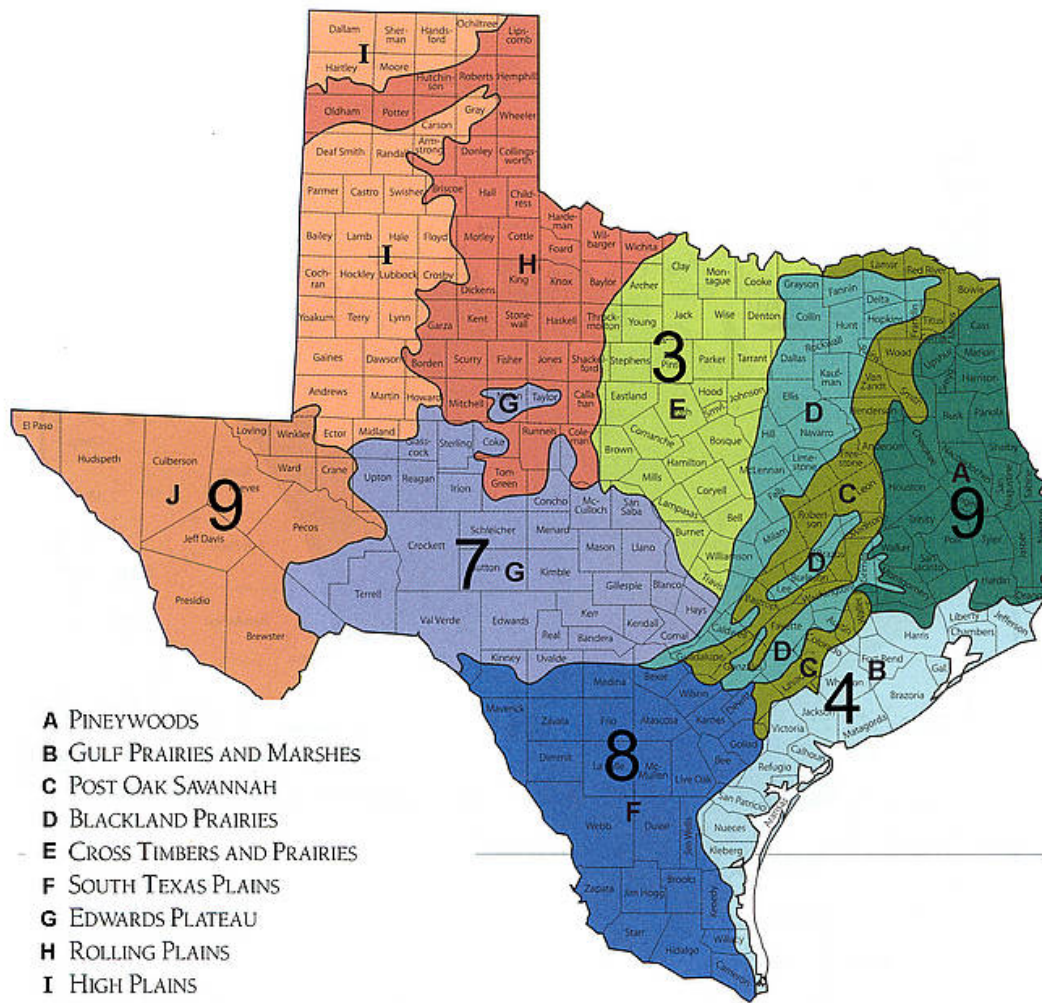


Forage Production for New Landowners

Philip Shackelford
Texas A&M AgriLife
Extension Service

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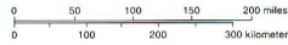
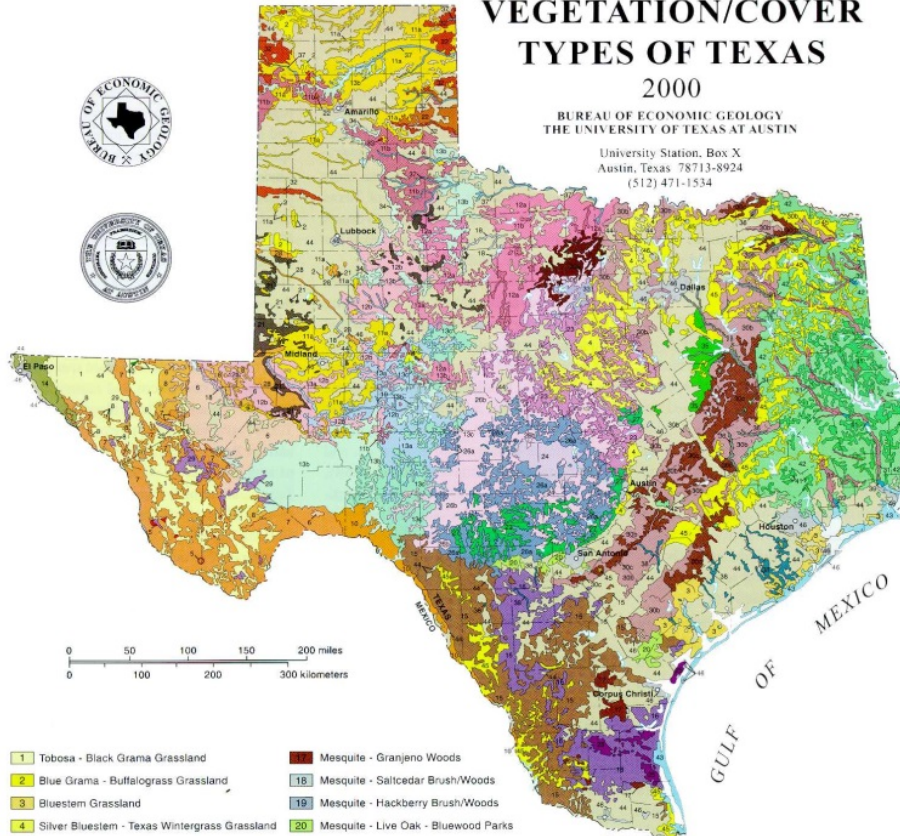
- A** PINEYWOODS
- B** GULF PRAIRIES AND MARSHES
- C** POST OAK SAVANNAH
- D** BLACKLAND PRAIRIES
- E** CROSS TIMBERS AND PRAIRIES
- F** SOUTH TEXAS PLAINS
- G** EDWARDS PLATEAU
- H** ROLLING PLAINS
- I** HIGH PLAINS
- J** TRANS-PECOS, MOUNTAINS AND BASINS



VEGETATION/COVER TYPES OF TEXAS 2000

BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN

University Station, Box X
Austin, Texas 78713-8924
(512) 471-1534



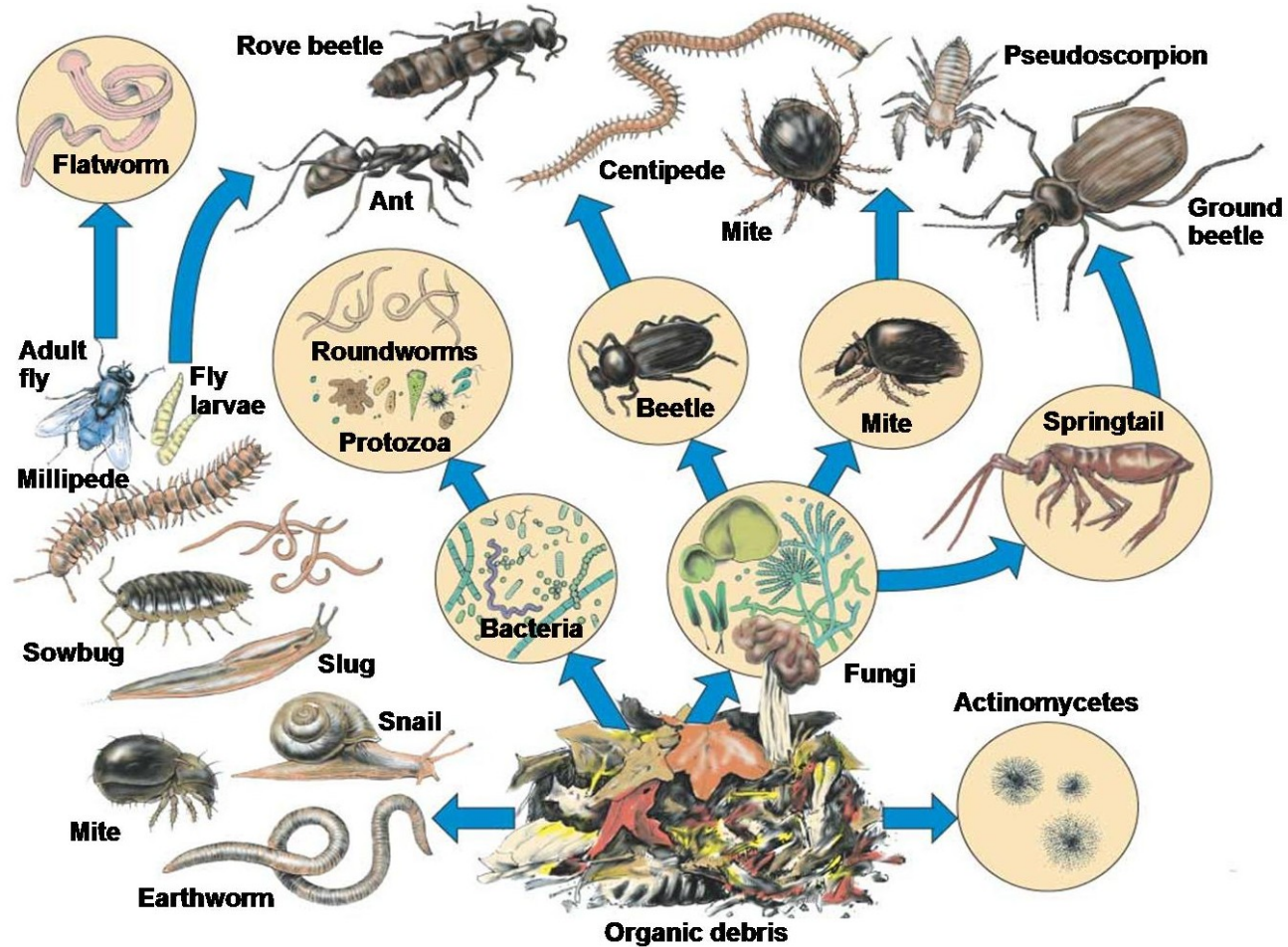
- | | | |
|--|--|--|
| 1. Tobosa - Black Grama Grassland | 17. Mesquite - Granjeno Woods | 34. Juniper - Mixed Brush |
| 2. Blue Grama - Buffalograss Grassland | 18. Mesquite - Saltcedar Brush/Woods | 35. Elm - Hackberry Parks/Woods |
| 3. Bluestem Grassland | 19. Mesquite - Hackberry Brush/Woods | 36. Water Oak - Elm - Hackberry Forest |
| 4. Silver Bluestem - Texas Wintergrass Grassland | 20. Mesquite - Live Oak - Bluewood Parks | 37. Cottonwood - Hackberry - Saltcedar Brush/Woods |
| 5. Yucca - Ocotillo Shrub | 21. Harvard Shin Oak - Mesquite Brush | 38. Pecan - Elm Forest |
| 6. Creosotebush - Tarbush Shrub | 22. Sandsage - Mesquite Brush | 39. Bald Cypress - Water Tupelo Swamp |
| 7. Creosotebush - Lechuguilla Shrub | 23. Oak - Mesquite - Juniper Parks/Woods | 40. Ponderosa Pine - Douglas Fir Parks/Forest |
| 8. Creosotebush - Mesquite Shrub | 24. Live Oak - Mesquite Parks | 41. Young Forest/Grassland |
| 9. Fourwing Saltbush - Creosotebush Shrub | 25. Live Oak Woods/Parks | 42. Pine - Hardwood Forest |
| 10. Ceniza - Blackbrush - Creosotebush Shrub | 26a. Live Oak - Ashe Juniper Parks | 43. Marsh/Barrier Island |
| 11a. Mesquite Shrub/Grassland | 26b. Live Oak - Mesquite - Ashe Juniper Parks | 44. Crops |
| 11b. Mesquite Brush | 27. Live Oak - Ashe Juniper Woods | 45. Other Native and/or Introduced Grasses |
| 12a. Mesquite - Lotebush Shrub | 28. Harvard Shin Oak Brush | 46. Urban |
| 12b. Mesquite - Lotebush Shrub | 29. Gray Oak - Pinyon Pine - Alligator Juniper Parks/Woods | |
| 13a. Mesquite - Juniper Shrub | 30. Post Oak Parks/Woods | |
| 13b. Mesquite - Juniper Brush | 30a. Post Oak Woods, Forest, and Grassland Mosaic | |
| 13c. Mesquite - Juniper - Live Oak Brush | 30b. Post Oak Woods/Forest | |
| 14. Mesquite - Sandsage Shrub | 31. Willow Oak - Water Oak - Blackgum Forest | |
| 15. Mesquite - Blackbrush Brush | 32. Sandsage - Harvard Shin Oak Brush | |
| 16. Mesquite - Granjeno Parks | 33. Ashe Juniper Parks/Woods | |

Map units are derived from the 1984 map
The Vegetation Types of Texas published by
the Texas Parks and Wildlife Department.



Who's using the plants in our landscape

◎ Insects & Micro organisms



Livestock



Wildlife



Example of Biodiversity



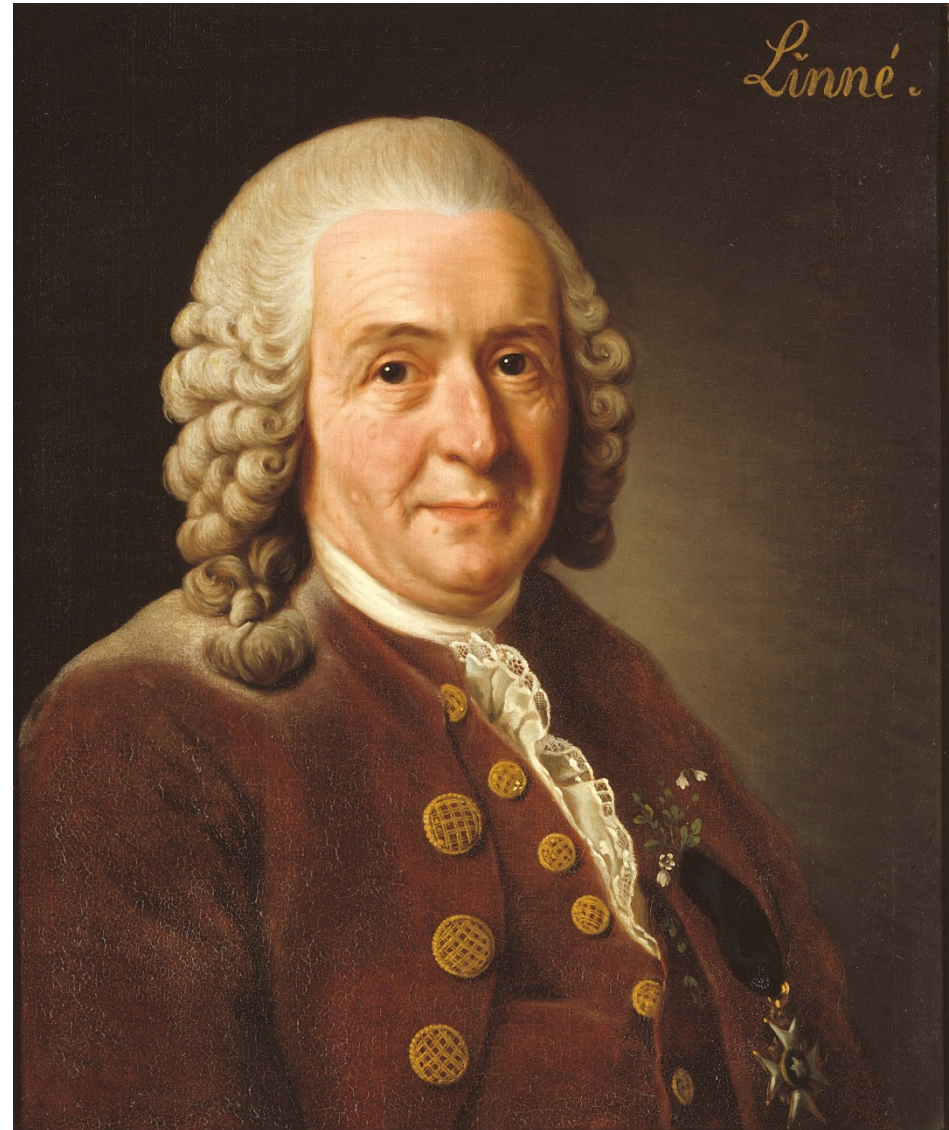
How the plants got their Names

- Common names given by settlers
- Native Americans
- Based on characteristics of the plant
 - Green
 - Prickly
 - Big, Small, etc...



Naming Plants

- ◎ Carl Linneaus (1707-1778)
- ◎ Binomial System of nomenclature
- ◎ Based on flower parts
- ◎ Kingdom, Phylum, Division, Class, Order
 - ◎ Family
 - ◎ Genus
 - ◎ Species



Categorizing Plants

- ⦿ **Plant Categories**

 - Angiosperms

 - Monocots
 - Dicots

- ⦿ **Growth Habits**

 - Herbacious

 - Grasses
 - Grass-Like
 - Forbs

 - Woody

 - Deciduous
 - Evergreen



Life Cycles

- ⊙ Annuals – 1 year life cycle, reproduce from seed, eg henbit,
- ⊙ Biennials – 2 year life cycle, eg common mullein
- ⊙ Perennials – live for many years, eg Little Bluestem



Henbit



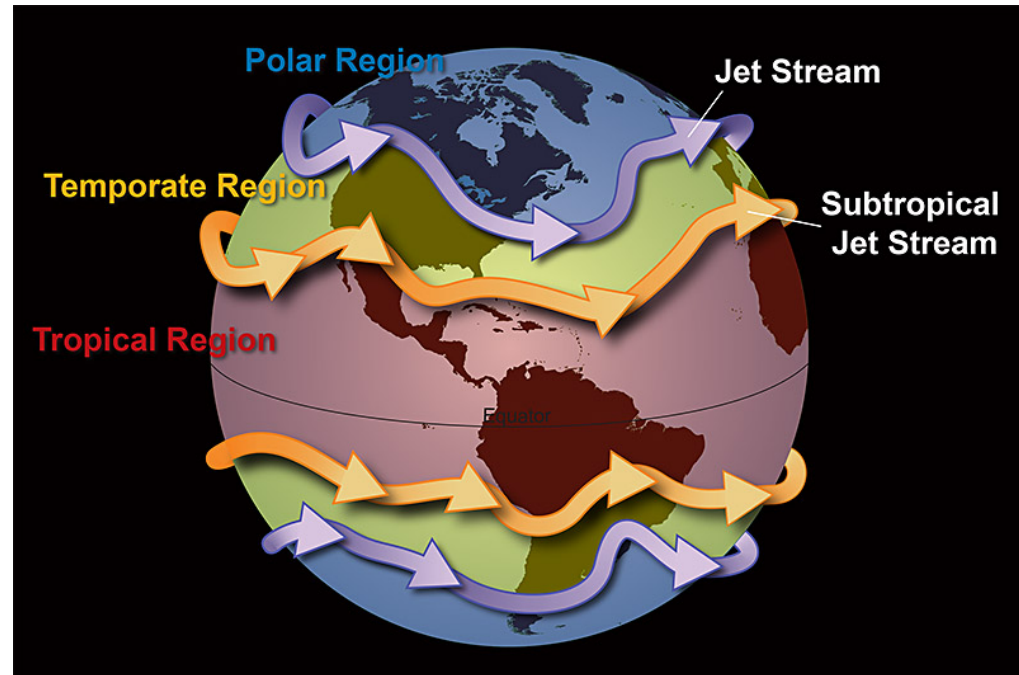
Common Mullein



Little Bluestem

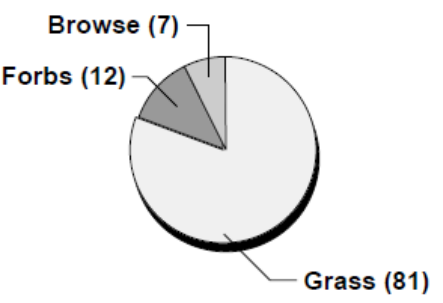
Temperature Tolerance

- ⦿ Polar
- ⦿ Tropical
- ⦿ Sub-Tropical
- ⦿ Temperate
 - ⦿ Cool Season
 - ⦿ Warm Season

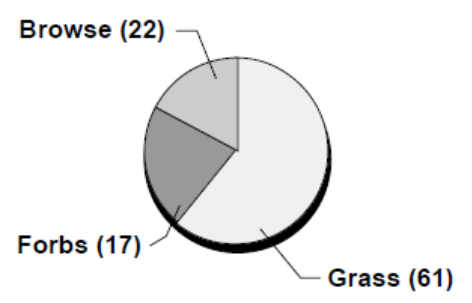


What Range Herbivores Eat?

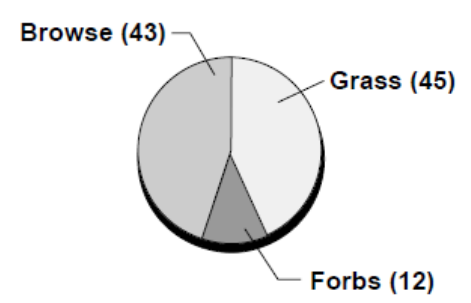
Cattle



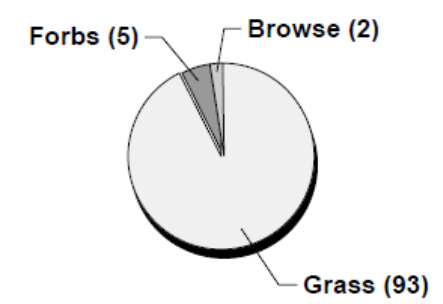
Sheep



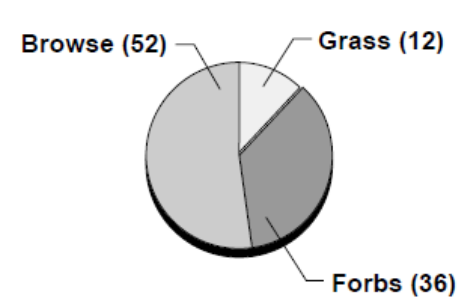
Goats



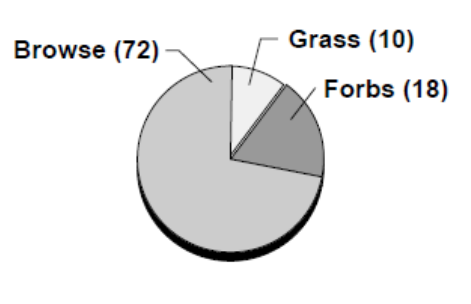
Bison



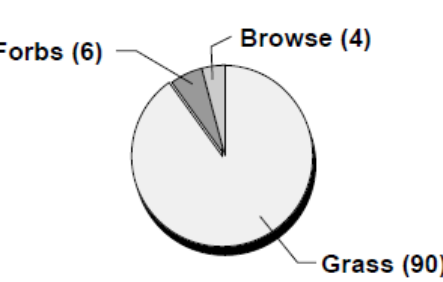
White-tailed Deer



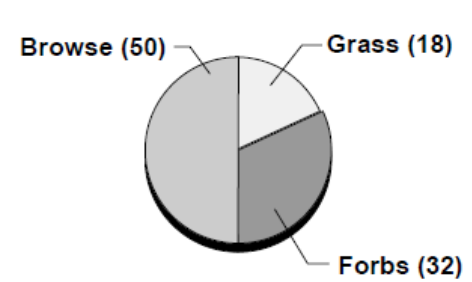
Mule Deer



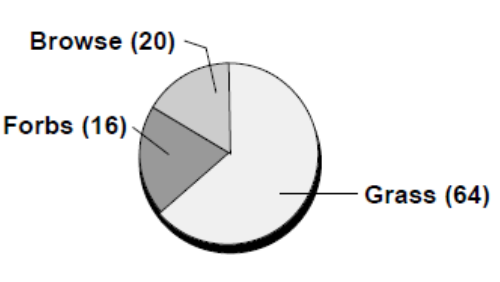
Horses



Pronghorn Antelope



Elk



Plant Succession

⦿ Decreaser

- ⦿ Plants that decreased over time due to mans management
- ⦿ Yellow Indiangrass, Eastern Gammagrass, Big Bluestem

⦿ Increaser

- ⦿ Plants that at first increase under mans management and slowly decline over time
- ⦿ Silver Bluestem, Sideoats Grama

⦿ Invader

- ⦿ Plants that take over once more desirable plants are removed
- ⦿ Common Bermuda, King Ranch Bluestem, Prickly Pear Cactus

Grasses

- ⊙ Poaceae or Grass Family
- ⊙ Monocots
- ⊙ Parallel venation
- ⊙ Fibrous root system
- ⊙ Divided into Native or Introduced
- ⊙ 545 species in Texas
- ⊙ Most important plant for livestock
- ⊙ Excellent soil holder

Grasses Folks Use for Hay



Introduced Grasses

- ⦿ Not Native to the area
- ⦿ Typically invasive
- ⦿ Withstand heavy grazing
- ⦿ Often require amendments such as fertilizer and herbicide

Bermudagrass

Cynodon dactylon

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Introduced
- ⦿ Invader
- ⦿ Sod Forming, most well adapted turf/forage grass in North America
- ⦿ Varieties include; Common, Tifton 85, Jiggs, Alicia, Callie, +100's more



Bahiagrass

Paspalum notatum

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Introduced
- ⊙ Invader
- ⊙ Distinctive forked seed head
- ⊙ Sod forming
- ⊙ Fair livestock grazing value, very poor for wildlife
- ⊙ Varieties include; Common, Pensacola, Argentine, Paraguay, Tifton 9, and more



King Ranch Bluestem

Bothriochloa ischaemum

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Introduced
- ⦿ Invader
- ⦿ Widely seeded for erosion control, seeded by the Texas Department of Transportation until 2006



Dallisgrass

Paspalum rugulosum

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Introduced
- ⦿ Increaser, good grazing for livestock
- ⦿ Fair value for wildlife
- ⦿ 4-5 rows of seeds
- ⦿ Can get an Ergot and cause the “Staggers”



Kleingrass

Panicum coloratum

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Introduced
- ⦿ Increaser, good grazing for livestock
- ⦿ Fair value for wildlife
- ⦿ Can cause photosensitization in sheep and goats



Johnsongrass

Sorghum halapense

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Introduced
- ⊙ Invader, good grazing for livestock
- ⊙ Fair value for wildlife
- ⊙ Can become toxic during certain stages of growth producing prussic acid



Annual Ryegrass

Lolium perenne

- ⊙ Annual
- ⊙ Cool Season
- ⊙ Introduced
- ⊙ Good grazing value for livestock
- ⊙ Fair value for wildlife
- ⊙ Over seeded in grazing pastures for supplemental forage during the winter



Burmedic/clover

Medicago polymorpha

- ⊙ Annual
- ⊙ Cool Season
- ⊙ Introduced
- ⊙ Good grazing for livestock
- ⊙ Excellent value for wildlife
- ⊙ Can cause bloat in livestock
- ⊙ Grows prostrate
- ⊙ Well adapted



Rescuegrass

Bromus catharticus

- ⦿ Annual
- ⦿ Cool Season
- ⦿ Introduced
- ⦿ Good grazing for livestock
- ⦿ Good value for wildlife
- ⦿ Distinctive seed head – sergeants stripes



Natives

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Characteristics of Natives

- ⦿ Indigenous to the area
- ⦿ Typically grow in clumps
- ⦿ Respond to fertilizers
- ⦿ Do not withstand heavy haying or grazing

Side Oats Grama

Bouteloua curtipendula

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Increaser
- ⦿ State Grass of Texas



Yellow Indiangrass

Sorghastrum nutans

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Feathery Seedhead
- ⦿ Decreaser, and provides good grazing for livestock



Eastern Gammagrass *Tripsacum dactyloides*

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Prefers moist soils, can withstand multiple flooding events
- ⦿ Decreaser, and provides good grazing for livestock, excellent fawning cover for deer



Little Bluestem

Schizachyrium scoparium

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Decreaser, fair grazing for livestock
- ⦿ Erosion control, widely adapted and deep rooted
- ⦿ Wildlife, seeds eaten by birds and nesting cover for ground dwelling birds such as quail



Big Bluestem

Andropogon gerardii

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Distinctive “Turkey’s Foot” seed head
- ⊙ Decreaser, excellent grazing value for livestock 16-18% CP
- ⊙ Excellent value for wildlife, grazed by large animals and seeds consumed by birds



Brownseed Paspalum

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Increaser, provides fair grazing for wildlife and livestock
- ⦿ Prefers sandy high pH soils
- ⦿ Made a comeback in 2012



Silver Bluestem

Bothriachloa laguroides

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Increaser, fair grazing for livestock
- ⦿ Poor value for wildlife
- ⦿ Indicator of an improving range site



Switchgrass

Panicum virgatum

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Decreaser, good grazing for livestock
- ⦿ Fair value for wildlife
- ⦿ Large and robust
- ⦿ Can grow on any soil type



Texas Wintergrass

Nassella leucotricha

- ⦿ Perennial
- ⦿ Cool Season
- ⦿ Native
- ⦿ Increaser, fair grazing for livestock
- ⦿ Fair value for wildlife
- ⦿ AKA – “Spear Grass”



Canada Wildrye

Elymus canadensis

- ⊙ Perennial
- ⊙ Cool Season
- ⊙ Native
- ⊙ Decreaser, good grazing value for livestock
- ⊙ Fair value for wildlife
- ⊙ Typically seen along river banks and streams and often in forest understory



Problem Weeds

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Weeds Compete With Grass and Other Desired plants for

- ✓ Nutrients
- ✓ Sunlight
- ✓ Moisture

When Do Weeds Occur?

- ✓ When plant density and vigor is decreased

Types of Weeds

Broadleaves

(5,000+ species in TX)

Annual

Perennial

Monocots

(1,800+ species in TX)

Annual

Perennial

Field Sandbur (Grassbur)

Cenchrus pauciflorus

- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Invader
- ⦿ Fair grazing for livestock
- ⦿ Poor value for wildlife
- ⦿ Occurs typically on sandy soils low in nutrition



Western Ragweed

Ambrosia psilostachya

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Good value for wildlife
- ⦿ Can become very invasive



Woolly Croton

Croton capitatus

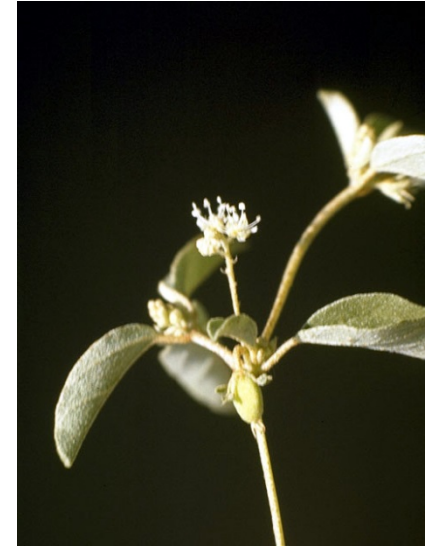
- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Good value for wildlife



One-seed Croton (Prairie Tea)

Croton monanthogynus

- ⊙ Annual
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing for livestock
- ⊙ Good value for wildlife
- ⊙ Often referred to as “Goat Weed”



Common Broomweed

Xanthocephalum Sarothrae

- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor value for livestock and wildlife



Bitter Sneezeweed

Helenium amarum

- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Loves hot dry weather
- ⦿ Poor value for both livestock and wildlife
- ⦿ Name derived from bitter milk
- ⦿ Poisonous



Henbit

Lamium amplexicaule

- ⊙ Annual
- ⊙ Cool Season
- ⊙ Native
- ⊙ Whorled leaf arrangement
- ⊙ Square stem
- ⊙ Common in compacted turf grass areas



Cocklebur

Xanthium pennsylvanicum

- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Fair value for wildlife
- ⦿ Velcro



Snow-on-the-Mountain

Euphorbia marginata

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing for livestock
- ⊙ Fair value for wildlife
- ⊙ Variegated leaves



Horsemint

Monarda punctata

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing for livestock
- ⊙ Fair value for wildlife
- ⊙ Utilized by Native Americans for perfume, head aches and acne wash
- ⊙ Square stem, whorled leaf arrangement



Prickly Poppy

Argemone albiflora

- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Good value for wildlife
- ⦿ Seeds used as a lubricant



Texas Thistle

Cirsium texanum

- ⦿ Annual
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Fair value for wildlife
- ⦿ Overtakes disturbed areas



Curly Dock

Rumex crispus

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Introduced
- ⊙ Poor grazing for livestock
- ⊙ Good value for wildlife
- ⊙ Leaves and Seeds can be consumed by humans
- ⊙ Found along road ditches and waterways



Antelope Horn Milkweed

Asclepias asperula

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Excellent value for wildlife, Monarch Butterflies



False Indigo

Amorpha fruticosa

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ No value for Livestock or Wildlife
- ⊙ Contains amorphina, a contact and stomachic insecticide that also acts as an insect repellent (Huxley 1992).
- ⊙ Contains indigo pigment that can be used to make a dye
- ⊙ Referred to as “Tumble bush”



Sensitive Briar

Mimosa quadrivalvis

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Good grazing for livestock
- ⊙ Good value for wildlife
- ⊙ Member of the mimosa family
- ⊙ Leaves clasp together when touched



Dogfennel

Eupatorium capillifolium

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing for livestock
- ⊙ Good value for wildlife
- ⊙ Creates a colony
- ⊙ Often referred to as “Yankee Weed”



Goldenrod

Solidago

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Poor grazing for livestock
- ⦿ Excellent value for Wildlife
- ⦿ 24 different species in Texas



Texas Bullnettle

Cnidoscolus texanus

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing for livestock
- ⊙ Excellent value for wildlife
- ⊙ Seeds can be consumed by several species
- ⊙ Spines on leaves



Silverleaf Nightshade

Solanum elaeagnifolium

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing of for livestock
- ⊙ Poor value for wildlife
- ⊙ Poisonous
- ⊙ Member of the Tomato/potato family



Woody Plants, Shrubs and Trees

- ⦿ Perennials
- ⦿ Can be deciduous or evergreen
- ⦿ Referred to as browse plants for wildlife
- ⦿ Defined trunk

Honey Mesquite

Prosopis glandulosa

- ⦿ Perennial
- ⦿ Warm season
- ⦿ Native
- ⦿ Beans consumed by both livestock and wildlife
- ⦿ Can become very invasive
- ⦿ Thorny
- ⦿ Bud zone below soil surface



Huisache

Acacia farnesiana

- ⦿ Perennial
- ⦿ Warm season
- ⦿ Native
- ⦿ Can become very invasive
- ⦿ Prefers moist climates
- ⦿ Bright showy puff ball flowers in the spring



Yaupon Holley

Ilex vomitoria

- ⦿ Perennial
- ⦿ Warm season
- ⦿ Native
- ⦿ Evergreen
- ⦿ Ingestion of berries causes nausea and vomiting.
- ⦿ The only plant native to North America that contains caffeine



Chinese Tallow

Triadica sebifera

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Introduced
- ⊙ Very invasive
- ⊙ Bright fall color
- ⊙ Seeds consumed by wildlife



Macartney Rose

Rosa bracteata

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Introduced
- ⦿ Invasive
- ⦿ Native to Asia, brought to Texas as living fence
- ⦿ Seeds consumed by livestock and wildlife
- ⦿ Excellent escape cover



Dewberry

Rubus

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Poor grazing value for livestock
- ⊙ Excellent value for wildlife
- ⊙ Known for its tasty fruit in the spring



Mustang Grape

Vitis mustangensis

- ⊙ Perennial
- ⊙ Warm Season
- ⊙ Native
- ⊙ Deciduous
- ⊙ Commonly found along fence lines and along creeks and streams
- ⊙ Excellent for wildlife
- ⊙ Very stringent grapes, but excellent for wine and jelly



Green Briar

Smilax rotundifolia

- ⦿ Perennial
- ⦿ Warm Season
- ⦿ Native
- ⦿ Monocot
- ⦿ Heart shaped leaves
- ⦿ Thorny stems
- ⦿ Climbs up trees, fencelines
- ⦿ Excellence cover for wildlife
- ⦿ Berries and leaves consumed by



Cultural Weed Control

- ✓ Selecting seed
- ✓ Mulching
- ✓ Fertilization

Mechanical Weed Control

- ✓ Cutting
- ✓ Plowing
- ✓ Cultivation
- ✓ Burning
- ✓ Grubbing
- ✓ Chopping
- ✓ Pulling

Mechanical Weed Control

- ✓ High labor requirement
- ✓ Not cheaper than chemical
- ✓ Method used must match weed type

Biological Control

- ✓ Very limited

Chemical (Herbicides)

- ✓ Follow label
- ✓ Restricted use herbicides
- ✓ Non-restricted use herbicides
- ✓ State limit use herbicides
- ✓ Non-state limit use herbicides

Restricted Use Herbicides

- ✓ Banvel
- ✓ Clarity
- ✓ Cimarron Max
- ✓ Surmount
- ✓ Crossbow
- ✓ Grazon P+D
- ✓ Grazon Next
- ✓ Tordon 22K
- ✓ 2,4-D
- ✓ Weedmaster

Non-Restricted Use Herbicides

- ✓ Cimarron
(Ally)
- ✓ Spike
- ✓ Pasture Guard
- ✓ Roundup Ultra
- ✓ Remedy
- ✓ Redeem
- ✓ Pastora
- ✓ Prowl
H2O

Resources for Plant Identification

- ⦿ <http://texnat.tamu.edu>
- ⦿ <http://noble.org/apps/plantimagegallery/index.aspx>
- ⦿ <http://essmextension.tamu.edu/plants/>
- ⦿ <http://foragesoftexas.tamu.edu>
- ⦿ <http://plants.usda.gov>
- ⦿ www.foragingtexas.com
- ⦿ BRIT Guide Texas Range Plants download app for \$1.99
- ⦿ Know Your Grasses B-182
- ⦿ Toxic Plants of Texas B-6105
- ⦿ Brush and Weeds of Texas Rangelands B-6208

The End

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