SOUTH DAKOTA PRAIRIES

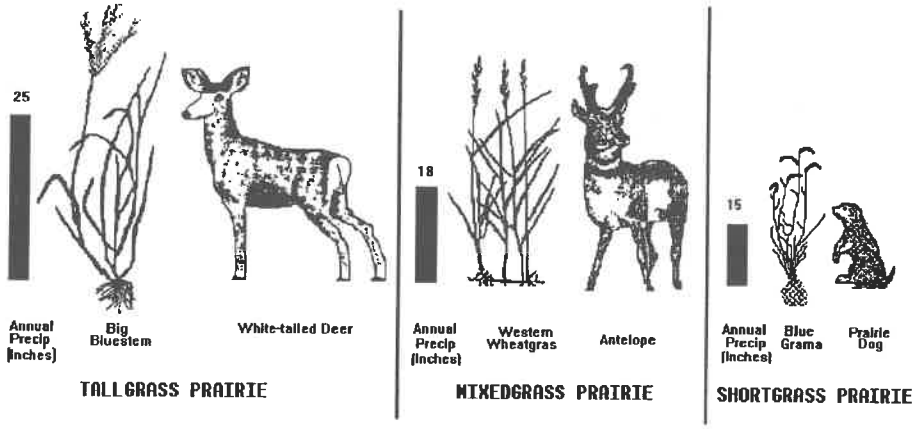

Figure 1. Prairie Types in South Dakota

What Is A Prairie?

Can you imagine being surrounded by a great "sea of grass," as the pioneers and American Indians were a century ago? Although the great expanses of unfenced prairies are gone, the remaining areas of native prairie are still important resources in South Dakota.

A prairie, or grassland ecosystem, is an area dominated by grasses, with plants and animals that have evolved together in a mutually dependent relationship (see Figure 1). Grazing stimulates the growth of many prairie plants, especially the development of *tillers*, or shoots, of grasses. Animals aid the dispersal of plants by distributing seeds caught in their hair or passed through their waste. Many plants have seeds that must be digested or broken open to allow them to germinate. Animals also help seeds to germinate by trampling them into the soil. In these ways, the prairie plants and animals depend on each other to live.

What Types Of Prairies Are Found In South Dakota?

In the United States, the prairie ecosystem is often classified into six different types, based on the dominant plant species. These include the tallgrass prairie, mixedgrass prairie, shortgrass prairie, desert grasslands, intermountain grasslands, and the California annual grasslands (see Figure 2). The three prairie types found in South Dakota are the **tallgrass prairie, mixedgrass prairie,** and the **shortgrass prairie** (see Figure 3). These types differ in the amount of precipitation each receives,

which in turn affects the types of dominant plants and animals associated with each prairie (see Figure 1).

Tallgrass Prairie

The tallgrass prairie is the wettest prairie ecosystem in South Dakota. The dominant plants of tallgrass prairies are big bluestem, little bluestem, switchgrass, Indiangrass, prairie sandreed, prairie cordgrass, pasqueflower, goldenrod, purple coneflower, and prairieclover.

Examples of dominant tallgrass prairie animals are prairie vole, coyote, white-tailed deer, eastern cottontail, jackrabbit, red fox, ring-necked pheasant, eastern meadowlark, and red-tailed hawk.

Mixedgrass Prairie

The mixedgrass prairie is the intermediate ecosystem between the shortgrass and tallgrass prairie, and as such, is found in the central and western parts of the state (see Figure 3). The dominant plants of the South Dakota mixedgrass prairie are western wheatgrass, green needlegrass, needleandthread, blue grama, side-oats grama, Indian ricegrass, scarlet globemallow, bracted spiderwort, Indian breadroot, dotted gayfeather, and prairie coneflower.

Dominant animals of mixedgrass prairies include coyote, mule deer, antelope, eastern cottontail, jackrabbit, skunk, sharp-tailed grouse, greater prairie chicken, magpie, red-tailed hawk, ring-necked pheasants and western meadowlark.

Shortgrass Prairie

The driest and western-most prairie in South Dakota is the shortgrass prairie. Although the shortgrass prairie extends only through the southwest corner of South Dakota, small pockets of it can be found throughout the mixedgrass prairie zone. Larger areas are also found in the Badlands of South Dakota. Dominant plants of this dry prairie include blue grama, buffalograss, side-oats grama, western wheatgrass, green needlegrass, pricklypear cactus, broom snakeweed, western wallflower, and Indian breadroot.

Dominant animals of shortgrass prairies are prairie dog, antelope, coyote, mice, gopher, badger, prairie rattlesnake, burrowing owl, red-tailed hawk, western meadowlark, magpie, crow, and turkey vulture.

Where Are Prairies Found?

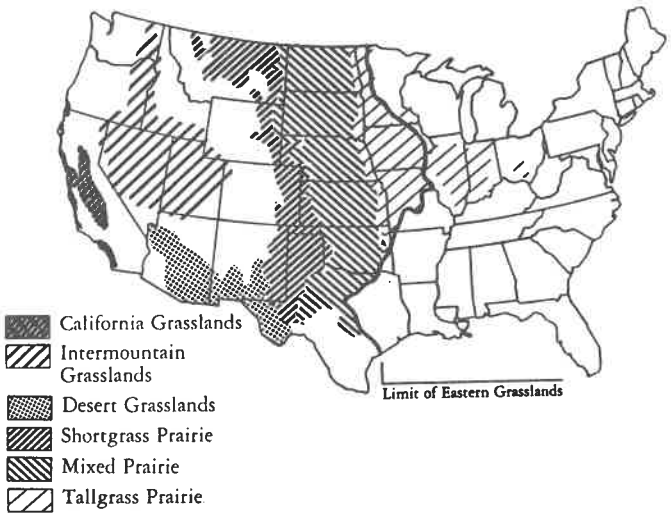

Fig. 2. Prairies of the United States

In the United States, the prairie ecosystem is located primarily in the area of the Midwest commonly known as the Great Plains, with small pockets in the Southwestern U.S., the Great Basin area of Utah and Nevada, and in parts of California, Oregon and Idaho (see Figure 2). Prior to cultivation, prairies covered about 700 million acres, or 31 percent of the United States, while now they only comprise 18 percent. In comparison, 33 percent of the total land area of the World is native prairie today.

Native prairies once made up about 95 percent of South Dakota and were found throughout the state, except for the Black Hills. The distribution of native prairies in South Dakota, from east to west, is tallgrass prairie, mixedgrass prairie, and shortgrass prairie. As can be seen in Figure 3, the most extensive prairie in South Dakota is the mixedgrass prairie.

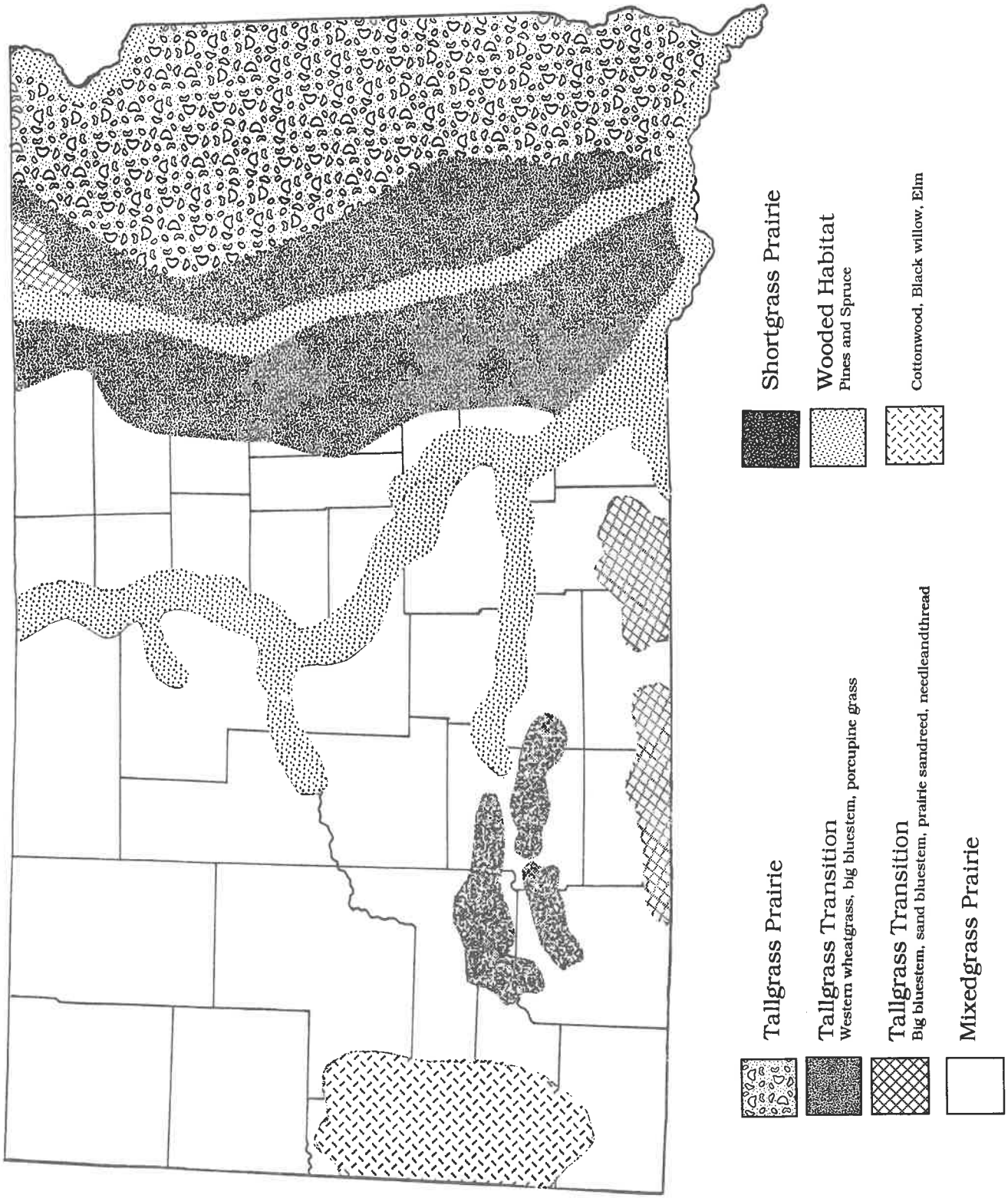

Figure 3. Predominant Major Vegetation Types Of South Dakota

Adapted From Plants Of South Dakota Grasslands. Bulletin 566. SDSU.

With extensive cultivation and urban growth, native prairies now make up 53 percent of South Dakota, or about 26 million acres. These native prairies make up about 90% of the *rangeland* in South Dakota. In Eastern South Dakota, much of the prairie ecosystem is now cropland. Some prairies in Western South Dakota have been cultivated to produce wheat and other crops, but most of the west-river prairie ecosystem remains, and is grazed by domestic livestock and native wildlife.

How Are Prairies Formed?

Why are these large areas of prairie dominated by grasses instead of trees? Natural forces of weather and fire have combined to form what we now know as prairies. Prairies receive variable amounts of precipitation. Moisture amounts are lower than in forest ecosystems. Prairies may have several years of *drought,* or below average precipitation. In the tallgrass prairie, one out of every ten years has precipitation that is less than 75 percent of the average. Three out of every ten years are 75 percent below average for the mixedgrass prairie, while the shortgrass prairie has a *drought* five out of every ten years. The variable, minimal moisture limits woody vegetation to protected areas and land near streams and rivers.

Historically, fire played a large role in the formation of the prairies. Fires swept across the prairies every five to ten years. Fires were more frequent on the tallgrass prairie and less frequent on the shortgrass prairie due to differences in *fuel loads.* These prairie fires curbed the growth of trees and shrubs, except along streams, rivers, and protected areas, while releasing nutrients to the soil. Many prairie plants and animals have evolved with prairie fire, and some plants actually thrive after a burn. More than half of the *biomass* of a grass plant is found below the ground. These extensive root systems allow the plant to recover quickly after burning. In contrast, trees have approximately 25 percent of their *biomass* underground, making it more difficult for them to recover from a fire.

American Indians often used fire to influence the movement of the bison herds they hunted. Bison were attracted to burned areas because the grass was more nutritious and better tasting.

Why Are They Important?

Historic: The prairie ecosystem evolved under the pressure of grazing. Huge herds of bison once roamed the prairies, migrating to new areas when the grass was consumed. These herds were a main source of livelihood for many tribes of American Indians including the Lakota, Dakota, and Cheyenne. Wildlife such as elk, deer, coyote, grizzly bear, prairie dogs, black-footed ferrets, eagles, and hawks were found on the prairies. As settlers moved west, the uses of the prairies changed. Prairies were plowed to provide crops for homesteaders. Most of the bison were eliminated and American Indians were moved to reservations. Settlers brought in domestic cattle to graze on areas that could not be plowed.

Current: Today, the prairies are managed to meet a variety of different needs. Prairies are home to a diversity of plants and animals. Deer, coyotes, prairie dogs, eagles, hawks and many other animals continue to flourish in the prairies. However, animals like the black-footed ferret, elk and grizzly bear are no longer found in this ecosystem, because of loss of habitat, hunting, settlement and other human pressures. The Conata Basin/Badlands Area of the Badlands National Park and Buffalo Gap National Grasslands has been proposed as a release site for the endangered black-footed ferret. (For a discussion of the black-footed ferret reintroduction efforts, see the *Black-footed Ferret* fact sheet.) The prairies are also valued for their wide-open spaces and magnificent beauty. These open vistas have attracted tourists as well as cinematographers to the state. Continued management is

needed to maintain a wide diversity of plants and animals.

The types and intensities of management on the prairie vary greatly depending on the objectives of the land manager. Private prairie lands are often managed to optimize production of cattle, sheep or horses. The U.S. Forest Service manages the grasslands for multiple uses, using a variety of techniques including domestic livestock, wildlife, and controlled burning. Other land managers, such as the National Park Service and the U.S. Fish and Wildlife Service, may use techniques, such as controlled burning, which mimic natural forces. Any of these management techniques can enhance the prairie ecosystem.

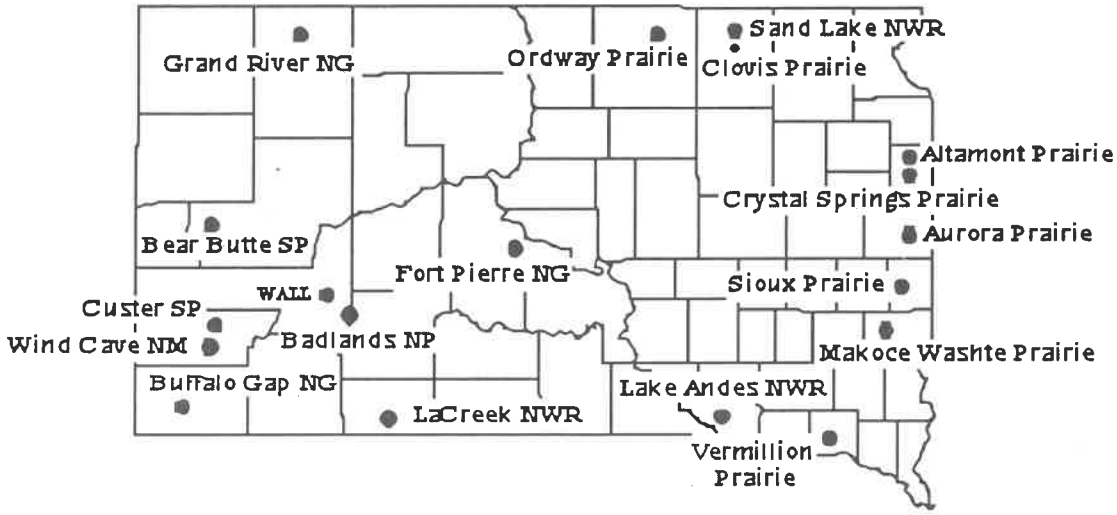

Fig. 4: Prairie Lands Open To The Public

Conservation Measures

The Nature Conservancy has preserved, through its land acquisition program, 10,000 acres of tallgrass prairie in Eastern South Dakota. The eight holdings, (Ordway, Clovis, Altamont, Crystal Springs, Aurora, Sioux, Makoce Washte, and Vermillion prairies shown in Figure 4), provide people with a chance to view native prairie habitat. The largest prairie preserve, Ordway Prairie near Leola, is the most accessible to the public, and has a bison herd and self-guided nature trail.

Three National Grasslands, covering 863,000 acres in South Dakota, are managed for multiple use by the U.S. Forest Service. These prairies provide opportunities for managed livestock grazing, wildlife habitat, mineral exploration, rock hunting, hiking, camping, and other recreation. The three National Grasslands are Buffalo Gap, Fort Pierre, and Grand River. The National Grasslands Visitor Center, located in Wall, features information about the three National Grasslands in the state and the 17 other National Grasslands throughout the Western United States.

Badlands National Park is the largest prairie park in the United States, managing over 100,000 acres of mixed and

shortgrass prairie. Other prairie lands can be found at Wind Cave National Monument, Custer and Bear Butte State Parks, and LaCreek Wildlife Refuge in the west, and at Sand Lake, and Lake Andes wildlife refuges in the eastern part of the state (see Figure 4).

Glossary

Biomass - the total amount of living material of a plant, both above and below ground; more broadly, total dry weight of all living organisms in an area.
Drought - prolonged dry weather generally when precipitation is less than 75% of the average.
Fuel loads - the amount of material that is available to be burned, including litter and standing dead plants.
Rangeland - land on which the vegetation is predominantly grasses, grass-like plants, forbs, or shrubs, and is routinely managed through grazing.
Tiller - a shoot, arising from the base of a plant, which produces another plant.

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