ground using their powerful front legs and claws. They also eat prairie dogs, skunks, mice, snakes, birds, and carrion.



Figure 29. Badgers are prairie animals that spend a lot of time digging with their muscular front legs and large claws. This digging is mostly in pursuit of prey like pocket gophers and ground squirrels that live underground.

Three types of ground squirrels live in North Dakota. They are Richardson's ground squirrel, thirteen-lined ground squirrel, and Franklin's ground squirrel. Ground squirrels eat harmful insects. All three of these ground squirrels provide food for larger mammals and raptors (predatory birds). Ground squirrels have often been called "gophers," which is not correct.

The **Richardson's ground squirrel** is a **diurnal** (die-Ern-al) animal, which means it is active during the daytime. These small mammals dig burrows about 5 feet underground that measure about 3½ inches in diameter and 15 to 20 feet in length. The burrows are grouped closely together in colonies.

Richardson's ground squirrels are omnivores that eat seeds, grains, grasses, insects, and carrion. They also store seeds and grains for later use. During the winter, the ground squirrels hibernate in their burrows.

Ground squirrels are born underground in late April or early May. Only about one-fourth of the young animals survive their first year. This means that out of every 100 ground squirrels that are born, only 25 of them are still living a year later. Seventy-five of them have died. The strategy of creating large families just so a few can survive is common in the world of wildlife. Most of the ground squirrel deaths are due to predators such as badgers, snakes, eagles, hawks, and falcons.

Richardson's ground squirrels are sometimes called "flickertails" because their tails are constantly flicking, or moving. One of the nicknames for North Dakota came from this small mammal that is found throughout the prairies of North Dakota. Before the official nickname "Peace Garden State" was adopted in 1957, North Dakota was known as "The Flickertail State."

The **thirteen-lined ground squirrel** is the most common ground squirrel in North Dakota. It is found in every part of the state and is easy to identify by the pattern of dark and light stripes extending down its back. Even though it is not a true gopher, the thirteen-lined ground squirrel is sometimes misnamed a "striped gopher."



Figure 30. Richardson's ground squirrels are prey for many larger mammals and birds, including badgers, foxes, coyotes, red-tailed hawks, and golden eagles. This ground squirrel has been commonly referred to as a "flickertail."



Figure 31. Thirteen-lined ground squirrels are often referred to as "striped gophers," but they are not gophers. They are common and provide food for many prairie predators.

Measuring about 9½ inches, including the tail, the thirteen-lined ground squirrel is the smallest ground squirrel in the state. Its weight ranges from one-fourth to one-half pound.

Thirteen-lined ground squirrels are omnivores. Their foods include grasses, roots, seeds, insects, and carrion. They are hunted by the same types of animals that prey on Richardson's ground squirrels.

Franklin's ground squirrels are somewhat larger than the other ground squirrels in the state. Franklin's ground squirrels are found mainly where taller vegetation exists. They are diurnal and have similar eating habits and similar predators as the other ground squirrels.

Both the Richardson's ground squirrel and the thirteen-lined ground squirrel are curious animals that stand upright in order to check their surroundings. The Franklin's ground squirrel, however, flees to its burrow at the first sign of anything unusual.

North Dakota has two species of pocket gophers—the **northern pocket gopher** and the **plains pocket gopher**. Pocket gophers got their name because of the fur-lined pouches, or “pockets,” on the outsides of their cheeks. These pouches are used for carrying seeds and other vegetation to their burrows. Pocket gophers are **herbivores** (plant eaters).



Figure 32. Pocket gophers spend most of their life underground so they are not often seen by humans. Soft, fluffy piles of soil on top of the ground in a field are clear signs that pocket gophers are present.

Pocket gophers dig roomy, underground burrows. Soft piles of dirt scattered around fields, gardens, and farmyards are evidence that pocket gophers live in the area. These animals spend most of their lives in their burrows under the ground and therefore are rarely seen by humans.

The burrows of pocket gophers are divided into rooms that are used for different purposes. Separate sections are used for food storage, sleeping areas, toilets, and tunnels for bringing in food.

The pocket gopher has several features adapted to its environment. Very long, sharp front teeth and claws enable it to dig easily into the earth. It is able to close its lips behind its teeth while digging. This feature prevents soil from entering its mouth.

Because the pocket gopher does not need to see or hear much underground, it has small eyes and ears. Its tail is short and sensitive and helps the animal find its way in the burrow while moving backwards. While in the burrow, a pocket gopher can run backward just as fast as it can run forward.

The **white-tailed jackrabbit**, which is found throughout North Dakota, is not a rabbit at all. It is an entirely different species called a “hare.” White-tailed jackrabbits are nocturnal herbivores that generally hide during the day but come out at night to eat grasses, twigs, and other vegetation.

During the summer, the jackrabbit has a brownish-gray coat, but as daylight hours get shorter with the arrival of winter, the brown coat is replaced with a white coat. This wintertime change in color gives the jackrabbit camouflage (Kam-ah-flozh) protection in the snow. **Camouflage** is protective coloring that allows an animal to blend in with its surroundings.

The average length of a jackrabbit from its nose to its hind feet is about 2 feet. Its average weight is about 7 pounds.

Jackrabbits have sharp eyesight and hearing, and they depend on their speed to escape predators. They travel in 12- to 20-foot leaps and can reach speeds of 40 miles per hour. Natural predators of jackrabbits include foxes, coyotes, and eagles.

In spite of its name, the jackrabbit is not a rabbit. A true rabbit that is common in all parts of North Dakota is the **eastern cottontail**. Cottontail rabbits are herbivores that eat grasses and other vegetation such as twigs and tree bark.



Figure 33. Winter does not stop pocket gophers from digging. This tube of soil seen after the snow melted in the spring is the result of the pocket gopher pushing soil out of the earth and into a snow bank.

Female cottontails give birth to several litters each year, but because of their many predators, only about 1 percent of the rabbits that are born reach two years of age. This means that out of every 100 rabbits born, only one is alive after two years. Their many predators include foxes, coyotes, weasels, hawks, and owls.

Hare

- ▶ Born with fur; eyes open
- ▶ Able to move about and feed on their own shortly after birth
- ▶ Young are called “leverets” (Lev-ah-rets)
- ▶ Long ears and long, powerful hind legs
- ▶ Weigh up to 9½ pounds
- ▶ Live alone
- ▶ Live on the surface of the ground
- ▶ Brownish-gray in summer, white in winter
- ▶ Escape predators by out-running them



Figure 34. White-tailed jackrabbits are prairie mammals that depend on their speed and maneuverability to escape from predators. Their fur turns white as days shorten and winter approaches.

Rabbit

- ▶ Born hairless and blind
- ▶ Need parents’ care for 4 to 5 weeks after birth
- ▶ Young are called “kittens” or “bunnies”
- ▶ Shorter ears and hind legs than hares
- ▶ Weigh up to 4 pounds
- ▶ Live in colonies
- ▶ Usually live in burrows
- ▶ Stay the same color year-round
- ▶ Freeze in place or run to burrow when threatened



Figure 35. Cottontail rabbits are found in a variety of woody or shrub habitats associated with prairie. They are smaller than jackrabbits, have shorter ears, and do not change color between seasons.

Three species of weasels are found in North Dakota. The most common one is the **long-tailed weasel**. The long-tailed weasel is a **furbearer** (animal harvested for its fur).

In response to shortened daylight hours in the winter, the long-tailed weasel's light-brown coat is replaced by a white coat. The tip of the tail remains black.

Two of the smallest mammal species in North Dakota are voles and mice. The only mammal smaller is the shrew. Voles are sometimes called “meadow mice,” but voles are not true mice. Voles have shorter faces, shorter ears, and shorter tails than mice.

The **meadow vole** is found throughout the state and generally lives in thick grasslands. It has a body about 4 inches long with a tail measuring about 1½ inches. Voles provide excellent food for red foxes, coyotes, hawks, and owls.

The most common mouse in North Dakota is the **deer mouse**. It is found in every part of the state. Its body is about an inch shorter than that of the meadow vole, but it has a longer tail.

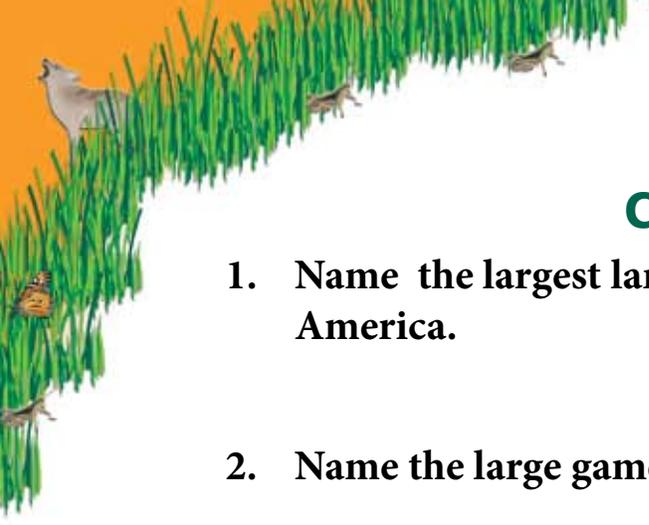
The deer mouse is a native mouse species, which survives naturally on the prairie. This is not true of the **house mouse**, which was brought here from Europe and survives only in houses, barns, and other structures provided by humans. Intruders to North America, like the house mouse, are called “exotic species.”



Figure 36. Meadow voles are found in all prairie habitats and provide excellent sources of food for many prairie predators. Unlike mice, they have short tails and ears.

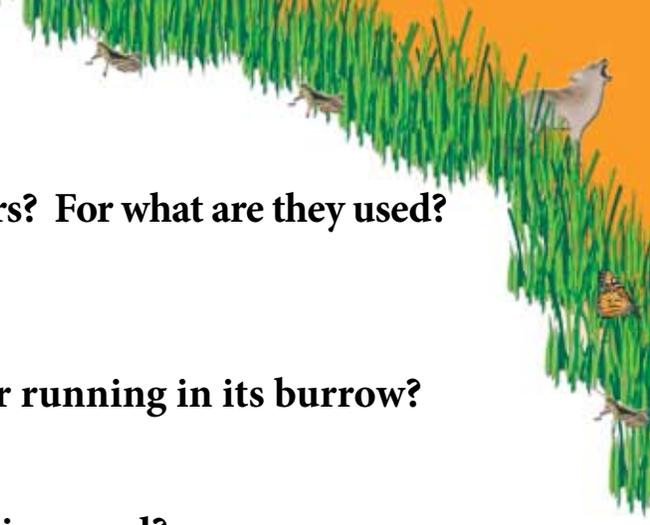


Figure 37. The deer mouse is one of several native mouse species. It is found in woody or shrub habitats within the prairie. Deer mice have longer tails and bigger ears than voles.



Comprehension

1. Name the largest land animal on the continent of North America.
2. Name the large game animals of North Dakota.
3. What makes the red fox look larger than it actually is?
4. What has sometimes been referred to as a prairie wolf? Why is this a misname?
5. What is the first thing that skunks will do when trying to escape predators?
6. Which prairie carnivore is noted for its fierce nature?
7. Name the three types of ground squirrels that live in North Dakota. Which two are curious and stand upright to look around?
8. Before North Dakota's official nickname was adopted, what was the nickname that was related to an animal? What is the actual name of that animal?

- 
9. What are the “pockets” on pocket gophers? For what are they used?
 10. What is unusual about a pocket gopher running in its burrow?
 11. How was the white-tailed jackrabbit misnamed?
 12. Why do cottontails need to give birth to so many rabbit kittens each year?
 13. How do the coats of both the jackrabbit and weasel change in response to shortened daylight hours during the winter?
 14. What is the difference between voles and mice?
- 

Critical Thinking

1. Are bison more like water buffalo or like goats? Explain.

Reptiles and Amphibians

The prairies of North Dakota provide habitat for several species of reptiles and amphibians. Both reptiles and amphibians are ectotherms (Ek-toe-therms). An **ectotherm** is an animal whose body temperature changes with the temperature of its surroundings. Ectotherms are also called “cold-blooded” animals.

North Dakota’s reptiles include snakes, turtles, and lizards. Several species of snakes inhabit the state. The most common are two species of garter snakes. They are found throughout the state in grasslands, often near bodies of water.

Reptiles

(snakes, lizards, and turtles)

- ▶ Ectotherm
- ▶ Skin with scales
- ▶ Claws on toes
- ▶ Lay eggs on land
- ▶ Young hatch on land and breathe through lungs

- ▶ Live on land

- ▶ Dry skin



Figure 38. Smooth green snakes are small, insect-eating reptiles found on North Dakota prairies. They are so well camouflaged that they are not often seen in the vegetation.

Amphibians

(frogs, toads, and salamanders)

- ▶ Ectotherm
- ▶ Smooth skin
- ▶ No claws on toes
- ▶ Lay eggs in water
- ▶ Young hatch in water as larvae (tadpoles) and get oxygen through gills

- ▶ Live part of their life in water and part on land

- ▶ Skin needs to stay moist



Figure 39. Great Plains Toad. Toads are insect-eating amphibians that hatch in wetlands but spend most of their lives in prairie habitats.

Garter snakes have black bodies with three yellow stripes running the length of the body. They are carnivores that eat a variety of small animals including frogs, toads, salamanders, insects, worms, and minnows. Garter snakes swallow their food whole.

The **smooth green snake** is a diurnal reptile found in native prairies and other grasslands. This animal is an insectivore (in-Sek-tah-vor). An **insectivore** is a carnivore that eats only insects and spiders.

When the smooth green snake feels threatened, it may either freeze or lift its body up and sway with the grass. It is so well camouflaged that it is difficult to spot. The smooth green snake is sometimes incorrectly called the “green grass snake.”

The **western hognose snake** was named because of its upturned snout (nose). During the hottest part of the day, these snakes escape the heat by burrowing into the ground. The upturned snout acts like a shovel to help the snake dig into the soil.

When hognose snakes feel threatened, they inflate their bodies, hiss loudly, and act as if they are going to strike. They are non-venomous (not poison), however, and do not actually strike. If this display does not frighten off their attacker, they roll over and play dead.

The **prairie skink** is a small lizard that is found in the eastern part of the state. It inhabits sandy areas in grasslands but is so secretive that it is seldom seen.

Prairie skinks are active in the summertime but hibernate in burrows during the winter. The diet of these insectivores consists of spiders and insects such as grasshoppers and crickets.

Toads are common amphibians on the North Dakota prairies. One of the species of toads found throughout the grasslands of the state is the **Great Plains toad**. It can be recognized by the large, dark, warty spots on its back.



Figure 40. The western hognose snake is found in most places in the state, with the exception of the northeastern corner. It prefers sandy areas in prairie and partially wooded regions. A hognose snake can be identified by its upturned snout, which it uses to burrow into loose soil to escape heat or lay eggs.

Great Plains toads breed only after rainstorms during the summer. Because they are amphibians, toads lay their eggs in water. They prefer clear, shallow pools such as flooded fields and road ditches. They will not lay their eggs in muddy water.

The most easily recognized toad in North Dakota is the **plains spadefoot toad**. This toad is the only one that has vertical eye pupils like cats. Plains spadefoot toads live in loose or sandy soils in central and western prairies of the state. They can dig deep burrows with the use of a digging spur (spade) on their back legs.



Figure 41. Plains spadefoot toads live in sandy, loose soils within prairie habitats. Unlike other toads, they have vertical eye pupils. They are named because of a special digging adaptation on their rear legs.



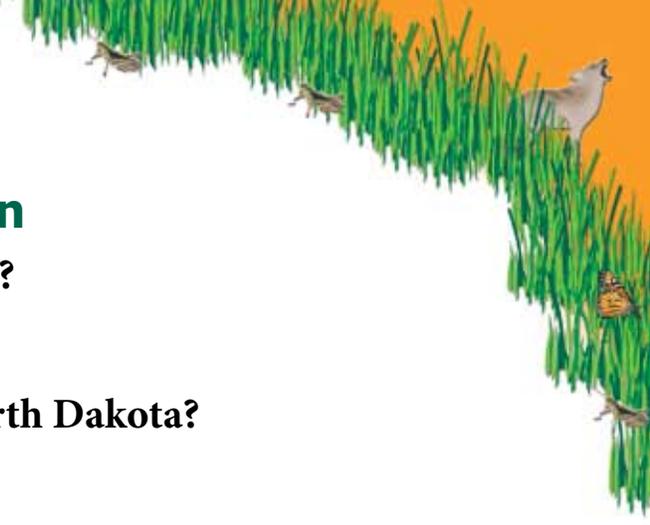
Figure 42. A spadefoot toad tadpole has begun to develop small legs. It will continue to get larger and will lose its tail in a process called metamorphosis. The process begins with a tadpole that hatched from an egg laid in water.

A female toad lays thousands of eggs at a time. It takes one to five days for the eggs to hatch into tadpoles and from three to six weeks for the tadpoles to become toads. The warmer the temperature, the faster the tadpole changes into a toad.

Metamorphosis (met-ah-Mor-fus-is) is the process of changing from the larva stage to the adult stage. Therefore, an amphibian goes through metamorphosis in its transformation from a tadpole (larva stage) to an adult amphibian.

Most of the tadpoles die before they go through metamorphosis. There may not be enough food in their shallow water habitats to support the thousands of tadpoles that have hatched. Many are eaten by predators. If the water habitat dries up, they will probably not survive.

Other toads found in the state include **Woodhouse's toad**, the **American toad**, and the **Canadian toad**.



Comprehension

1. How are reptiles and amphibians alike?
 2. What three types of reptiles live in North Dakota?
 3. How does the smooth green snake camouflage itself?
 4. Which lizard is so shy that it is seldom seen by people?
 5. How can the Great Plains toad be recognized? Which toad has eye pupils that are vertical?
 6. Why do toads lay their eggs in the water? What happens to most of the tadpoles before they go through metamorphosis?
- 

Critical Thinking

1. Which would you rather get close to—a skink or a skunk? Explain.

Birds

North Dakota is home to hundreds of species of birds that live in a variety of different types of habitats. Many of these birds are prairie species that nest on the ground and rely on open spaces to survive. The North Dakota prairies are home to three species of the grouse family—the greater prairie chicken, the sharp-tailed grouse, and the sage grouse.

The habitat of the **greater prairie chicken** is tallgrass prairie. When eastern North Dakota was covered by tallgrass prairie, large numbers of greater prairie chickens were found in the area. As the tallgrass prairie was plowed under to make farmland, the population of greater prairie chickens dropped drastically. Today, the only parts of the state that have greater prairie chickens are the Sheyenne National Grassland and a small prairie remnant (small piece) west of Grand Forks.

Sharp-tailed grouse inhabit open areas of prairie grass and brush. They can be found in the mixed-grass and shortgrass prairies of North Dakota, often where patches of shrubs provide additional food and cover.

Sharp-tailed grouse are native to North Dakota and have evolved (changed) for thousands of years to live in cold, snowy climates. Their legs are covered with feathers to keep them warm, and their feet have small projections that act like snowshoes so they can walk on the top of snow.



Figure 43. Birds of the prairie, including waterfowl, upland game, and songbirds rely on quality grass in which to build their nests on the ground. With less prairie and grass habitat in which to nest, prairie bird populations decrease.

In a snowstorm, sharp-tailed grouse will stay put and allow snow to fall on them, forming a snow shelter where they stay warm. After the snow stops falling, they harmlessly fly out.

Sage grouse are the largest grouse species in the state. These birds rely on sagebrush habitat found in extreme southwestern North Dakota.

The **ring-necked pheasant**, a bird that was introduced to North Dakota from China in the early 1900s, did not evolve with these “smarts” to live in a snow cave. Unlike the grouse, pheasants will simply stand in a

snowstorm until they die of exposure or starve.

An unusual mating behavior is displayed by male greater prairie chickens and sharp-tailed grouse. Each spring, several males gather in an open area of high ground and perform a strange dance. The object of this dancing is to impress the females who are watching from outside the circle of dancers. The same dancing area is used year after year. This dancing ground is called a **lek**.

The males fluff their feathers and fan their tails. The sides of their necks contain air sacs which they inflate and deflate, resulting in a “booming” sound. They lower their heads as they strut, bounce, leap into the air, and rapidly stomp their feet. At the same time, their voices make a “hoot” sound, which can be heard up to 2½ miles away.

The **upland sandpiper** is a bird that has the characteristics of a shore bird (long legs and long bill) but actually makes its home on the prairie. These birds nest on the ground but often perch on fence posts in order to see over tall grass. These birds migrate to South America to spend the winter.

Several species of songbirds inhabit the prairies of North Dakota. **Songbirds** are small, perching birds that sing a variety of different songs. Some of the most common ones are the western meadowlark, horned-lark, lark bunting, bobolink, grasshopper sparrow, and chestnut-collared longspur. All of these species rely upon prairie. As prairie is lost, so is the habitat in which they exist.



Figure 44. Male sharp-tailed grouse return to traditional areas on the prairie called “leks” every spring. Here, males show off to females in order that breeding can occur.



Figure 45. The upland sandpiper is a bird that doesn’t quite fit the mold. It has the characteristic long legs and bill of a shore bird that lives near water, but it actually finds its home on the prairie.

The **western meadowlark** is the state bird of North Dakota. It is a familiar bird that is often seen perching on fence posts. Many people recognize the melody of its song, which is a sign of spring.

John James Audubon was a naturalist and artist who studied birds and mammals. His goal was to draw or paint all of the birds on the continent of North America. In 1843, he spent a few months at Fort Union in western North Dakota.

During the time that Audubon stayed at Fort Union, he identified 11 new species of birds that scientists had never seen before. One of these birds was **Baird's sparrow**. This species was not identified again for another 29 years.

While at Fort Union, Audubon also identified **Sprague's pipit**. This once-common bird of the mixed-grass prairies is now quite rare. Both the Baird's sparrow and Sprague's pipit are examples of birds with very specific habitat needs that are found on our prairies. People from all over the world come to North Dakota to catch a glimpse of one or both of these birds.



Figure 46. Because North Dakota is well-known for its prairie, the western meadowlark was chosen as the official state bird. The colorful male, with a distinctive song, goes hand-in-hand with prairie and the return of spring. It is a ground-nesting bird whose populations have suffered because of the loss of prairie habitat.

John James Audubon became famous for his book, *Birds of America*.

Lake Audubon in McLean County was named after this famous artist and wildlife expert. Wildlife conservationists like Audubon helped develop an appreciation for wildlife and their habitats by showing people what lived on the prairie.

The **lark bunting** is a medium-sized sparrow with a large, white patch on its wings. It is the only sparrow that completely changes its color according to the season. During the summer, males are black, but they become drab-colored in the winter. The wing patch remains light-colored. Lark buntings build cup-like nests in the grass.

The **bobolink** is the only American bird that has white on its back and a black underside. Male bobolinks look similar to male lark buntings, except bobolinks have a yellow patch on the back of the neck. Bobolinks migrate to the southern hemisphere to spend the winter.

One of the earliest nesting birds on the prairie is the **horned lark**. It got its name from the two small feather tufts that look like small horns on its head. It has black stripes on each side of its head that curve up and meet below the eyes. Rather than hopping, as most songbirds do, the horned lark walks or runs.

The **grasshopper sparrow** got its name for two reasons. Part of its song is a buzz that sounds much like a grasshopper, and the diet of this bird is made up mainly of grasshoppers and crickets.

The **chestnut-collared longspur** was named because of certain features. The male has a rusty-red band on its neck that looks like a collar.

“Longspur” comes from the fact that the bird’s back toe and nail are about twice as long as the front toes. This toe with its long, sharp nail is called a “spur.”

A **raptor** is a predator. Raptors are also called “birds of prey.” The most common raptors on the prairies of North Dakota include various species of eagles, hawks, falcons, and owls. **Golden eagles** can be found nesting in our western prairies. Hawks, eagles, and falcons are diurnal, while owls are mainly nocturnal. Many species of hawks have been referred to as “chicken hawks” since they were



Figure 47. Horned larks migrate to the prairie early and often stay into the first snowfalls. Their name came from the two black, horned-shaped feather tufts on the head. Horned larks are ground-nesters.



Figure 48. Chestnut-collared longspurs are ground-nesting prairie birds that are fairly small. Like the prairie sparrows, not many people have seen one, because without binoculars, many of these birds look as if they are just brown in color.

thought to have eaten chickens. Actually, there is no such thing as a “chicken hawk.” The different hawk species are often hard to tell apart and, therefore, were all referred to incorrectly as “chicken hawks.”

Raptors of the prairie have an important role in helping to maintain the balance of nature. By hunting and catching prey, these carnivores control the population of **rodents** (gnawing or nibbling mammals such as rats, mice, voles, and ground squirrels). Raptors have extremely good eyesight. Hawks and falcons can see about 10 times better than humans. In dim light, owls can see about 100 times better than humans.

The feathers on the wings of owls are designed so that the birds can fly silently. They use their ears and eyes, which are found on a head that can rotate nearly all the way around, to locate prey. They are successful hunters, even in complete darkness.

The diet of raptors consists of small mammals, birds, snakes, amphibians, and large insects such as grasshoppers. Female raptors are generally larger than the males.

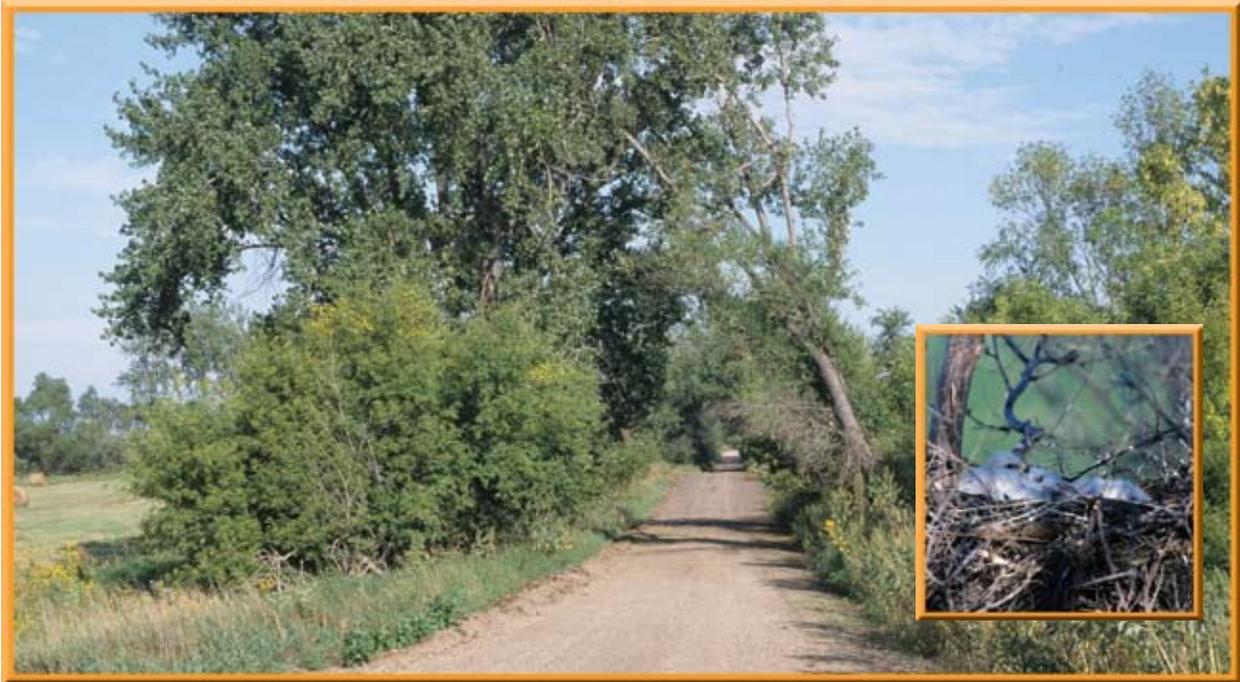
Common hawks and owls that nest and live in the wide-open spaces of the North Dakota prairie include the northern harrier, Swainson’s hawk, red-tailed hawk, great-horned owl, and short-eared owl.



Figure 49. The **red-tailed hawk** is one of the largest hawks in North Dakota. It is a member of the “buteo” family of soaring hawks that have wide tails and wings. They are often seen high in the sky riding the warm thermal air currents as they search for prey such as ground squirrels, rabbits, mice, voles, and snakes on the ground. *(Courtesy of Brian Wheeler)*

Some of these species are traditional prairie birds, while others have become more common as more trees have invaded the prairie. Land owners have planted trees on the prairie for wind breaks and to prevent soil erosion. Prairie fires at one time kept most other trees on the prairie from surviving.

The **northern harrier** flies low and slow above grasslands and wetlands. It uses its sharp eyes to search for prey such as meadow voles, snakes, frogs, and small birds. This hawk nests on the ground in prairie grass.



Figures 50 & 51. At one time, tree-nesting birds were not very common in the prairies since trees were scarce. Today, trees are more common, and therefore, populations of raptors that build their nests in trees have increased. These species include the red-tailed and Swainson's hawk, as well as the great horned owl. Higher populations of these raptors result in more predation on waterfowl and ground-nesting bird species.

The **red-tailed hawk** and **Swainson's hawk** are fairly large, common hawks in North Dakota. These raptors have excellent eyesight and look for prey from a high perch or while soaring high on the air currents above the prairie. The red-tailed hawk is one of the more easily identified large hawks because of the red rump patch near the tail. Both of these hawks are more common on the prairie today since they nest in trees, which were quite rare in North Dakota 100 years ago.



Figure 52. The **American kestrel** does not nest on the ground, but it can often be spotted in the prairie on highline wires and fences. It is the smallest falcon species in North America. *(Courtesy of Brian Wheeler)*

The most common falcon that makes its home on the North Dakota prairie is the **American kestrel**. It is about the size of a robin and is the smallest falcon in North America. The American kestrel has been called a “sparrow hawk,” but it is

not a hawk. It builds its nest in a cavity of a dead or dying tree. Its diet consists of grasshoppers, crickets, and mice. These birds can often be seen perched on highline wires.

Three owl species live in the prairie habitat of North Dakota. They are the great horned owl, the short-eared owl, and the burrowing owl. Owls are very efficient predators.

The **great horned owl** got its name from the tufts of feathers that look like horns on the top of its head. The great horned owl is one of the few animals that will kill skunks and porcupines. Great horned owls were not birds of the prairie until trees became more common.

Great horned owls are the first birds to begin nesting in North Dakota. During February and March, great horned owls choose an abandoned nest of a hawk in a prairie tree or farm shelterbelt in which to raise their young.

The **short-eared owl** has very small, sometimes hidden ear tufts unlike the very visible ones on the great-horned owl. Even though the short-eared owl is mainly nocturnal, it is partly diurnal as it also hunts during dawn and at dusk, sometimes



Figure 53. Short-eared owls nest on the ground in the prairie and feed on prey such as voles, mice, snakes, ground squirrels, and small birds. They are medium-sized birds with very tiny ear tufts.

flying and sometimes looking for prey from a ground perch. Its diet consists of voles, mice, ground squirrels, and small birds. Nests, in which four to seven eggs are laid, are built on the ground and lined with grasses.

The **burrowing owl** used to be common in the central prairies, but loss of prairie habitat and nesting conditions have greatly reduced the population of this bird. Burrowing owls must have underground burrows for living quarters. When prairie habitat disappeared, there were fewer burrowing mammals such as ground squirrels to provide nesting habitat for burrowing owls. Most burrowing owls now reside within prairie dog towns of western prairies.

Comprehension

1. Name the three species of the grouse family found on the prairie. What is the habitat of each?
2. What adaptations do sharp-tailed grouse have on their bodies that help them adapt to cold, snowy climates?
3. Who identified 11 new species of birds in North Dakota in 1843? Which of these birds was not identified again for almost 30 years? What North Dakota feature was named after this naturalist?
4. Which bird looks as if it is wearing a collar? What is a toe with a long, sharp claw called?
5. What four types of birds make up the raptors of North Dakota?
6. Which two hawks are more common on the prairie today than they were 100 years ago? Why?
7. What three owl species live on the North Dakota prairies? Which are the first to begin nesting in the spring? Which nest underground?

Critical Thinking

1. If you had a chance to pick the state bird of North Dakota, would you pick the one that was adopted as the state bird, or would you pick a different one? Explain.

PRAIRIE WILDLIFE IN A NUTSHELL

-  **Bison are part of the same family as cattle and goats; they are not related to the buffalo family found in Asia and Africa.**
-  **Elk, white-tailed deer, mule deer, and pronghorn are large, grazing game animals.**
-  **Three types of ground squirrels live in North Dakota—Richardson's ground squirrel, thirteen-lined ground squirrel, and Franklin's ground squirrel.**
-  **The white-tailed jackrabbit is not a rabbit; it is a hare.**
-  **The eastern cottontail is a true rabbit that is common in all parts of the state.**
-  **In response to shortened daylight hours in the winter, the brown coats of both the weasel and the white-tailed jackrabbit are replaced with white coats for camouflage.**
-  **Voles and mice are two of the smallest mammals in North Dakota.**
-  **Snakes, lizards, and turtles are the reptiles of North Dakota.**
-  **Toads and other amphibians go through metamorphosis as they transform from tadpoles into adults.**
-  **Two species of the grouse family live on the North Dakota prairies—the greater prairie chicken and the sharp-tailed grouse.**
-  **The ring-necked pheasant is not a native bird but was introduced to North Dakota from China in the early 1900s.**
-  **Lake Audubon is named after John James Audubon, who identified 11 new species of birds while he was at Fort Union in 1843.**
-  **Raptors are birds of prey.**
-  **Various species of hawks, eagles, falcons, and owls are the most common raptors in North Dakota.**
-  **The American kestrel, which is about the size of a robin, is the smallest falcon in North America and the most common falcon in North Dakota.**
-  **Three owl species live on the North Dakota prairies—the great horned owl, the short-eared owl, and the burrowing owl.**

PRAIRIE WILDLIFE VOCABULARY

Audubon, John James:

-  Naturalist and artist who spent a few months at Fort Union in 1843, studying and drawing birds and mammals
-  Identified 11 new species of birds in North Dakota
-  Became famous for his book, *Birds of America*
-  Lake Audubon in McLean County was named after him

Camouflage:

-  Protective coloring that allows an animal to blend with its surroundings

Canid:

-  Member of the dog family

Carnivore:

-  Meat eater

Carrion:

-  Dead animals that have been killed by other animals, by vehicles, or by other means

Diurnal:

-  Active during the daytime

Ectotherm:

-  Animal whose body temperature changes with the temperature of its surroundings
-  Also called “cold-blooded”

Furbearer:

-  Animal harvested for its fur

Game animals:

-  Animals that may be hunted

Herbivore: Plant eater**Insectivore:** Carnivore that eats only insects and spiders**Lek:** Prairie dancing area used by grouse year after year**Nocturnal:** Active at night**Omnivore:** Animal that eats both plants and animals**Raptor:** Bird of prey**Rodents:** Gnawing or nibbling mammals such as rats, mice, voles, and ground squirrels**Songbirds:** Small, perching birds that sing a variety of different songs**Other Vocabulary I Want to Know:**

THE IMPORTANCE OF PRAIRIES

Value

Today, some people are realizing the priceless value of prairies. Because so much of North Dakota's prairies have already vanished, the prairie lands that remain are extremely valuable.

Countless numbers of mammals, birds, and insects depend on the prairies for survival. The lives of people are also significantly affected by the many special features of the prairies.

When prairies are left to operate as large habitats with minimal disturbance, they can help maintain clean air and water, and they help control erosion. Living plants have the ability to trap and remove pollutants such as toxic chemicals from the air; therefore, prairie grasses and forbs play an important role in maintaining good air quality.

The thick matting of plant roots and surface entanglements of plant parts control soil erosion on prairie lands. This saving of the soil keeps nutrients on the land. Prevention of soil erosion also helps keep wetlands clean for use by people, livestock (farm animals), and wildlife.

Tourism is the second largest industry in North Dakota. Millions of dollars are brought to the state every year by people who take advantage of the different types of outdoor opportunities on the North Dakota prairies.



Figure 54. Prairies not only help prevent erosion and keep nutrients out of wetlands, they also provide areas for grazing, sites for ground-nesting birds, homes for a variety of other wildlife, and places to enjoy hiking, taking photographs, viewing wildlife, and hunting.

Recreational activities include hunting, camping, picnicking, bird-watching, viewing wildlife, sight-seeing, and taking photographs. The National Grasslands and other large tracts of undisturbed prairie are excellent areas for observing plants and animals in their natural environments.

Each year, thousands of hunters walk the North Dakota prairie grasslands to harvest pheasants, grouse, waterfowl, deer, pronghorn, and other game species. **Anglers** (people who fish) fish in the rivers, lakes, and reservoirs located throughout the prairie regions. Lakes maintain cleaner water when grasses from prairies help prevent soils and nutrients from entering them and other wetlands.

Threats to Prairie

Before Euro-Americans began settling in what is now North Dakota in the late 1800s, almost the entire region was covered by grasslands. Today, about 80 percent of the native prairie in the state has vanished. In the Red River Valley, over 95 percent of the prairie has disappeared. The result has been a tragic loss of wildlife and prairie plants.

As prairie land was plowed for planting crops, wildlife habitat was destroyed. Many grassland species suffered huge population losses when their habitats disappeared, were changed, or were split into small patches of land. The loss of prairie habitat has made the Dakota skipper quite rare. Many ground-nesting bird populations have decreased.

The greater prairie chicken and the western fringed prairie orchid both require tallgrass prairie. Many of the greater prairie chicken lek areas have become farm fields.

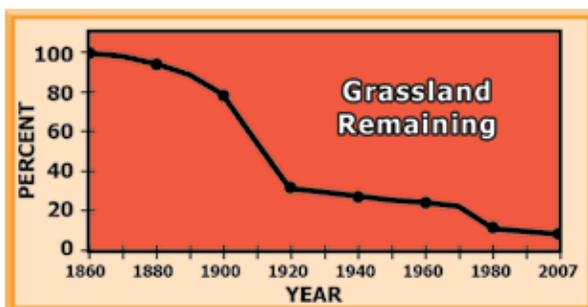


Figure 55. Less than 20 percent of North Dakota's prairie remains today. Most of it has been plowed under to make more room for agricultural crops.

Other human activities have also resulted in loss of wildlife. One of these is the use of **insecticides** (chemicals for killing insects) on agricultural fields.

Some insecticides kill all insects. These insects are often eaten by songbirds or upland game species. These birds either die quickly from the poison or carry it in their bodies until they accumulate

enough so that it kills them over time. Also, if a raptor eats a songbird, for example, with enough accumulated chemical, the raptor can die. This introduction of chemicals into the food chain is called **bio-accumulation**.

Some prairie lands are not suitable for raising crops and should never have been plowed for farming. When a drought (drou) (long period with no precipitation) hit the Great Plains in the 1930s, the soils on the disturbed prairie dried up, became dust, and blew away. The huge clouds of dust that were whipped around by strong winds became known as “black blizzards.” Wind erosion took a terrible toll on land that had held prairie grasses for thousands of years.

Today, the high value of farm products, such as wheat, corn, and sunflowers, continues to increase the amount of native prairie being converted (changed) to cropland. In the five-year period from 2002 to 2007, 227 square miles of native prairie was lost forever. The area would be close to the size of 145,000 football fields.

Prairie land not plowed for farming is commonly used for cattle grazing. If the land is not managed well, **overgrazing** can occur. This means that livestock are placed in an area to graze and kept there until all the grass is eaten to ground level.

When a prairie is overgrazed, it can take a long time for the prairie to recover. Too much animal traffic leads to soil erosion because not enough plants are left to hold down the soil. Exposed soil also allows weeds, or unwanted plant species, to invade.

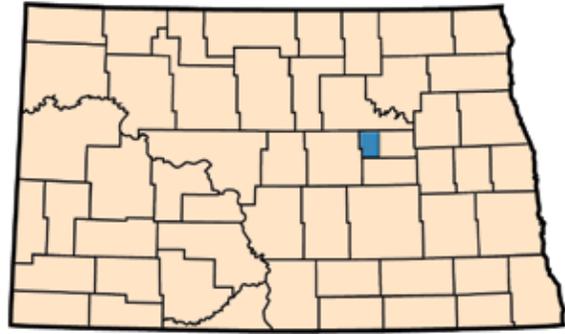


Figure 56. The size of the area of prairie that was converted to cropland between the years 2002 and 2007 was about one-third the size of Eddy County, or about the size of 145,000 football fields. (Graphic by Cassie Theurer)



Figure 57. Prairie converted to cropland can increase soil erosion by wind and water and add pollution to nearby wetlands and lakes.

The threat of prairie loss and disturbance can also come from energy development. Coal mining takes away native prairie forever. The new concept of wind energy may be good for preventing pollution, but it can disturb prairie wildlife and prevent ground-nesting birds from nesting on the prairie where wind farms are constructed.

The loss of prairie threatens parts of the North Dakota economy. Each year, the cattle industry brings about \$600 million into the North Dakota economy. This industry is dependant on good quality grasslands. With the loss of prairies, fewer natural grazing systems are left to provide quality forage for livestock.

Serious consequences can occur when grasslands are destroyed or abused. These include air pollution, poorer soil and water quality, lower wildlife populations, and a decrease in the economy of the state. More than 80 percent of North Dakota's prairies have vanished since the state was settled.

Saving Prairies

Conservation means preserving natural resources by careful use and management of the resources. Conservation goals for the prairie include enhancing wildlife habitat, preventing soil erosion, maintaining high-quality grasslands for grazing, and restoring prairie ecosystems to serve the public.



Figure 58. Wind power is a clean way of producing electricity, but it can be damaging to native prairie when the wind farm is located there. New roads create disturbance to wildlife and fracture large pieces of prairie into smaller ones. The height and movement of fan blades on towers prevents some ground-nesting birds from using prairie where wind farms are located.

Agencies such as the U.S. Forest Service, Nature Conservancy, Delta Waterfowl, the North Dakota Game and Fish Department, the U.S. Fish and Wildlife Service, and Ducks Unlimited work to save existing prairies and restore grasslands. These agencies cooperate with scientists and landowners to achieve conservation goals for the prairies of North Dakota.

The U.S. Forest Service is in charge of National Grasslands that are leased to ranchers for grazing cattle. These grasslands are managed wisely so that overgrazing does not occur. In other



Figure 59. The Conservation Reserve Program (CRP) pays farmers to plant cropland back into grasses. This program has created large populations of wildlife, as well as preventing soil erosion. As of 2008, the program is shrinking, and North Dakota will lose significant areas of wildlife habitat.

areas, ranchers are bringing back native grasses for grazing in order to restore and preserve the soil.

The **Conservation Reserve Program** (CRP) is a government program that pays farmers to plant grass on marginal (less fertile) land that had been plowed for raising crops. CRP is not the same as native prairie, but it does have great conservation benefits. It has increased populations of wildlife such as white-tailed deer, pheasants, ducks, and nongame species.

The Conservation Reserve Program is funded by the federal government, and the program, as of 2008, is shrinking in size. Fewer CRP fields will mean fewer places for wildlife to live. This will have a great impact on the populations of pheasants, ducks, and white-tailed deer.

Individuals, as well as agencies, are working to save native prairie and restore other grasslands. Everyone, no matter what age, can participate in prairie management and protection. Becoming educated about conserving prairies is the first step in this process. The North Dakota Game and Fish Department and other wildlife and conservation agencies have information available on opportunities for becoming involved in saving this valuable resource.

Grasslands and wildlife habitats can be restored. Even small areas can be planted to prairie grasses and forbs. These might include yards, parks, and along roadways.

Re-planting prairie in small pieces is not as good as keeping a large piece preserved because many prairie wildlife species require large areas of prairie with little disturbance. However, homeowners can help by keeping their yards outside of city limits as prairie, or by planting prairie species instead of mowing.

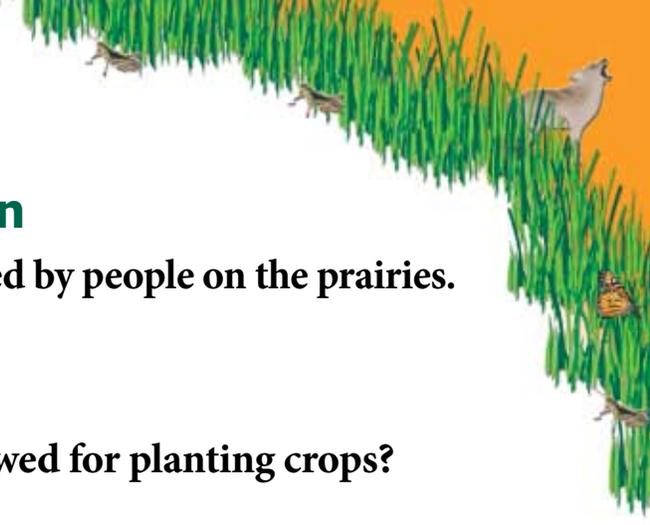
Small pieces of prairie do provide habitat for some species of wildlife. They also cut down on watering, mowing, and use of pesticides and fertilizers, which all contribute to pollution and use of valuable natural resources. Two or three years after being planted, new grasslands may already attract wildlife and provide scenic beauty.

Healthy prairies are extremely valuable resources that carry enormous benefits for people and wildlife. Plants, insects, and other animals serve as food sources in prairie habitats, and grasses are available for shelter and nesting. People and communities benefit through clean air, clean water, good soil, and income from ranching, hunting, recreation, and tourism. Every year, the prairies are responsible for bringing millions of dollars into the state.

Prairies played a major role in the history of North Dakota. Today, these grasslands provide us with a reminder of our rural and pioneer heritage. They also allow us to enjoy the feeling of freedom and peacefulness of the wide open spaces. Some scientists say that prairie grasslands are the most endangered ecosystem in North America. The prairies of North Dakota must be saved!



Figure 60. Individuals can help promote prairie, save water, and prevent pollution by becoming involved. This homeowner planted a backyard to prairie grasses and forbs. This prevents wasting water on turf grass, burning more fuel mowing, applying fertilizers and insecticides, and disturbing neighbors. These small additions of natural landscape provide beauty and a habitat for insects and birds.



Comprehension

1. Name some recreational activities enjoyed by people on the prairies.
2. What happened as prairie land was plowed for planting crops?
3. What are negative consequences of prairies being destroyed or mismanaged?
4. What are the prairie conservation goals?
5. What does the Conservation Reserve Program do? What is happening to this program? How does this affect wildlife?
6. How do people and communities benefit from prairies?

Critical Thinking

1. Explain why insects are so important to prairie game bird hunters.
2. North Dakota has very little forested land. Explain why the U.S. Forest Service is so important to North Dakota.

THE IMPORTANCE OF PRAIRIES IN A NUTSHELL

-  Living plants have the ability to trap and remove pollutants from the air.
-  Thick plant roots and surface entanglements hold prairie soil in place to prevent erosion.
-  Prairie grasses help keep wetlands clean by preventing soils and nutrients from entering wetlands.
-  Before Euro-Americans settled in North Dakota, grasslands covered almost the entire region.
-  Over 80 percent of North Dakota's prairie has vanished.
-  Wildlife habitat was destroyed as prairie land was plowed for planting crops.
-  Bio-accumulation, or introduction of chemicals into the food chain, kills wildlife.
-  Black blizzards were huge clouds of dust whipped by strong winds in the 1930s.
-  Native prairie is still being converted to cropland because of the high values of farm crops.
-  Soil erosion and the introduction of weeds occurs from overgrazing.
-  The loss of prairie threatens North Dakota's ranching and tourism economy.
-  Because so much of North Dakota's prairies have disappeared, the prairie lands that remain are extremely valuable.
-  Conservation goals for the prairie include enhancing wildlife habitat, preventing soil erosion, maintaining high-quality grasslands for grazing, and restoring prairie ecosystems.
-  The U.S. Forest Service manages the National Grasslands and leases them to ranchers for grazing cattle.
-  The Conservation Reserve Program (CRP) pays farmers to plant grass on land that had been plowed for crop raising.
-  Prairies benefit people and communities by providing clean air, clean water, good soil, and income from ranching and tourism.
-  Prairie grasslands are the most endangered ecosystem in North America.

THE IMPORTANCE OF PRAIRIES VOCABULARY

Anglers:

 People who fish

Bio-accumulation:

 Introduction of chemicals into the food chain

Conservation:

 Preserving natural resources by careful use and management of the resources

Conservation Reserve Program (CRP):

 Government program that pays farmers to plant grass on land that had been plowed for crop raising

Insecticide:

 Chemical for killing insects

Overgrazing:

 Keeping livestock in an area to graze until all the grass is eaten

Other Vocabulary I Want to Know:

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NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION

Best effort to conserve and manage wildlife that the world has ever seen.

*"The nation behaves well
if it treats the natural
resources as assets...*



*...which it must turn over
to the next generation
increased, and not impaired,
in value."*

— Theodore Roosevelt

Through history, countries in Europe evolved into systems of hunting and fishing where the public did not have access to wildlife. Hunting in North America is being threatened today and may potentially lead toward a European system benefiting only the wealthy. The following 7 concepts of the North American model are the basis upon which the North American system of hunting and fishing evolved.

1. Wildlife is Held in Public Trust

Wildlife in North America is public property. North Dakota law further clarifies that the North Dakota Game and Fish Department manage the wildlife resource for the public.

2. Eliminating Commerce in Dead Wildlife

In the past, some hunters killed wildlife for personal profit. This led to the rapid decline of many wildlife species. Eliminating the marketing of dead game animals is one of the most important policies of wildlife conservation.

3. Allocating Wildlife Use Through Law

Every citizen in good, legal standing – regardless of wealth, social standing or land ownership – is allowed to participate in the harvest of wildlife within guidelines set by the public and lawmakers.

4. Hunting Opportunity for All

In North America, all citizens have the opportunity to participate in harvesting wildlife. Because of this opportunity, citizens feel a connection with wildlife and work toward conserving the resource for future generations.

5. Wildlife May Be Killed Only for Legitimate Reasons

Wildlife can be killed only for a good purpose and in a fair chase manner that provides sustainable populations. Legitimate reasons to harvest include food, fur and protection of life and property.

6. Wildlife is an International Resource

Wildlife is an international resource to be managed cooperatively by states. This policy is basic to international wildlife treaties as well as the broad-based, continental cooperation between professionals and conservation organizations. Cooperation is very important in managing wildlife such as waterfowl which use several countries in their migration.

7. Science is the Basis for Wildlife Policy

Science is the proper tool for managing wildlife rather than politics or popular opinion. This assures that public wildlife is managed by trained biologists and favors a hands-off policy by elected or appointed officials.

