Rangeland Ecology and Management

Shane Kiefer, CWB
Director of Ecological Services
Plateau Land & Wildlife Management

Plateau
Land & Wildlife Management

- Private company, est. 1997
- Founders helped establish WMV law
- Central Texas based
- Serving Texas landowners
- Staff Wildlife Biologists
- Trained, dedicated field technicians
- Registered Property Tax Consultants

BRAUN & GRESHAM
ATTORNEYS AT LAW

Advocates for you and your land.

- Property Tax
- Powerline Routing
- Conservation Real Estate
- Risk Management
- Estate Planning
- Conservation Easement
- Water Rights
- Condemnation

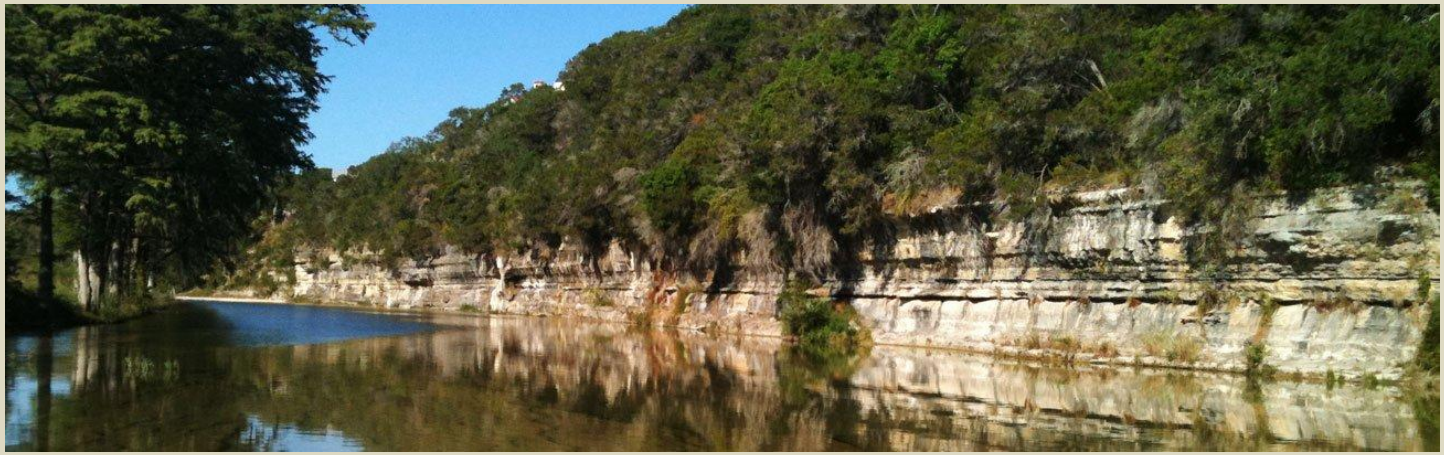
braungresham.com

512-894-5426

PLATEAU LANDGROUP

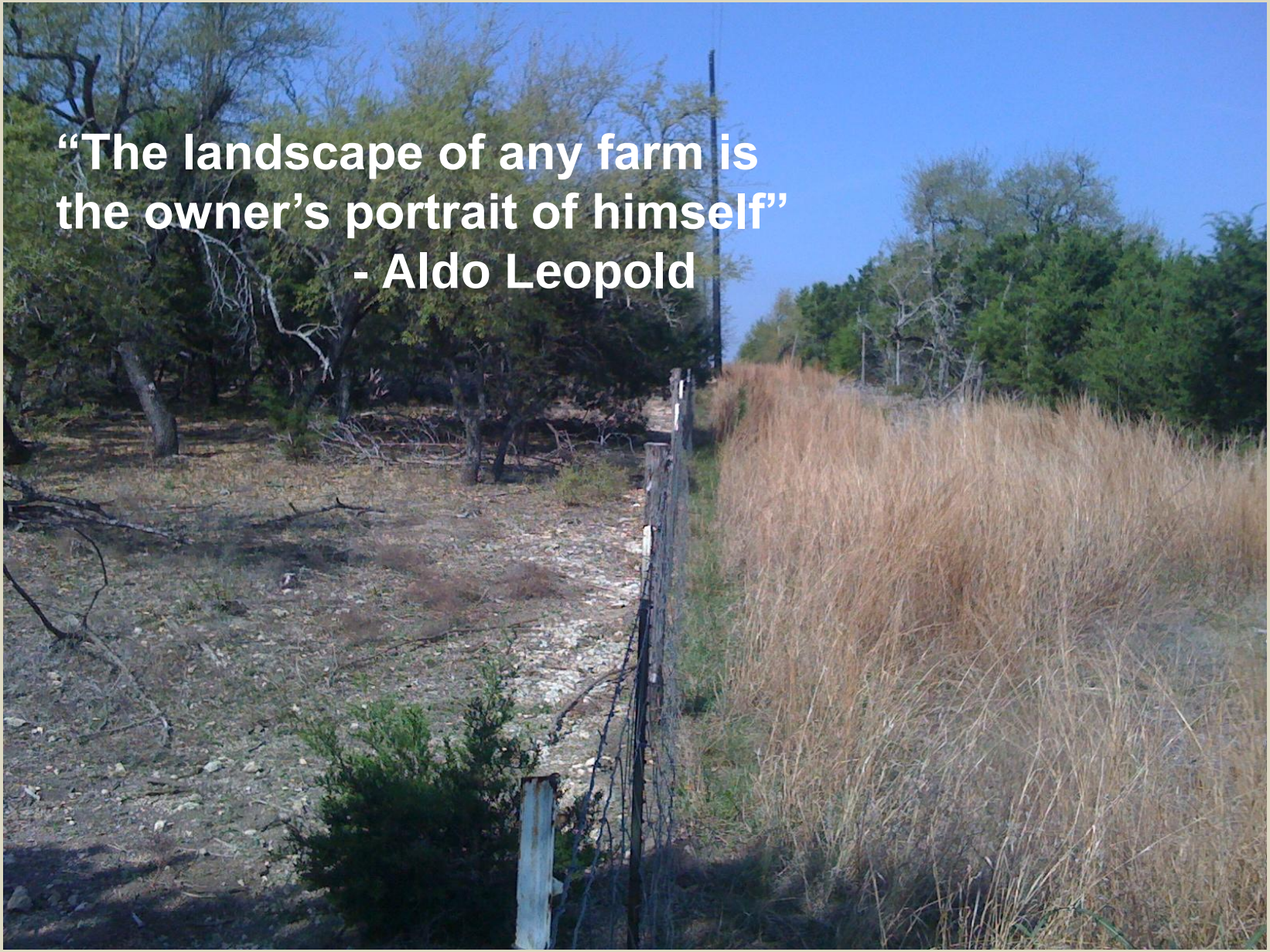
Rural Land.
Real Knowledge.
Real Value.

- Rural Real Estate Specialists
- Knowledge of land, income and sales tax advantages
- Work with buyers and sellers



plateaulandgroup.com

512-829-5287


“The landscape of any farm is
the owner’s portrait of himself”
- Aldo Leopold

What is Rangeland?

- Technically – land with a climax community dominated by herbaceous plants and/or shrubs.
  - Tend to be arid
- Practically - rangeland is natural land that is not cultivated and is used for grazing livestock and/or wildlife.
  - Forests and woodlands may be used as range

Rangeland Services

- Livestock grazing
  - Meat
  - Fiber (wool, mohair)
- Wildlife
  - Game and non-game
- Pollinators
- Water
- Wood
- Fuel
- Open-space and recreation
- Lifestyle

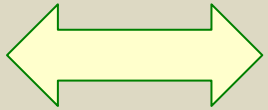
Characteristics of Rangeland

- Evolved under “grazing”
- Need periodic disturbance to maintain climax
  - Grazing, fire, etc.
  - Frequency depends on the climate and soils
- In the U.S. most have a recent history of overuse
- Recent shift (several decades) to multi-use management from historic focus solely on commodities

Range Management is Manipulation (active management)

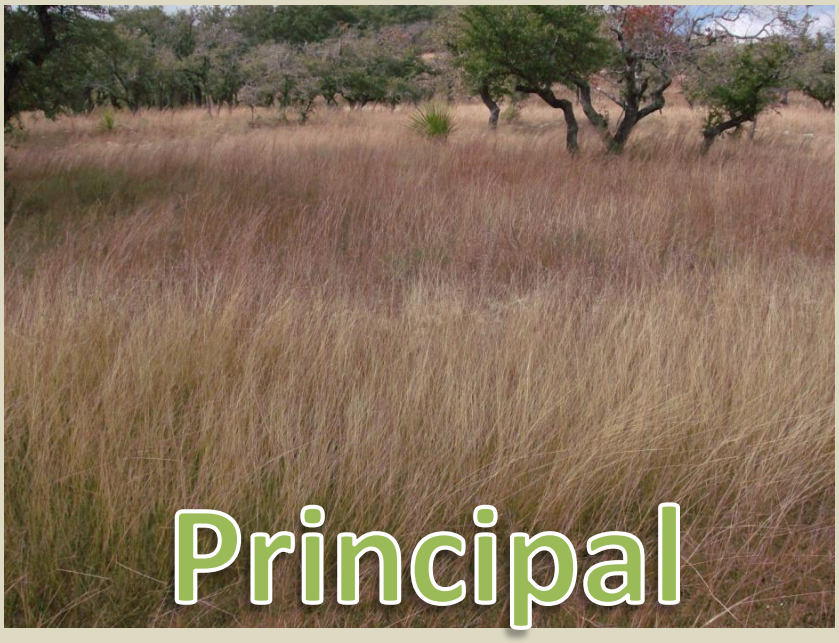
of Rangeland

- Vegetation and Soil



to optimize <u>desired</u> outputs on a sustained basis

- Goods and Services

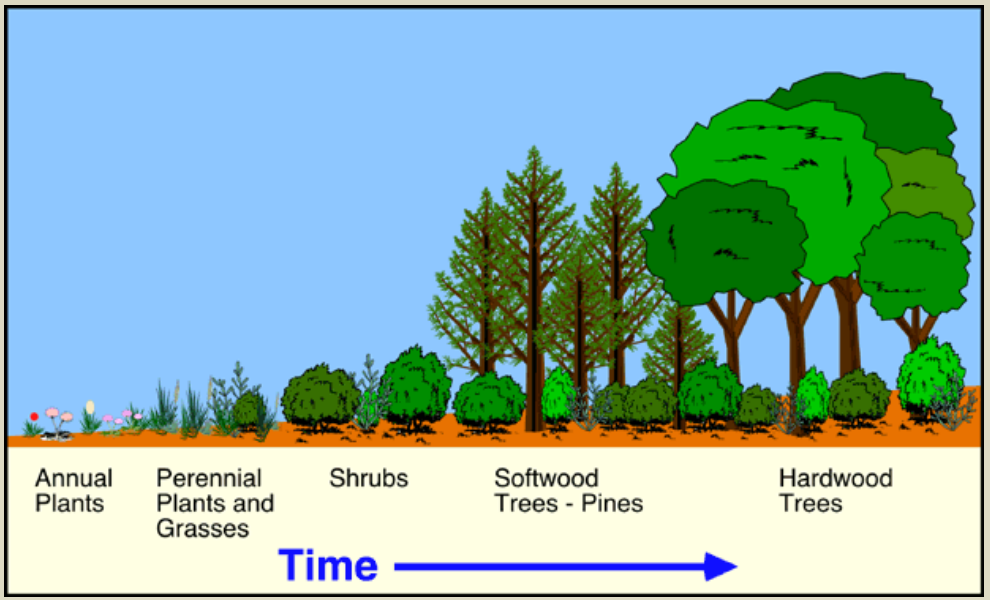


Multiple Use Management
Balcones Canyonlands

- **Endangered Species (8):**
  - **Neo-Tropical Migratory Songbirds**
    - Golden-cheeked warbler (Dendroica chrysoparia)
    - Black-capped vireo (Vireo atricapillus)
  - **Karst Invertebrates**
    - Tooth Cave pseudoscorpion *(Tartarocreagris texana)* Tooth Cave spider *(Neoleptoneta myopica)* Tooth Cave ground beetle *(Rhadine persephone)* Kretschmarr Cave mold beetle *(Texamaurops reddelli)* Bone Cave harvestman*(Texella reyesi)* Bee Creek Cave harvestman *(Texella reddelli)*
- **Species of Concern (27):**
  - **Karst Invertebrates**
    - Flatworm - *Sphalloplana mohri*
    - Ostracod - *Candona sp. nr. Stagnalis*
    - Isopods - *Caecidotea reddelli, Trichoniscinae N.S., Miktoniscus N.S.*
    - Spiders
      - *Eidmannell Cicurina wartoni, Cicurina ellioti, Cicurina bandida, Cicurina reddelli, Cicurina reyesi, Cicurina cueva, Cicurina travisae, Neoleptoneta cocinna, Neoleptoneta devia,a recluse*
    - Pseudoscorpions
      - *Aphrastochthonius N. S., Tartarocreagris Comanche, Tartarocreagris reddelli, Tartarocreagris intermedia, Tartarocreagris N. S. 3*
    - Millipede - *Speodesmus N. S.*
    - Harvestman - *Texella spinoperca*
    - Ground Beetles
      - *Rhadine austinica, Rhadine s. subterranean, Rhadine s. mitchelli*
  - **Plants**
    - Canyon Mock Orange *(Philadelphus ernestii),* Texabama Croton *(Croton alabamensis var. texensis)*

Ecological Succession

- The observed process of change in the species composition or structure of an ecological community



- Initiated by some form of disturbance (e.g. wildfire, plowing), succession involves a continuous replacement of plant species, until a climax of growth is reached

Rangeland Management Tools

- Aldo Leopold's Wildlife Management Tools
  - Axe, Cow, Plow, Fire, Gun
- Livestock ("cow")
  - Proper Use, Proper Season, Proper Distribution, Proper Kind of Animal
- Fire
  - Rangelands evolved with fire and grazing
- Plow

Proper Use

- Stocking Rate
  - What can the land sustain?
  - 25% harvest rate
- Productivity vs. Rate of Use
- Measured in Animal Units and Time

Animal Unit Equivalent (AUE)

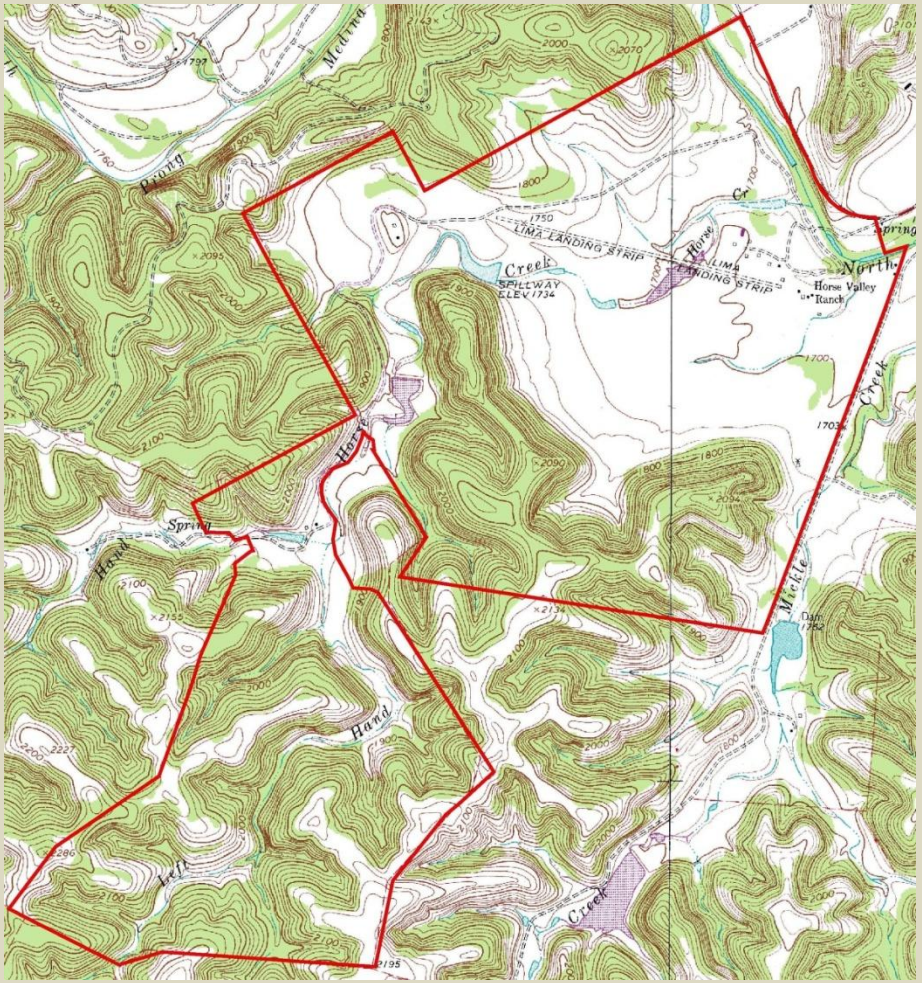
- 1 AUE = 1,000 lb cow + calf
- 1 AUE requires ~9,500 lbs of forage per year
  - 1 Animal Unit-Year (AUY)
  - 365 AU Days (AUD)
  - 12 AU Months (AUM)
- Stocking rates should be based on average to poor production years

Proper Season

- Plant response to grazing depends on:
  - Type of plant (warm season, cool season)
  - When it is grazed
- Plant physiology dictates optimum timing
- R&R is essential to plant health
  - Rest & Recovery

Proper Distribution

- How do animals use the range?
  - Animals want to conserve energy whenever possible
  - Distance from water, feed, time of year, topography, size of pasture



Example Rotation Schedule – 1 Herd/4 Pasture

- 4 Pastures of Equal Size and Productivity

Year 1

Pasture	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Graze	Graze	Graze	Graze	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest
2	Rest	Rest	Rest	Rest	Graze	Graze	Graze	Graze	Rest	Rest	Rest	Rest
3	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Graze	Graze	Graze	Graze
4	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest

Year 2

1	Rest	Rest	Rest	Rest	Graze	Graze	Graze	Graze	Rest	Rest	Rest	Rest
2	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Graze	Graze	Graze	Graze
3	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest
4	Graze	Graze	Graze	Graze	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest

Proper Kind and Class

- Different animals prefer different types of plants
  - Grass eaters – cattle, antelope
  - Forb eaters – sheep (and deer)
  - Brush eaters – goats, deer
- Animal physiology dictates kind and class

Fire

- Promotes new plant growth
- Removes excess litter
- Recycles nutrients
- Controls weeds, brush, and non-native grasses

Plow (and/or Shredder)

- Sets back succession
- May be necessary for replanting
- Alternative to the “Cow”

Native Grasses

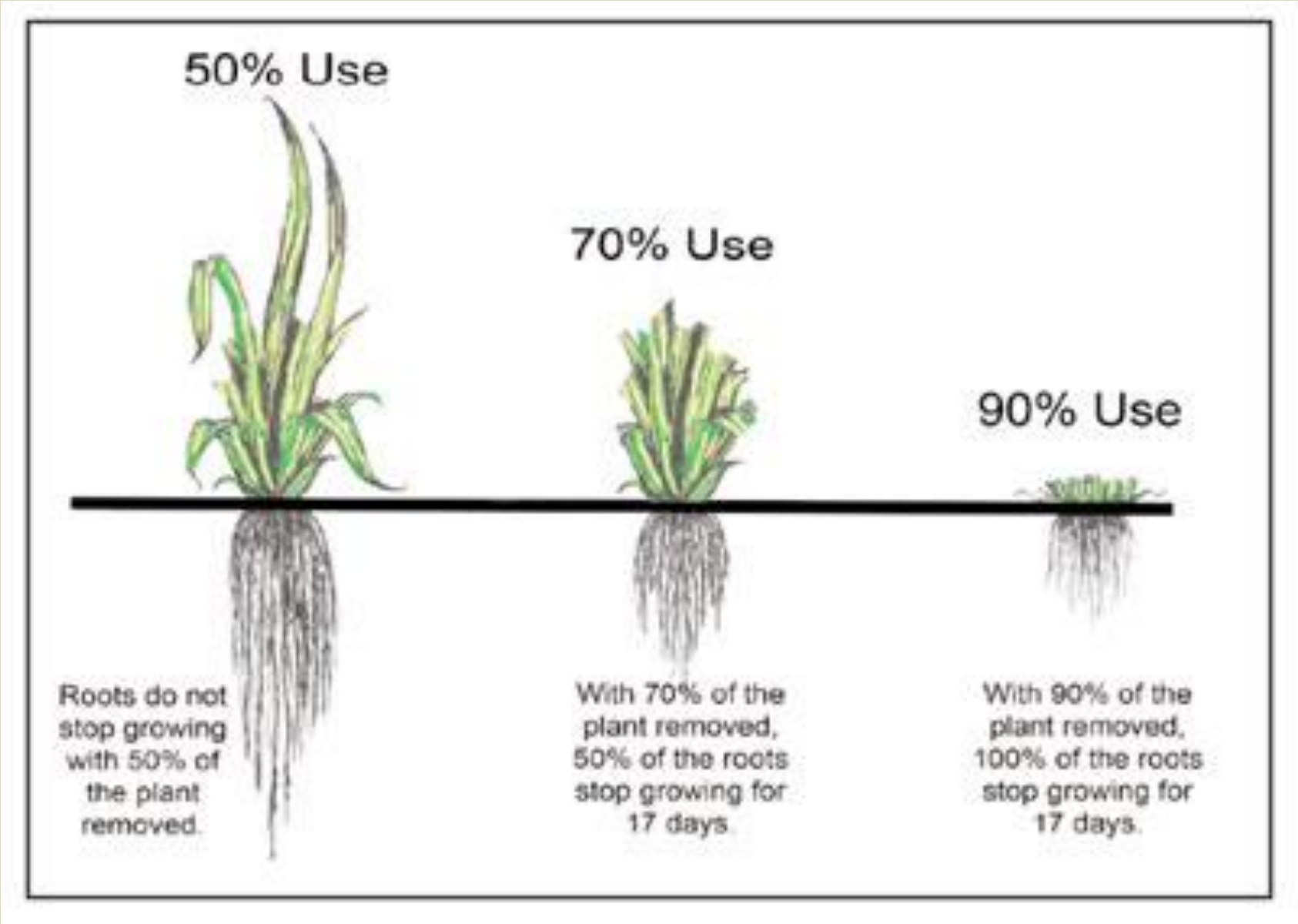
- Warm-season – spring-summer
- Cool-season – late fall-early spring
- Annual – complete life-cycle in one growing season
  - Grow from seed every year
- Perennial – life-cycle more than 2 years
  - Grow from vegetative buds each year
- Texas rangelands dominated by warm-season, perennial grasses

Native Grasses

- Bunchgrasses with higher growth points than non-natives
  - These are not sod-forming lawn grasses
- Repeated, heavy grazing will change plant composition and health
- Know your plants!

Native Grasses

- Native grasses evolved under grazing pressure, fire, and variable weather patterns
  - Still subject to overuse
- 25% utilization
  - Other 75% provides food and cover for wildlife and protects soil and plant health
- 50-80% utilization on fertilized, non-native pasture grasses
  - Does not guarantee a better return


50% Use
70% Use
90% Use
Roots do not stop growing with 50% of the plant removed.
With 70% of the plant removed, 50% of the roots stop growing for 17 days.
With 90% of the plant removed, 100% of the roots stop growing for 17 days.

Native Grasses

- Leftover grass is not wasted

- Ungrazed grass provides:
  - Litter (mulch) to protect the soil surface and capture water
  - Nesting cover and food for wildlife
  - Nutrient recycling to the soil

Weed & Brush Control

- Is there a problem?
  - Depends on your goals
- What is the problem? – know your plants!
  - Native or non-native plant species
  - Are there benefits?
- What is causing the problem?
  - Overgrazing – current or historical
  - Past management practices

What is a Weed?

- Plant out of place?
- Anything that is not a grass (or wildflower)?
- Often annual, early-successional plants
  - Mostly forbs
- Essential part of succession
- Most have some benefit – know your plants!

Goal of Rangeland Management

- Long-term health and productivity of the land should be the primary goal of range management
  - If you degrade the investment “principal” your “returns” will suffer

Closing Tips

- Know your plants!
- Light grazing pressure is best for wildlife
  - Try to take no more than 25% of annual growth
  - Leaving stubble height of 12+ inches is good for plants and wildlife
  - Monitor use with exclosures
- Protect sensitive areas from overuse
  - Riparian areas are especially important for wildlife
- Be flexible
  - Adjust stocking rate when conditions dictate
  - The less there is to eat, the more they will compete
- Consider all your options
  - Grazing leases or stocker steer operations can be more flexible than cow-calf herds for smaller ranches

Thank You!

Plateau Land & Wildlife Management

*Working with **you** to protect and enhance **your** land!*

512-894-3479

SKiefer@plateauwildlife.com