University of Wyoming Extension

THE PRAIRIE

PRAIRIE

- The word prairie is derived from the French word “prataria”, or meadow, which probably originated with the Latin word “pratum”.

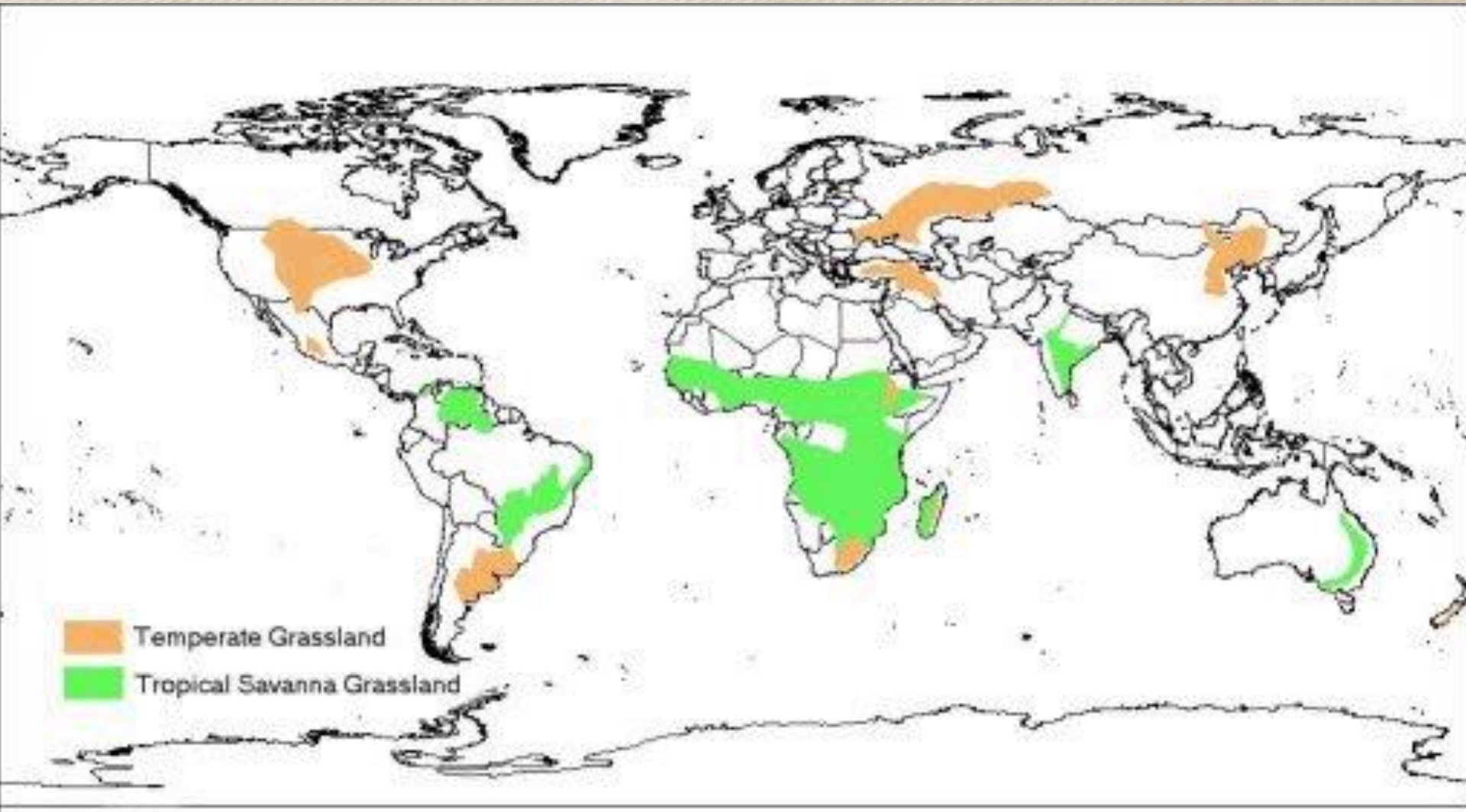
- It was coined by the French explorers and trappers moving into Western Canada and south into the US, during the late 18th century, to describe the “sea of grass”.

WHAT IS THE PRAIRIE?

- **Grassland**
  - Usually temperate climate.
  - Usually intercontinental.
  - Relatively flat.

GRASSLANDS OF THE WORLD

- Central Africa - savanna
- Southern Africa - veldt
- Eurasia - steppe
- Australia - lowlands
- South America - pampas
- South America - llanos


Temperate Grassland
Tropical Savanna Grassland

HOW WAS THE PRAIRIE CREATED?

- Mountain development to the west created a rain shadow, which favored the establishment of grasslands over forests.
- Drought tolerant plants persisted or immigrated from nearby.
- Grasses thrived, creating a fuel load that could carry fire, trees, and shrubs were not able to recover as quickly.

THE PRAIRIE WAS FURTHER DEVELOPED BY:

– Presence of large herbivores.

THE PRAIRIE WAS FURTHER DEVELOPED BY:

- Extended periods of drought.
- Relatively short growing season.

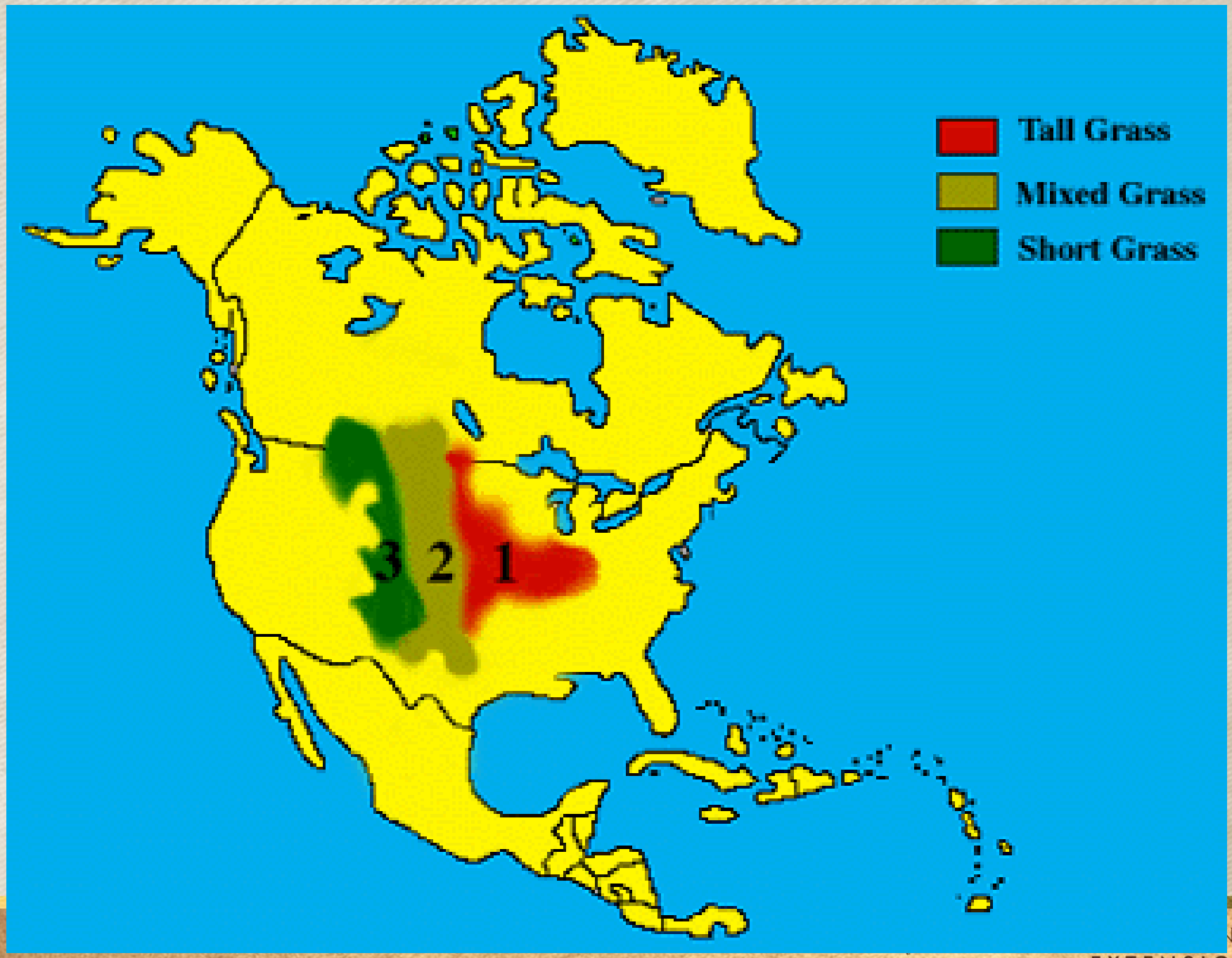
TYPES OF AMERICAN PRAIRIES

The simplest division: by height

- Tall grass
- Mixed or mid-grass
- Short grass

By soil type:

- Sandhills of Nebraska
- Blackland Prairie of east Texas


Tall Grass
Mixed Grass
Short Grass
3
2
1

WHAT IS THE STATUS OF THE PRAIRIE?

- Less than 1% of the tall grass prairie remains, most has been turned into cropland, or drastically changed by haying or grazing.
- About 24% of the mixed grass prairie is intact, most has been converted to cropland or seeded to non-native forage species.
- About 18% of the short grass prairie is intact, it has also been heavily impacted by grazing of domestic livestock.

LARAMIE COUNTY

- Some mixed grass prairie in the western part of the county.
- Mostly short grass prairie throughout the rest of the county.
- Some tall grass prairie grasses in wetter areas.

GRASSES IN GENERAL

- Sod formers versus bunch grasses:
  - Sod formers make a mat and spread by rhizomes (above or underground stems).
  - Bunch grasses grow in small clumps.

COOL C3 VS WARM C4 GRASS

- **C3** grasses are active when it's cool and dormant in heat (less drought tolerant).
- **C4** grasses are actively growing in the hot summer and dormant in the winter (very drought tolerant).

DROUGHT ADAPTATIONS OF PRAIRIE GRASSES

- Leaves – small and narrow (reduces area exposed for transpiration and heat absorption.
- Leaves - often with pubescence (slows rate of transpiration and reflects solar radiation).
- Leaves - deciduous .
- Early growth period when moisture is available.

- Very deeply rooted, up to 6 feet deep when not mowed or grazed.

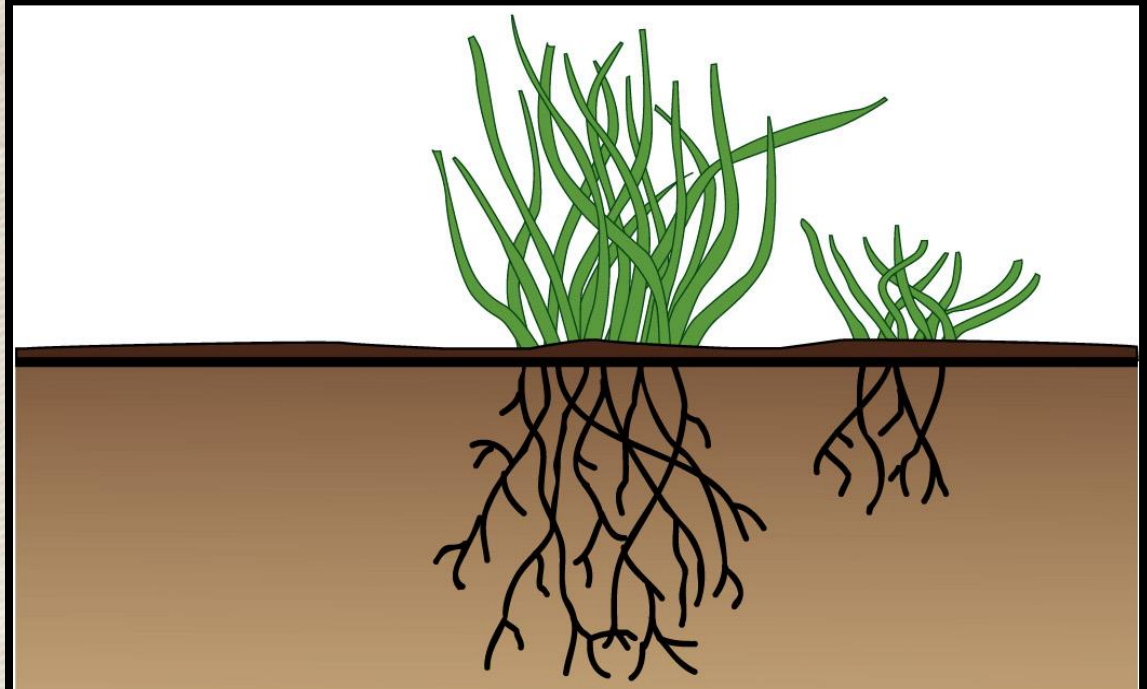
ADAPTATIONS

- About 75% of the grassland biomass occurs below the soil surface = a large amount of stored energy.
- Wind pollinated.

CONSEQUENCES OF OVERGRAZING OR EXCESS MOWING

- Loss of desirable species.
- Loss of soil due to wind and water erosion.
- Invasion of weeds.

Take Half and Leave Half 50% rule



Percent leaf volume removed	Percent root growth stopped
10%	0%
20%	0%
30%	0%
40%	0%
50%	2-4%
60%	50%
70%	78%
80%	100%
90%	100%

Adapted from NRCS, Bozeman, MT

STOCKING RATES

Number of acres to support one animal or one cow calf pair (animal unit).

Varies month to month.

Typically 35 to 40 acres per AU without damaging the prairie.

APPROXIMATE GRAZING LENGTH AND REGROWTH PERIODS

Season	Grazing Length	Grass re-growth Period
Spring	4 – 5 days	10 – 14 days
Summer	9 – 10 days	21 – 30 days
Late Summer	12 – 15 days	30 – 45 days


Photo by: Wanda Manley

Some grasses on the prairie

SHORT GRASS PRAIRIE

- Two major components:
  - Bluegrama (Bouteloua gracilis).
  - Buffalo grass (Buchloe dactyloides).

BLUE GRAMA

BUFFALO GRASS

MIXED GRASS PRAIRIE

- Grasses
  - Needle & thread (Stipa comata)
  - Western wheatgrass (Agropyron smithii)
  - Sandberg bluegrass (Poa secunda)
  - Needleleaf sedge (Carex eleocharis)
  - Junegrass (Koeleria cristata)
  - Indian ricegrass (Orzyopsis hymenoides)

Needle and Thread

Western Wheatgrass

Sandberg bluegrass

Needleleaf Sedge

Prairie Junegrass

Indian Ricegrass

WATER -- WYOMING

WATER LAW IN WYOMING

- Prior Appropriations Doctrine - First in time is first in right - Allows for regulation of water by setting up seniority of rights system.
- Water rights that date to territorial time (pre-Statehood).
- **All water owned by State, use must be permitted**.

GROUND WATER

- Domestic and stock wells limited to 25 gallons per minute by law.
- Domestic use is defined as water for household use for 3 or less single family dwellings and non commercial garden. Landscape water of no more than 1 acre.
- Commercial uses (including greenhouses or businesses growing for market) have additional permitting requirements.

YOUR WATER WELL

- Minimum well construction guidelines
  - November 2004 State Engineer's Office
    - 20 feet from property line
    - 100 feet from leach field
    - must have surface seal to prevent contamination - 10 ft. require by standards, few actually have seal installed.
  - Proper Construction can be important in quality and quantity of water produced (sand content, water quality, longevity of well and pump equipment).

For Additional Information Related to Water, Water Rights, or Water Wells contact:

Wyoming State Engineer's Office

General 307 777-7354

Ground Water 307 777-7730 or 6688

or visit http://seo.state.wy.us/

For basic water well information for well owners see: National Ground Water Association (NGWA) visit http://www.wellowner.org

WATER TESTING

- **Bacterial (Coliform)**
  - **City County Health Department**
    - **Free**
    - **Twice a year**
- **Water Quality**
  - **Private labs to test for….**

FENCING

WY FENCING STATUTES MINIMUM CONSTRUCTION STANDARDS

- **11-28-102. Lawful fences generally.**
  - (a) The following are lawful fences in this state:

- (i) A fence made of steel, concrete or sound wooden posts and three (3) spans of barbed wire not more than fifteen (15) inches or less than ten (10) inches apart, or two (2) spans of barbed wire with a wooden rail on top. Wooden posts shall be at least four (4) inches in diameter. Posts shall be set firmly in the ground at least twenty (20) inches deep, at no greater distance apart than twenty-two (22) feet between the posts or thirty-three (33) feet with at least two (2) iron or wooden stays between the posts. Stays shall be placed equal distance apart from themselves and the post on either side;

SHARE COST OF FENCING

- **11-28-106. Construction and maintenance of partition fences.**

- The owner of any lawful fence which is or becomes a partition fence separating the owner's land from that belonging to some other person may require the person *to pay for one-half (1/2) of what it would or does actually cost to construct the partition* fence. In case of refusal, the owner may maintain a civil action against the person refusing and is entitled to recover one-half (1/2) of what it would or did actually cost to construct that portion of the partition fence used by the person and costs of suit. The joint users of a partition fence shall contribute to the cost of maintenance in proportion to their respective interests and if either refuses to pay his share of the cost of maintenance, the other may recover maintenance costs in the manner provided for recovering the cost of construction.

DOGS

WY DOG STATUTES

ARTICLE 3
ANIMALS RUNNING AT LARGE

- **11-31-301. Public nuisance; notice; penalties; rules and regulations; animal control districts and officers.**
  - (d) A dog injuring or killing livestock may be killed by the owner of the livestock or his agent or any peace officer.

WINDBREAKS GOOD REASONS TO HAVE THEM.

- Increase the value of your property.
- Decrease heating bills.
- Capture snow:
  - Reduce drifting on roads.
  - Increase soil moisture.
- Provide wildlife habitat.

Photo by Wanda Manley

HOW DO WEEDS ENSURE THEIR SUCCESS?

- They are very competitive:
  - grow well in spite of interference from other plants.
- They are persistent:
  - will return year after year.
  - reproduce vigorously.
  - spread seeds effectively.

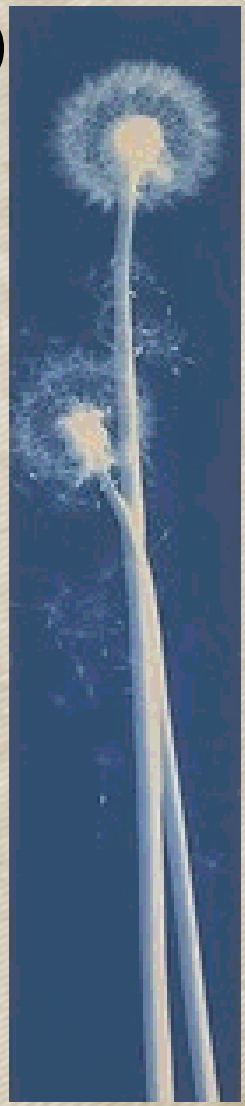
HOW DO WEEDS ENSURE THEIR SUCCESS?

- can alter the site they grow in by accumulating salts, changing water table depths, increasing erosion, increasing wildfire frequency, etc.

HOW DO WEEDS SPREAD

- **Natural means:**
  - **Wind**
  - **Water**
  - **Animals**
  - **People**

pi.cdfa.ca.gov/weedinfo



nmaa-ryder.si.edu

HOW DO WEEDS SPREAD?

- **Mechanical means: Disturbed soil.**
  - Irrigation
  - Roadside shoulder work
  - Construction/fill dirt
  - Vehicles
  - Tillage
  - Contaminated seed or feed
  - Livestock management

UNCE, Reno, NV

DOWNY BROME *(BROMUS TECTORUM* L.)

Winter annual.

Smooth erect stem; visible ligule with frayed margin.

Reproduces by seed (up to one billion/acre).

Grass family (Poaceae).

Seeds are long and flat with an awn as long as the seed.

Mature plants turn purple to brown as they dry.

Increases fire frequency.

FIELD BINDWEED (*CONVOLVULUS ARVENSIS*)

www.pitkingov.com

Morningglory family (Convolvulaceae).

Perennial.

Alternate, arrowhead-shaped leaves on climbing stems.

www.arapcsuext.org

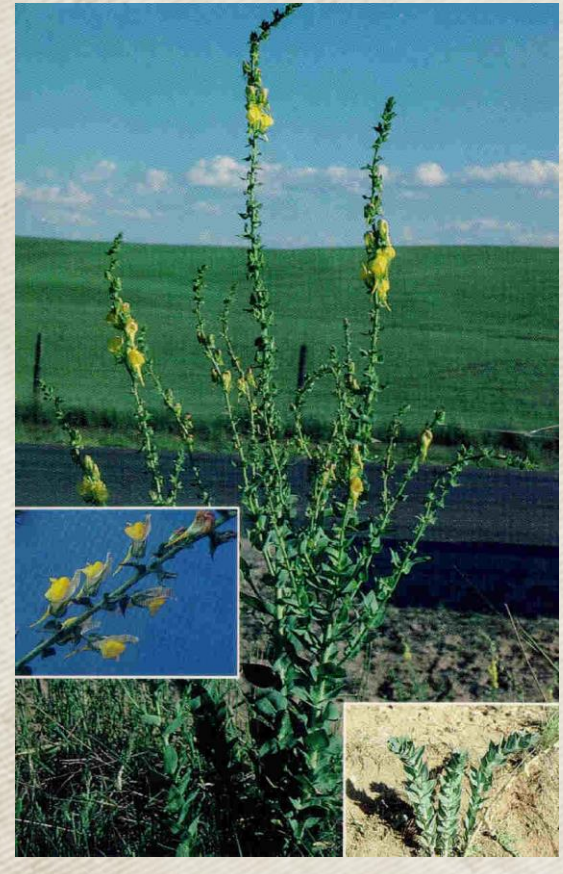
Flowers are trumpet-shaped and white to pinkish.

Reproduces by seeds which remain viable for up to 50 years and rootstocks.

DALMATIAN TOAD FLAX

LINARIA DALMATICA L.

- Typically found along roadsides, pastures, and rangelands.
- **Once established, however, it becomes an effective competitor, reducing the abundance of grasses and other forbs.**
- **In addition, Dalmatian toadflax contains alkaloids <u>that may be toxic</u> to grazing mammals.**



LEAFY SPURGE

EUPHORBIA ESULA L.

- **ECOLOGICAL THREAT:**
- Leafy spurge displaces native vegetation in prairie habitats and fields through shading and by usurping available water and nutrients.
- **Plant toxins prevent the growth of other plants.**
- Leafy spurge is an aggressive invader, and once present, can completely overtake large areas of open land.
- Is a persistent, deep-rooted perennial which reproduces by seeds and roots.
- http://www.nps.gov/plants/alien/fact/eues1.htm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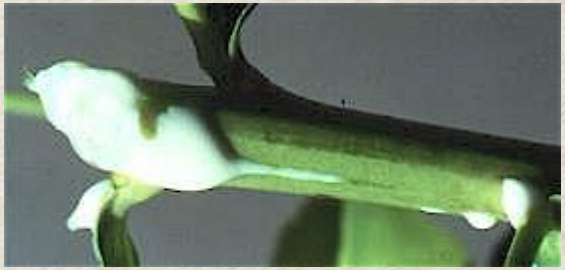


RUSSIAN THISTLE

SALSOLA PESTIFER

- **Is an annual.**
- **Single plant may produce 20,000 to 50,000 seeds. Seeds germinate quickly.**
- **It depletes soil moisture.**
- **Serves as a shelter or food source to many insects, vertebrate pests, and crop diseases.**
- **Threatens native plant ecosystems.**

RUSSIAN THISTLE

- **Accumulate along tree rows and fence lines, posing a serious fire hazard.**
- **Many people are sensitive to Russian thistle and exhibit skin rashes and allergic reactions after exposure to the plant.**
- **The windblown pollen of Russian thistle can cause an allergic reaction in people during summer.**
- http://axp.ipm.ucdavis.edu/PMG/PESTNOTES

LARKSPUR

Is Toxic

- Toxin can affect cattle and other ruminants as well as horses.
- DANGEROUS PARTS OF PLANT: All parts, especially seeds and young leaves.
- SIGNS: Nervousness, in-coordination, staggering, salivating, bloating, abnormal heart beat, breathing difficulty, paralysis, convulsions, death.
- Larkspur grows six inches to 4 feet high, bear alternate, deeply-lobed ("crowfoot") leaves and elongate clusters of spurred white, blue, or purple flowers in the spring.

LARKSPUR

- **The plant is palatable.**
- Native to the Rocky Mountain Region.
- Shows growth before other forages.

- The highest periods of toxicity occurring during early growth (spring) and when the plant goes to seed.

- Signs of larkspur toxicity appear within a few hours of ingestion. Approximately 1/4 pound of larkspur per 100 pounds body weight may be lethal for cattle. A higher dose is needed before sheep and horses show clinical signs.

LARKSPUR

- FIRST AID: **There is no antidote for larkspur poisoning**, treatment is supportive, only. A veterinarian needs to be called if the animals are bloated, or if consumption was very recent.

MIXED GRASS PRAIRIE

- Forbs*:
  - Pricklypear cactus (Opuntia polyacantha)
  - Scarlet globemallow (Sphaeralcea coccinea)
  - Fringed sage (Artemisia frigida)
  - Hooded phlox (Phlox hoodii)
  - * term for weeds or wildflowers.

Pricklypear

Scarlet Globemallow

Hooded Phlox

SMALL MAMMAL AND RODENT DAMAGE

- Rabbits & hares.
- Prairie dogs.
- Pocket gophers.
- Ground squirrels.

RABBITS

- True rabbits include :
- Mountain Cottontail (Sylvilagus nuttalli)
- Desert cottontail (Sylvilagug audubonii),
- Pygmy rabbit (Sylvilagus idahoensis)

ABOUT RABBITS

- Paired tracks commonly indicate cottontails or jackrabbits.
- Prefer some type of cover.
- Damage is recognized by a sharp 45 degree cut on small twigs from a few inches to 20 inches above ground.
- Common foods are garden vegetables, flowers, and shrubs.

Do Not Mow.

HARES

- Whitetail and blacktail "jackrabbits" (Lepus townsendii and L. californicus) actually are hares.

ABOUT HARES

- Do not hibernate.
- Prefer open range.
- Also have paired tracks.
- Droppings are small marble size.
- Nests are small depressions.
- Young are born with fur.

CONTROLS FOR HARES

- 24-inch high fence will exclude them from small areas or individual plants.
- Domestic dogs can discourage them.
- Do not mow, let pasture grasses be tall.

UNIVERSITY OF WYOMING EXTENSION

PRAIRIE DOGS

PRAIRIE DOGS

- Don’t hibernate.
- Are diurnal.
- Exist in dense colonies, create 30 to 50 6-inch burrows and mounds per acre.
- Grasses and broad-leaved plants clipped at one-inch height.
- Occasional bark stripping occurs on shrubs.
- Black widow spiders and rattlesnakes are associated with colonies.

CONTROLS FOR PRAIRIE DOGS

- Some minor effects have been shown by placing poles and other perch sites for large hawks and barrier fences, hay bales and other obstacles that prey upon prairie dogs.
- Proper grazing use--rotate livestock through pasture systems, avoid season-long grazing but graze early spring, place salt and water for livestock away from prairie dog towns; exclude livestock for several seasons post control of prairie dogs.
- Do Not Mow.

POCKET GOPHERS

ABOUT POCKET GOPHERS

- Don’t hibernate.
- Nocturnal and diurnal.
- Dinner plate-sized mounds with no entrance.
- Tracks and animal are almost never seen above ground.
- Pocket gophers girdle growing trees and shrubs at or near ground level. Trees up to several inches in trunk diameter can be killed.
- A gopher can move up to two tons of soil each year.

After the snow melts

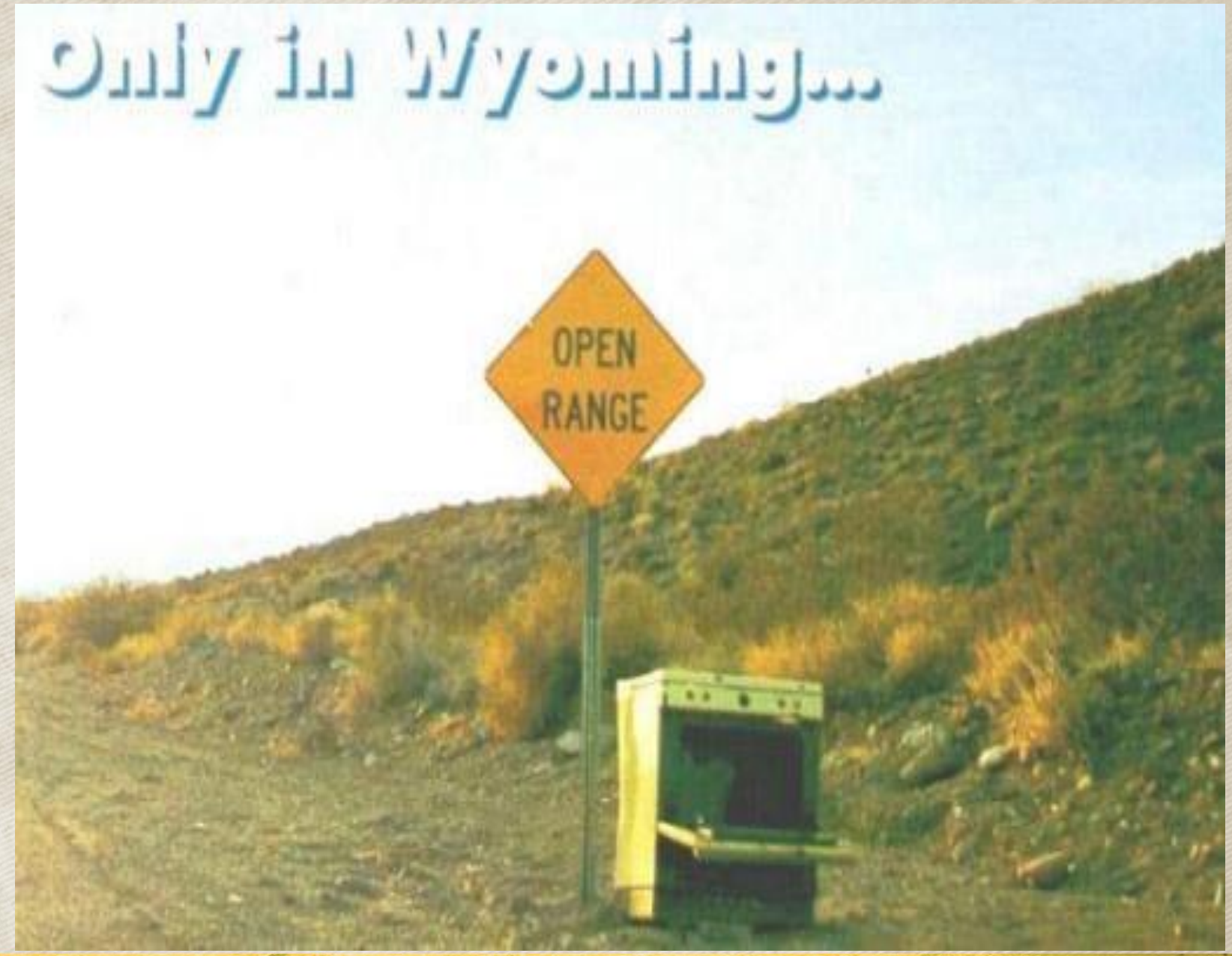
The rest of the year

Pocket gopher damage

CONTROLS FOR POCKET GOPHERS

- **Domestic cats, foxes.**
- **Owls, hawks**
- **Fence buried at least 18 inches below the soil surface.**

THE BEST CONTROL OF ALL = BALANCED ECOSYSTEM


Only in Wyoming...
OPEN
RANGE

Flowers found on the Prairie, a sampling.

Argemone polyanthemos
Prickly Poppy

Prickly poppy (Argemone polyanthemos) a short lived perennial.
It can grow up to 2 1/2 feet tall and as wide. Likes full sun, sandy well drained soil and drought tolerant. This is a favorite of native bees, bumblebees and honey bees. It is easy to grow from seed, blooms white from May to August.


Photo credit: Catharine Wissner

Brassica rapa, Birdsrape Mustard

An annual or biennial about 1-3' tall.
Prefers full sunlight, moist to dry conditions, and a neutral to alkaline soil containing loam, clay-loam, or gravelly material.

Coreopsis

Coreopsis tinctoria or Tickseed, blooms in huge yellow drifts on the prairie.
A short lived perennial grows 18 inches tall and blooms June through September.
It likes sandy well drained soil and full sun.
You can propagate this plant from seeds.

Eriogonum Flavum, Wild Buckwheat

A perennial wildflower growing up to 10 inches.
Likes open prairies, loose rocky soils, full sun to light shade and adaptable to different soils.
Comes in yellows, pinks, cream or white.
Blooms June to September.
Is drought tolerant, a good choice for rock gardens and attracts native bees and butterflies.

Erysimum asperum, Yellow Wallflower

Large drifts of bright eye catching color.
Western native is a member of the mustard family and is a short lived perennial, blooming from May to July.

It does best in full sun, open areas in plains, well drained soils and reseeds readily.

Linum lewisii, Flax

A native perennial that can grow 2.5 feet tall under favorable conditions.

Flower color range from light to deep blue.

Tolerant of a wide range of conditions from moist to dry and found from the plains to alpine areas.

Flax is easy to grow from seed, but does not transplant well.

Lathyrus polymorphus, Hoary Vetchling

Native to open, gravelly or rocky areas in the plains a member of the pea family.

Flowers are pink-purple with hints of white or blue, blooms May-June.

Likes full sun, dry well drained soils.

Makes a great rock garden or ground cover plant and is low care and can be started from seed.

Oxytropis lambertii, Locoweed

Perennial can either be 10 inches tall and as wide or compact and 3 inches tall. Full sun dry to moist well drained soils or rocky soils.
The showy flowers can be white or pink-purple that fade to dark purple. It blooms from May to July, is easily grown from seed.
All parts of this beautiful wildflower are toxic, fresh or dried, especially to horses.

Leucocrinum montanum, Star Lily

Found in prairies, sagebrush grasslands, deserts, and mountain meadows of western North America.
This tiny flower blooms white in late May or June, with the entire aboveground part of the plant withering away.


Photo credit: Catherine Wissner

Mertensia, Bluebells

Bluebells (Mertensia Lanceolata or viridis) is a member of the Boarge family.

Is a very adaptive 12inch tall wildflower it likes; moist to dry open areas and full sun to light shade.

The flowers are blue to blue pink and blooms May to July.

It will die back in the heat of summer and can be grown from seed.

Photo credit: Catherine Wissner

Musineon tenuifolium, Slenderleaf Wild Parsley

A native compact perennial wildflower growing to 12 inches or less, but as wide.
Tiny yellow flowers in a 1 ½ to 2 inch umbel form, a member of the wild carrot family.
Blooms May and June, likes dry, open, rocky areas on the plains. It does well in rock gardens a can be grown from seeds sown in the fall.

Photo credit: Carlie [illegible] Wissner

Penstemon

A very large genus that has over 100 species in the Rocky Mountain region.

Flower colors range from white, shades of pink, blues, lavender to purple.

Heights range from 5 inches to 18 inches.

They can be propagated by division or seeds.

There is an American Penstemon Society and penstemon are easily found in nurseries.

Photo credit: Catherine Wissner

Thermopsis rhombifolia, Prairie Buffalopea

Perennial grows by underground rhizomes and can form big patches.
The yellow flowers grow above the leaves May to August.
It likes dry open soils grows in full sun to part shade.
Prairie Buffalopea is very drought tolerant and works will in perennial flower beds.

Rumex venosus, Veiny Dock

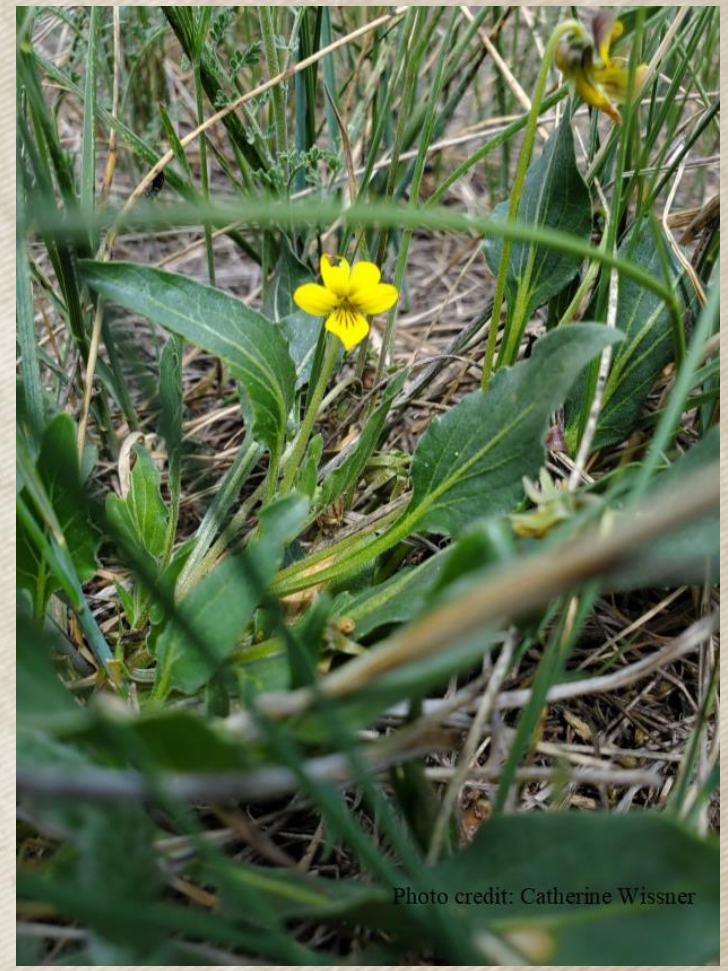
Grows 18 inches tall and wide and spreads by rhizomes or seeds.

They grow in disturbed soils that are sandy or gravelly, full sun, dry areas.

Veiny Dock can be aggressive, but good for holding sandy banks, the flowers can be dried and used in flower arrangements.

Viola nuttilli, Yellow Prairie Violet

A perennial wildflower with small yellow flowers that has adapted to full sun and dry locations, unlike most violas which like cool moist and shady locations.
Yellow Prairie Violet comes back each year from root stock rather than seeds.
Blooms April through July, it is one of 16 native viola species found throughout the rocky mountain region.



Thank you