Mongolia's Grassland Biomes

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Grassland, Northern Mongolia. Source: Shutterstock

Grasslands can appear as desolate landscapes with kilometres of endless grass containing a few scattered trees. Instead they are home to a rich biodiversity of species and are a primary source of food for both wildlife and humans. In Mongolia traditional life is closely connected to the environment.

What are grasslands?

Grasslands are:

- not the same across the world but vary according to climate, altitude, landform and soil.
- referred to as 'savannas' in Africa; 'steppes' in Asia; 'prairies' in North America; 'pampas' in South America and 'rangelands' or 'savannas' in Australia.

Where are grasslands located?

Grasslands:

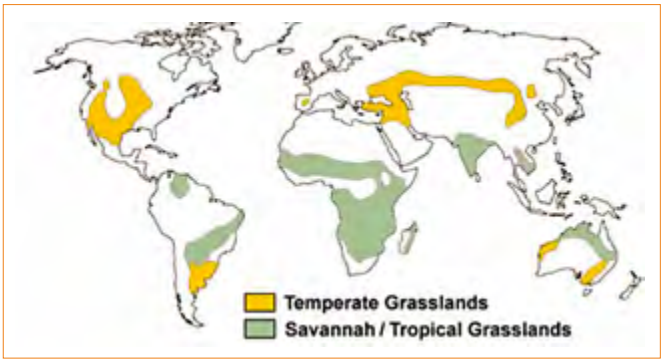
- cover 30% of the Earth's land.
- occur primarily in the interiors of continents and have large seasonal temperature variations, with hot summers and cold winters
- encompass 50% of the land area in Africa, 33% in South America and 75% in Australia and Kenya.
- are generally located between forests (wetter environments) and deserts (drier).but are also found at different altitudes from sea level to high plateaus.
- Central Asia's vast grassland area is known as the Eurasian Steppe. This area extends into Mongolia, a land-locked county bordering Russia and China.

Characteristics

Grasslands have developed in response to natural fire, periodic drought, and wildlife grazing as well as climatic conditions that prevent shrubs and trees growing.

Grasslands usually have very rich, dark topsoil that support deep root systems – often much of the grass is below the ground.

SOURCE A: Grassland regions of the world



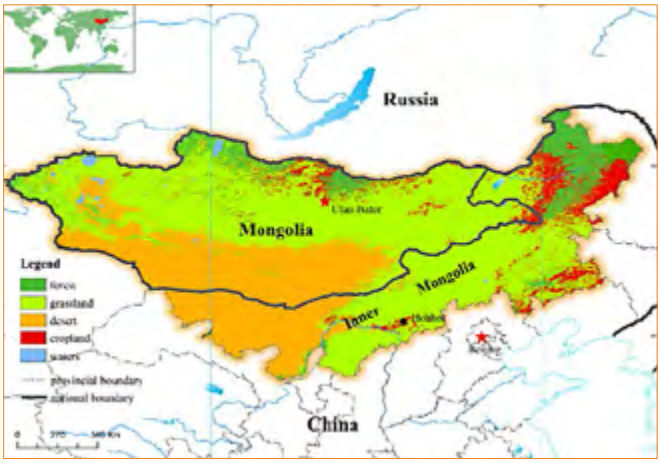
Grassland productivity?

The productivity of grasslands, depends on climate and soil quality. Higher precipitation leads to tall grasses with a high biodiversity of grasses and high productivity. Lower precipitation leads to short grass prairies and arid grasslands.

The productivity of grasslands makes them suitable for grazing and crop growing. All the major food grains corn, wheat, oats, barley, millet, rye and sorghum are produced in grasslands. Grazing grasslands eg sheep and cattle also produces food including meat and milk. Fibres such as wool and cotton are produced in grassland biomes.

Deep, fertile soils are highly productive in wetter grassland biomes. Source: https://grasslandscience10.weebly.com/temperate-grassland.html

SOURCE B: Mongolia's biomes



Source: http://www.mdpi.com/remotesensing/remotesensing-05-05193/article_deploy/html/images/remotesensing-05-05193f1-1024.png

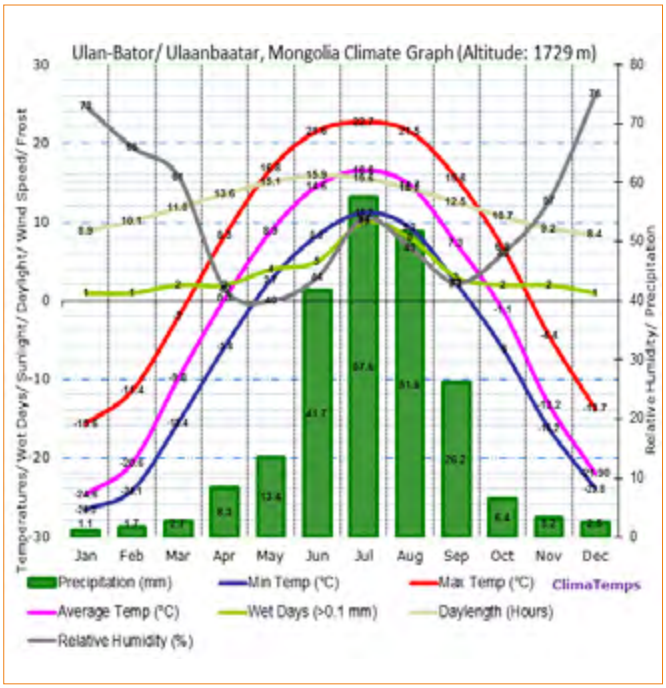
Mongolia's grasslands

Mongolia contains expansive grasslands that remain sparsely populated, dominated by agriculture, and support relatively isolated human communities dependent on its natural resources.

The Mongolian-Manchurian grasslands cover an area of nearly 900,00km^2. The biome is classified as a temperate grassland for the following reasons:

- **Climate:** The Mongolian climate varies from arid to semi-arid with warm to hot short summers and long cold winters. Temperatures range from –45°C in winter to over 40°C in summer. The country is called the 'Land of the Eternal Blue Sky' as it enjoys over 250 sunny days a year. Few clouds results in little precipitation that averages 400mmpa in the east, declining to 150mmpa in the west.
- **Plants:** The grasslands consist of medium to tall grasslands, dominated by feather grass.

SOURCE C: Climate graph of Ulaanbaatar



Source: http://www.ulaanbaatar.climatemps.com/graph.php

The grasses have evolved over 65 million years ago and are connected to changes in temperature and precipitation.

- **Animals:** The biome supports a variety of animals such as gazelles, wolves, foxes, antelopes and pheasants. The grass is crucial for semi-nomadic herders who graze horses, goats, cattle, yaks and camels. The growth in the cashmere trade has fuelled economic pastoralism and growth in exports.
- **Net Primary Productivity (NPP)** is low for grasslands located in dry or cold regions, but is higher after precipitation.

Grasslands span 80 percent of Mongolia and generate livelihoods for 200,000 families.

Yurt village and herds, Mongolia. Source: Shutterstock

Grassland agriculture

Extensive grazing occupies 80% of Mongolia's land, mostly on the grasslands. Only 1% of Mongolia is arable land used to grow crops and 5% urban.

Nomadic herders placed very little stress on the grasslands and never seriously threatened the biodiversity (plants and animals). A low population density and small settlements that migrate with the seasons helps to maintain the natural environment. Livestock grazing consists of goats, horses, donkeys, cattle, yaks, and Bactrian camels. Most pastoral households maintain multiple-species herds with at three to five types of livestock.

Cashmere goats produce quality wool, making it the most profitable source of income for Mongolian herders. More recently, overgrazing of these goats has caused land degradation and desertification.

Threats and challenges

Grasslands provide essential goods and services to Mongolians but recently their nomadic lifestyle is threatened by increased livestock numbers, the growth of settlements, mining and climate change. Trophy hunting and the illegal trade in rare animal species has reduced biodiversity.

As a result of a decline in nomadic pastoralism, many Mongolians have changed from living in gers or yurts, designed for easy movement a few times a year, to living in small brick homes in villages or high rise apartments in the capital city Ulaanbaatar.

Land degradation from overgrazing and mining has led to environmental degradation, as well as social changes for traditional herders.

Over the past 30 years, climate change and land degradation have resulted in serious desertification, and the drying out of 850 lakes and 2,000 rivers. If this persists, the Mongolian tradition of nomadic herding on the grasslands and the cultural customs of these people could completely disappear.

Sustainable management of grasslands?

Grasslands are one of the most endangered biomes on Earth as they are constantly altered by human activities. Where soils are rich, and the land is flat and treeless, areas have been turned into farms to grow crops or graze animals. Modified biomes, referred to as anthropogenic biomes or anthromes, now cover more of the Earth's land surface than so called 'wild' or 'natural' ecosystems. The sustainability of biomes is essential to human survival and wellbeing. The biomes need be protected to meet the needs of the present without compromising the ability of future generations to meet their own needs (Bruntland Report 1992).

What are the government strategies?

The Government of Mongolia has established nature reserves and national parks to limit people's access to grassland biomes. The government has introduced an environmental policy to:

- create a 'green economy'
- implement sustainable land management principles
- halt environmental pollution and land degradation (e.g. tree planting campaigns to reduce soil erosion and desertification)
- create water reserves and prevent water depletion
- ensure sustainable development of animal husbandry, crop farming and the food production sector
- promote ecotourism
- implement the 'one hundred thousand solar light' program
- expansion of specially protected areas
- abatement of air pollution in Ulaanbaatar
- introduce environmentally sound technologies in mines

The Mongolian National Council for Sustainable Development aims to combat poverty, reverse environmental degradation and improve human wellbeing.

Eastern Gobi desert steppe, watering point for goats

Mongolian horse riders on the grassland plains

Umnugovi Province, Two Wells watering point.
Photos: J Bliss