

Introduction to Prairies

Grasslands are biological communities dominated by herbaceous vegetation, especially grasses.

Herbaceous = non-woody; includes forbs and grasses.

Grasses (monocots) belong to the family Poaceae (or Gramineae). Grasses are characterized by unbranched, hollow stems with solid nodes (joints) from which the leaf blades arise. Roots form a fibrous mat, or sod.

Forbs (dicots) are represented by many different families of plants (e.g., Compositae, Fabaceae). Forbs have solid stems that may be branched; leaves can arise from various points along the stem. Forbs have central taproots that may reach deep into the soil.

Examples of grasslands include prairies of North America, pampas of Argentina, steppes of central Asia, veldt of south Africa, and grasslands of Australia.

Grasslands cover(ed) ca. 20% of North America; prairies were the most abundant type of grassland on the continent.

“Prairie” is the French word for “meadow”.

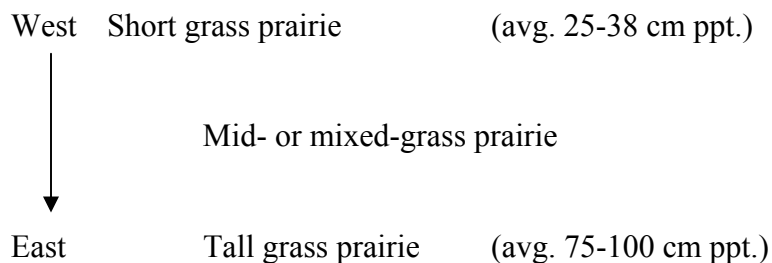
Historically, prairies occupied a 3.6 million km² triangle:

The base extending along the foothills of the Rocky Mountains from Saskatchewan and Manitoba, Canada south into Texas.

The apex, or **prairie peninsula**, jutted east into Iowa, Minnesota, Missouri, Wisconsin, Illinois, and Indiana.

Types of Prairie

Prairie communities or associations may be broadly categorized based on height (at flowering) of the grassland dominants:



Influenced by precipitation patterns attributed to rainshadow of the Rocky Mountains and moisture carried from Gulf of Mexico. (Also influenced by a north-south temperature gradient.)

Some dominant grasses of the prairies:

Short grass prairie—*Bouteloua gracilis*, *Buchloë dactyloides*

Mixed grass prairie—*Schyzachrium*, *Stipa*, *Bouteloua*, *Sporobolus*

Tall grass prairie—*Andropogon gerardii*, *Sorghastrum nutans*

Prairie may be more narrowly defined based upon soil type and amount of moisture:

| | |
|-----|-------------------|
| Wet | Wet prairie |
| ↓ | Wet-mesic prairie |
| ↓ | Mesic prairie |
| ↓ | Dry-mesic prairie |
| Dry | Dry prairie |

Some plant species are found in only particular environments, whereas others may tolerate a wider range of conditions.

Tallgrass Prairie

Lies on the eastern extent of the prairie region. Historically, occupied ca. 60 million ha (144 million acres) from s.w. Manitoba to central Texas, projecting east through Illinois and part of Indiana.

Outlying patches of tallgrass prairie were found in s.w. Michigan, northern Ohio, and western Kentucky.

Only 4% of presettlement tallgrass prairie remains.

Illinois (“The Prairie State”) has < 0.01% of its original prairie remaining.

Important pioneering work in community ecology has been conducted in prairies (Clements 1916, Gleason 1926), but after much of the tallgrass prairie was eradicated.

Therefore, questions of the natural prairie ecosystem remain:

presettlement vegetation

fire frequency and season

extent of grazing

Types of Tallgrass Prairie

Wet prairie—soil saturated for at least 2 weeks of the growing season; soil may be organic peat and muck, sand, or gravel;
e.g., in low-lying areas amidst prairie,
prairie fen,
dolomite prairie,
alluvial expanse along river

Mesic prairie—well-drained soil with relatively high moisture availability; most fertile prairie soils; some of the most diverse prairies

Dry prairie—on slopes and well-drained uplands; may range from very dry to dry-mesic; once common in the south and west portions of the tallgrass prairie region.

Hill prairie—highly drained type of dry prairie found on steep slopes and tops of hills, bluffs, and ridges; substrate may be comprised of glacial outwash gravel or **loess** (finer, windblown glacial soil) and exposed rock is common.

Sand prairie—found in sand deposits that may range from wet (e.g., dune depressions along rivers or the Great Lakes) to dry; nutrient-poor soil that drains readily.

Savannas

Common on the ecotone of the eastern deciduous forest region and the tallgrass prairie.
Characterized by communities of scattered trees, grasses, and forbs.

Has been defined as approximately 1-15 trees/acre.

Has also been defined based on canopy cover, e.g., >80% cover it becomes woods.

Bur oaks and black oaks were some common savanna trees.

Early Europeans also describe groves of crab apple, hazel, and blackberry; thickets of wild plum trees in draws of areas near the Mississippi River.

Wooded areas and savannas also found along creeks running through the grasslands.