

# Grasslands

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**Grasslands, which constitute 41 percent of China's territory, exist in desert, semi-arid, and moist forest ecological zones of the country. The Chinese government has taken action since the mid-1980s to preserve and protect this important environmental and economic resource.**

**A**lthough China is perhaps best known in the West for its rice-growing eastern landscapes, China ranks second among the countries of the world (behind Australia) in terms of its total area in grassland. Grasslands extend over 41 percent of China's territory. Together, these 393 million hectares of grasslands, located primarily across vast reaches of China's north, northwest, and western regions with smaller areas in the highlands of the southwest, constitute China's largest biogeographic region. These grasslands support a great diversity of flora and fauna, are homeland to a number of different peoples, especially the Tibetans and the Mongols, and provide the raw materials for a wide range of industries, from medicinal plants to dairy products. They are also the locus of some of China's most threatened environments.

### Physiographic Features

Although there are grasslands and meadows scattered throughout much of China (small areas of grassland are most numerous in southwestern China), the two largest

areas of grassland are found in Inner Mongolia (the northern grassland) and on the Qinghai–Tibetan Plateau (the alpine grasslands). The grasslands follow the patterns of China's climatic regions. In western, interior China, where the Himalaya and the Tibetan Plateau form a formidable barrier to the transport of moisture, semi-arid, arid, and desert-like conditions prevail, and the grasses grow short, tough, and sparse. Moisture increases from west to east until the moist summer monsoon patterns that come from the southeast overcome the arid winds of the west, and the grass gradually becomes taller and more lush. In the moist forests of northeastern China (Liaoning, Jilin, and Heilongjiang provinces), well-watered, green meadows fill the spaces between the tall trees. But most of China's grassland area is found in more arid regions. (See table 1 for a list of grassland species and the types of climates in which they thrive.)

The northern grassland, located primarily in Inner Mongolia, constitutes 48 percent of China's grassland area. It ranges from low desert and steppe vegetation in the arid west to relatively tall grasses in the more moist environments of the east, and comprises grasslands of the northeastern plateau, the Inner Mongolian Plateau. In the west, the dry, desert-grassland areas of Inner Mongolia's Ordos Plateau and parts of Gansu Province, the Ningxia Autonomous Region, and the Xinjiang Autonomous Region are characterized by drought-resistant *Stipa* and *Artemisia* grass species as well as numerous annual plants. Most of the vegetation in these arid regions averages 23 to 30 centimeters in height. At its eastern extreme, in the northeast China plain forest-steppe region, the grass species include "sheep's grass" (*Aneurolepidium chinensis*, *Stipa baicalensis*,

TABLE 1 Grassland species

GRASS TYPE	MODERATE-TEMPERATE	WARM-TEMPERATE	ALPINE
<i>Stipa baicalensis</i>	●		
<i>Stipa grandis</i>	●		●
<i>Stipa krylovii</i>	●		
<i>Stipa kirghisorum</i>	●		
<i>Stipa capillata</i>	●		
<i>Stipa bungeana</i>		●	
<i>Stipa klemenzii</i>	●		
<i>Stipa orientalis</i>	●		
<i>Stipa caucasica</i>	●		
<i>Stipa stapfii</i>	●		
<i>Stipa breviflora</i>	●	●	
<i>Stipa glareosa</i>	●		
<i>Stipa purpurea</i>			●
<i>Stipa subsessiliflora</i>			●
<i>var. basiplumosa</i>			●
<i>Stipa subsessiliflora</i>			●
<i>Festuca ovina</i>	●		
<i>Festuca sulcata</i>	●		
<i>Festuca kryloviana</i>			●
<i>Festuca pseudovina</i>			●
<i>Festuca olgae</i>			●
<i>Cleistogenes squarrosa</i>	●		
<i>Cleistogenes songorica</i>	●		
<i>Cleistogenes mucronata</i>		●	
<i>Agropyron cristatum</i>	●		
<i>Aristida trisetata</i>			●
<i>Bothriochloa ischaemum</i>		●	
<i>Aneurolepidium chinense</i>	●		
<i>Orinus spp.</i>			●
<i>Carex moorcroftii</i>			●
<i>Filifolium sibiricum</i>	●		
<i>Allium polyrrhizum</i>	●		
<i>Thymus mongolicus</i>		●	
<i>Artemisia frigida</i>	●		
<i>Artemisia gmelinii</i>	●	●	
<i>Artemisia giraldii</i>		●	

Source: (Xu, Z. 2008, 41).

which averages 50 to 80 centimeters in height, and *Filifolium sibiricum*). Between these extremes, the temperate grasslands of the Inner Mongolian Plateau provide some of China's richest grazing lands, dominated by *Aneurolepidium pseudoagropyrum*, *S. grandis*, and *S. krylonii*.

Animal species found in the northern grassland region include the Mongolian gazelle (*Gazella gutturosa*), Przewalski's horse (*Equus caballus przewalskii*), foxes, wolves, as well as numerous bird species.

The alpine grasslands of China are found primarily on the Qinghai–Tibetan Plateau, which averages more than 4,000 meters elevation. Grasslands cover 68 percent of the Tibetan Autonomous Region (approximately 82 million hectares), and 60 percent of the entire Qinghai–Tibetan Plateau. Northwestern Tibet is characterized by dry, desert-like conditions, but as moisture increases from northwest to southeast, the grasslands become increasingly lush.

Grasses in the alpine grasslands average 15 to 20 centimeters in height and tend to cover 30 to 50 percent of the ground. Other vegetation in alpine grasslands includes low-lying plants such as cushion plants, plum, saxifrage, and dwarf juniper. On the southern Qinghai–Tibetan Plateau, the primary grassland species are *S. bungeana*, *Aristida trisetata*, *Pennisetum flaccidum*, and *Orinus thoroldii*. At elevations above 4,400 meters, the grassland transitions to *S. purpurea*, *Artemisia wellbyi*, *A. younghusbandii*, and *A. stracheyi*. Above about 5,000 meters, the alpine meadows are dominated by *Kobresia pygmaea* and *Carex montiis-everestii*. In the northern reaches of the plateau, the dominant grass species include *S. krylovii*, *S. breviflora*, and *A. frigida*.

The alpine grasslands of Tibet are home to a wide range of animal and bird species. The most notable of these are large mammals such as wild yak (*Bos grunniens*), Tibetan antelope (*Pantholops hodgsoni*), Tibetan gazelles (*Procapra picticaudata*), Himalayan blue sheep (*Pseudois nayaur*), and Tibetan wild asses (*Equus hemionus*), as well as predators such as brown bears (*Ursus arctos*), wolves (*Canis lupus*), and snow leopards (*Panthera uncia*).

There are also alpine grasslands in Sichuan and in the Kunlun Shan, Altay Shan, Tian Shan and the Qilian Shan.

## Human Geography

These vast grassland areas have served as homelands for a number of different nomadic peoples over the long span of history for which there is archeological or historical evidence. The ancestors of the Chinese first encountered the peoples of the northern grasslands during the





**Nanshan grasslands horse show, Zinjiang Kazak, 1983.** PHOTO BY JOAN LEBOLD COHEN.

fourth century BCE. Over a long history of alternating wet and dry, cold and warm periods, a succession of different peoples—some inhabiting year-round permanent settlements, others living nomadic or semi-nomadic lifestyles as they grazed their herds—thrived in these vast grasslands. Powerful confederations of nomadic tribes arose in the grasslands, such as the Xiongnu (sometimes referred to as the Huns), who became a regional power in the third century BCE, and the Mongols, who were united by Chinggis (also known as Genghis) Khan during the twelfth century. A Tibetan empire arose in the seventh century.

The grasslands were home not only to nomads but also to significant cities: Lhasa (Tibet), Xining (Qinghai), and Hohhot (Inner Mongolia), for example, are all major cities that have flourished for centuries in the grasslands. The eastern and southern reaches of the grasslands of Tibet and Inner Mongolia have also supported agricultural settlements. The Tibetans and Mongols have very distinct

cultures, languages, and traditions. But they have shared some common history and culture since the sixteenth century, when Tibetan Buddhism became the primary religion of the Mongols.

Today the vast expanses of the Inner Mongolian and the Qinghai–Tibetan grasslands are sparsely inhabited, in comparison to eastern China, by peoples of Mongol and Tibetan heritage. But they are also home, especially since the founding of the People’s Republic of China, to increasing numbers of Han Chinese migrants from eastern China. For example (not accounting for boundary changes) the population of Inner Mongolia was about 6.1 million in 1953, and by 2006 was estimated at nearly 24 million. Most of the difference in population is a result of Chinese in-migration: there are now about 4 million Mongols and 19 million Han Chinese living in Inner Mongolia. Qinghai Province has seen a population increase from about 1.7 million in 1953 to about 5.5 million as of 2006, of which nearly 3 million are Han Chinese.

## Economic Geography

The grasslands provide subsistence for a number of different nomadic and semi-nomadic peoples. As is common with this type of subsistence system, herds of animals graze on the natural grasses and shrubs for a period of time until those resources are depleted, then the herds (and often the settlement, as well) move on to a fresh area of grass. The grazed grass is allowed to renew in order to serve as fodder again in the future. This type of system works well on the grasslands for a wide range of livestock such as horses, sheep, goats, and yak. These sophisticated subsistence systems have been endangered in recent years by changing land-tenure systems and economic and political pressures on the nomads to settle in one place.

Historically, the grasslands were important to China as a supplier of both a wide range of products (particularly livestock, livestock products, and medicinal plants)

and knowledge. The grassland sheep supplied wool for Chinese carpets; horses raised on the grasslands carried the Chinese armies to their battles. Horsemanship in particular was an area of knowledge imported from the grasslands: Stirrups, saddles, and other technologies were often first developed or improved in the grasslands. During the Qing dynasty (1644–1912), a widespread system of trade with the peoples of the northern grasslands developed and became so important to China that the trade routes were protected by imperial decree.

Today the Chinese grasslands are the primary loci of a number of China's livestock industries. The grasslands of Inner Mongolia, Xinjiang, Tibet, Qinghai, Sichuan, and Gansu account for 70 percent of China's sheep, 100 percent of the camels, 44 percent of the horses, 39 percent of the donkeys, and 25 percent of the country's cattle and goats. In the past the raw materials of the grasslands were often sent east for processing. In recent years there have been

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**Woman and child in folk dress, resting on China's grasslands.** PHOTO BY JOAN LEBOLD COHEN.





increasing efforts to establish production facilities in or near the grasslands themselves in order to provide a better livelihood for the people who live there. Of these, the dairy and wool industries have been the most successful.

## Environmental Issues and the Grasslands

The Chinese grasslands began receiving wider attention both in China and abroad during the late 1980s as China's scientific community came to a consensus: The grasslands were becoming increasingly degraded, and the degradation of the grasslands—as bare soil became exposed, dried, and blown by prevailing winds—became known as one of China's most significant environmental issues. This degradation, which many scientists believe leads to increases in desert area (desertification), is believed to be exacerbated by overgrazing of grasslands by herders. The rate of desertification in many of China's grassland areas may have doubled since the late 1970s, as economic development has led to greater economic uses of the grasslands. Chinese scientists estimate that about 10 percent of the grasslands were degraded in 1970, but that the amount of degradation has increased to about 30 percent in recent years, about 118 million hectares of degraded grasslands as of 2008.

In order to protect the environment of much of China (not just the grasslands themselves, but also the wide regions plagued by increasingly frequent dust storms across northern China), the Chinese government has worked to reclaim or restore the grasslands by relocating herders, by reorganizing agricultural and pastoral systems on the grasslands, and in some cases by replanting grasslands or reforesting nearby slopes to cut the wind. There are a number of major programs to carry out these changes, especially the Northern Shelterbelt Program, which is aimed at restoring grasslands and forest across a wide swath of northern China in order to reduce soil erosion.

## Protected Areas

Under the laws of the People's Republic of China, all grasslands are owned by the state. A national grasslands law passed in 1985 specifically forbids any activities that

would harm the grasslands and requires local authorities to close degraded areas until those areas recover. These general provisions have been strengthened through designation of grasslands as protected areas. For example, a number of grasslands in China have been designated as nature reserves. The first of these, designated by the national government in 1985, is located on the Xilin Gol grassland of Inner Mongolia. In 1987 the Xilin Gol grassland, one of China's largest contiguous grassland areas, was recognized by UNESCO as an International Biosphere Reserve. There are numerous nature reserves on the Qinghai-Tibetan Plateau, including the Changtang Nature Reserve, a vast protected area covering about 247,000 square kilometers that was established by the national government in 1992.

## Grassland Tourism

Some of China's grasslands have become tourist destinations in recent years. In Inner Mongolia, tourist resorts where visitors can stay in yurts, eat Mongol foods, and attend Mongol cultural performances have become popular with both international and domestic tourists. And the recently opened railroad crossing the Qinghai-Tibetan Plateau from Golmud, Qinghai, to Lhasa, Tibet, has also provided new opportunities for tourists to experience the grasslands landscapes. In Inner Mongolia, Tibet, and Qinghai, promotion of grassland tourism has resulted in the construction of new tourist-oriented settlements and in the marketing of local festivals and events. These take place primarily in the summer and often involve exhibitions of horsemanship, dancing, and contests of strength and endurance. In Inner Mongolia alone there are ten different summer festivals promoted for tourism, most of which are versions of *Nadam*, a traditional Mongol festival. Most of the Tibetan attractions are centered around traditional monastery events scheduled according to the Buddhist calendar.

## Perspectives

The significance of the grasslands can be interpreted in many different ways. Are the grasslands an economic resource to be utilized to its fullest extent? A subsistence

resource? An environmental resource which provides biomass and carbon sequestration and protects against dust storms? A cherished homeland? Or the locus of a growing tourism industry? Although they are not necessarily mutually exclusive, these five perspectives—all of which can be found within China in the twenty-first century—have different implications for the management and future of the grasslands. In recent years the Chinese government has focused on creating policy initiatives aimed at making use of the economic potential of the grasslands while preserving them in order to protect the environment.

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