

TEMPERATE GRASSLANDS

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INTRODUCTION

▶ THE GRASSLAND BIOME

- ▶ Grasslands are characterized as lands dominated by grasses rather than large shrubs or trees. In the Miocene and Pliocene Epochs, which spanned a period of about 25 million years, mountains rose in western North America and created a continental climate favorable to grasslands. Ancient forests declined and grasslands became widespread. Following the Pleistocene Ice Ages, grasslands expanded in range as hotter and drier climates prevailed worldwide. There are two main divisions of grasslands:
- ▶ Tropical grasslands or savannas
- ▶ Temperate grasslands

TEMPERATE GRASSLANDS– LOCATION

- ▶ Temperate grasslands are characterized as having grasses as the dominant vegetation. Trees and large shrubs are absent. Temperatures vary more from summer to winter, and the amount of rainfall is less in temperate grasslands than in savannas. The major manifestations are the veldts of South Africa, the puszta of Hungary, the pampas of Argentina and Uruguay, the steppes of the former Soviet Union, and the plains and prairies of central North America.

LOCATION

- ▶ Temperate Grasslands are found all over Earth, generally in the interiors of the continents. They're mostly just north or south of the Tropic of Cancer and Tropic of Capricorn. The following are the major regional expressions of grasslands recognized around the globe.
- ▶ Veldts of South Africa
- ▶ Puszta of Hungary
- ▶ Pampas of Argentina/Uruguay
- ▶ Steppes of Russia / China
- ▶ Plains and Prairies of North America
- ▶ Australian Outback

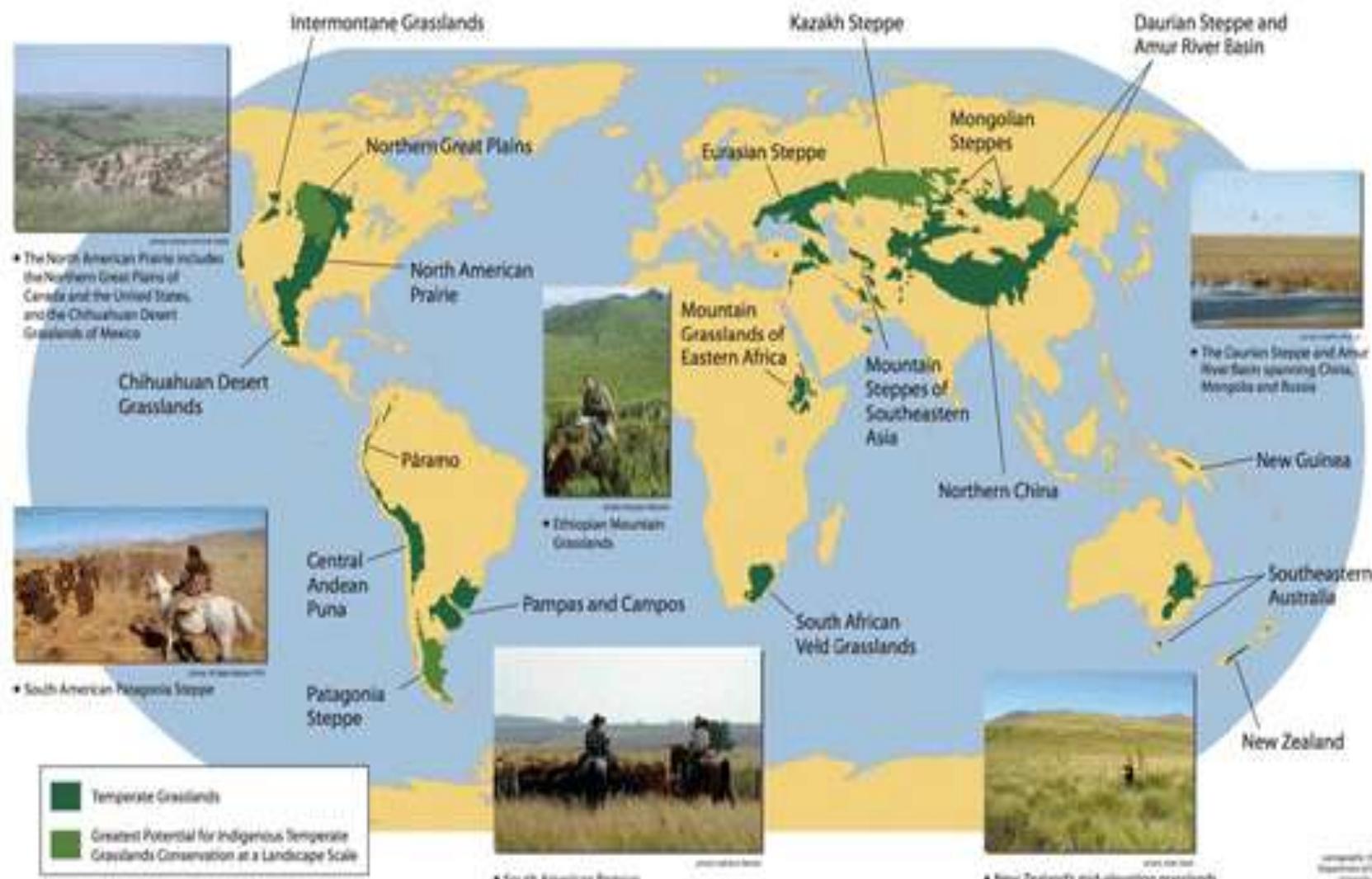
LOCATION

- ▶ Grasslands are located on every continent with the exception of Antarctica. Some locations of temperate grasslands include:
- ▶ Argentina – pampas
- ▶ Australia – downs
- ▶ Central North America – plains and prairies
- ▶ Hungary – puszta
- ▶ New Zealand – downs
- ▶ Russia – steppes
- ▶ South Africa – veldts

MAJOR GRASSLANDS OF THE WORLD



The World's Temperate Grasslands Conservation Priorities



CHARACTERISTICS

- ▶ Temperate grasslands have hot summers and cold winters. Rainfall is moderate.
- ▶ The amount of annual rainfall influences the height of grassland vegetation, with taller grasses in wetter regions. As in the savanna, seasonal drought and occasional fires are very important to biodiversity.
- ▶ However, their effects aren't as dramatic in temperate grasslands as they are in savannas.
- ▶ The soil of the temperate grasslands is deep and dark, with fertile upper layers. It is nutrient-rich from the growth and decay of deep, many-branched grass roots.
- ▶ The rotted roots hold the soil together and provide a food source for living plants. Each different species of grass grows best in a particular grassland environment (determined by temperature, rainfall, and soil conditions).

- ▶ The seasonal drought, occasional fires, and grazing by large mammals all prevent woody shrubs and trees from invading and becoming established.
- ▶ However, a few trees, such as cottonwoods, oaks, and willows grow in river valleys, and some nonwoody plants, specifically a few hundred species of flowers, grow among the grasses.
- ▶ The various species of grasses include purple needlegrass, blue grama, buffalo grass, and galleta.
- ▶ Flowers include asters, blazing stars, coneflowers, goldenrods, sunflowers, clovers, psoraleas, and wild indigos.



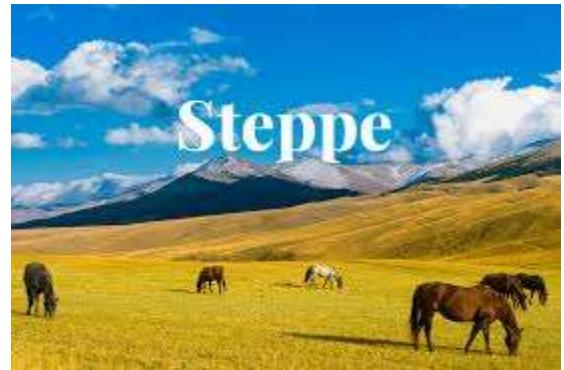
Buffalo Grass



Fleabane



Bluestem



TEMPERATE GRASSLAND ANIMALS



American
Bison



Pronghorn



Black-tailed
Prairie Dog



Coyote



Greater Prairie
Chicken



Swift Fox



Burrowing
Owl



Eastern
Meadowlark



White-tailed
Deer



Badger

- ▶ Precipitation in the temperate grasslands usually occurs in the late spring and early summer. The annual average is about 50.8 to 88.9 cm (20–35 inches). The temperature range is very large over the course of the year. Summer temperatures can be well over 38° C (100 degrees Fahrenheit), while winter temperatures can be as low as –40° C (–40 degrees Fahrenheit).
- ▶ The fauna (which do not all occur in the same temperate grassland) include gazelles, zebras, rhinoceroses, wild horses, lions, wolves, prairie dogs, jack rabbits, deer, mice, coyotes, foxes, skunks, badgers, blackbirds, grouses, meadowlarks, quails, sparrows, hawks, owls, snakes, grasshoppers, leafhoppers, and spiders.

ISSUES

- ▶ There are also environmental concerns regarding the temperate grasslands. Few natural prairie regions remain because most have been turned into farms or grazing land. This is because they are flat, treeless, covered with grass, and have rich soil.
- ▶ Temperate grasslands can be further subdivided. *Prairies* are grasslands with tall grasses while *steppes* are grasslands with short grasses. Prairie and steppes are somewhat similar but the information given above pertains specifically to prairies — the following is a specific description of steppes.

ISSUES

- ▶ Steppes are dry areas of grassland with hot summers and cold winters.
- ▶ They receive 25.4–50.8 cm (10–20 inches) of rainfall a year. Steppes occur in the interiors of North America and Europe. Plants growing in steppes are usually greater than 1 foot tall.
- ▶ They include blue grama and buffalo grass, cacti, sagebrush, speargrass, and small relatives of the sunflower. Steppe fauna includes badgers, hawks, owls, and snakes.
- ▶ Today, people use steppes to graze livestock and to grow wheat and other crops. Overgrazing, plowing, and excess salts left behind by irrigation waters have harmed some steppes. Strong winds blow loose soil from the ground after plowing, especially during droughts. This causes the dust storms of the Great Plains of the U.S.

Environmental concerns:

- ▶ There is a great concern for remaining grasslands in temperate regions. Because the soil in these areas is incredibly rich and the land is flat and treeless, most of this biome has been turned into farms or ranches.
- ▶ The result of this overuse and consumption of the grassland by agricultural practices is a fragmentation of once large tracks of grassland. Fragmentation decreases biodiversity (Theory of Island Biogeography).
- ▶ Plowing of grasslands, combined with wind has lead to huge dust storms, such as those which created the Great Dust Bowl in the American Depression of the mid 1920s. Finally, in dryer areas, overgrazing and salt build-up from irrigation of the land have turned these areas into near-wastelands.