



SHEEP MOUNTAIN MULE DEER INITIATIVE

NUTRITION, HABITAT ENHANCEMENTS, MONITORING

NUTRITION

As forage plants mature, their cell walls thicken. Parts contained within cells are up to 98% digestible. Some of the cell wall constituents can be broken down by microbes in the rumen, while others cannot. Lignin, a non-carbohydrate polymer that binds the cell together, is indigestible.

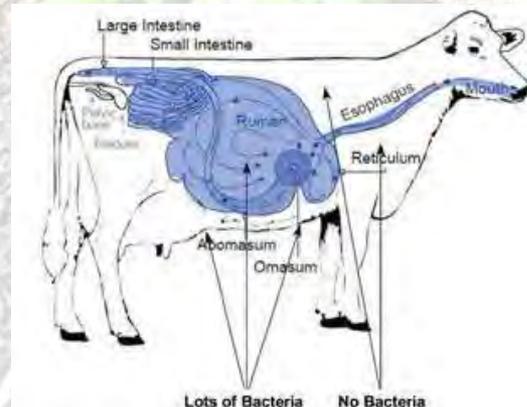
Grass vs Forb vs Shrub/Browse

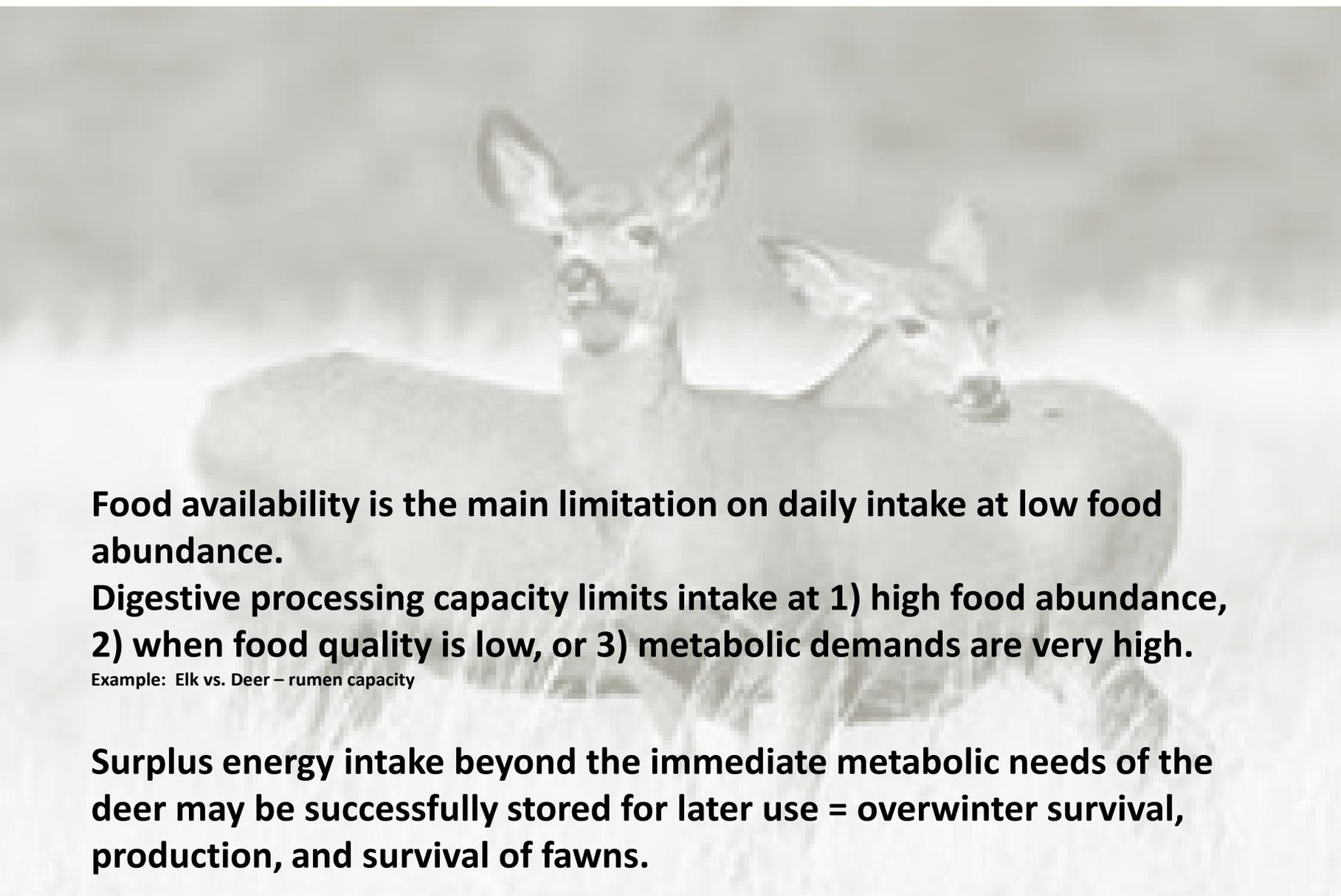
↑ lignin = ↑ plant maturity = ↓ digestibility = ↓ forage intake = ↓ crude protein = ↑ ADF and NDF

ADF predicts forage intake NDF predicts digestibility

Secondary compounds (affect taste and odor) with plant maturity

Importance of 'early seral' plants on the landscape.....Disturbance!





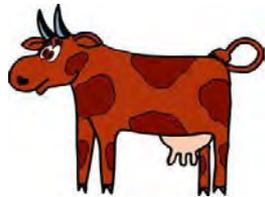
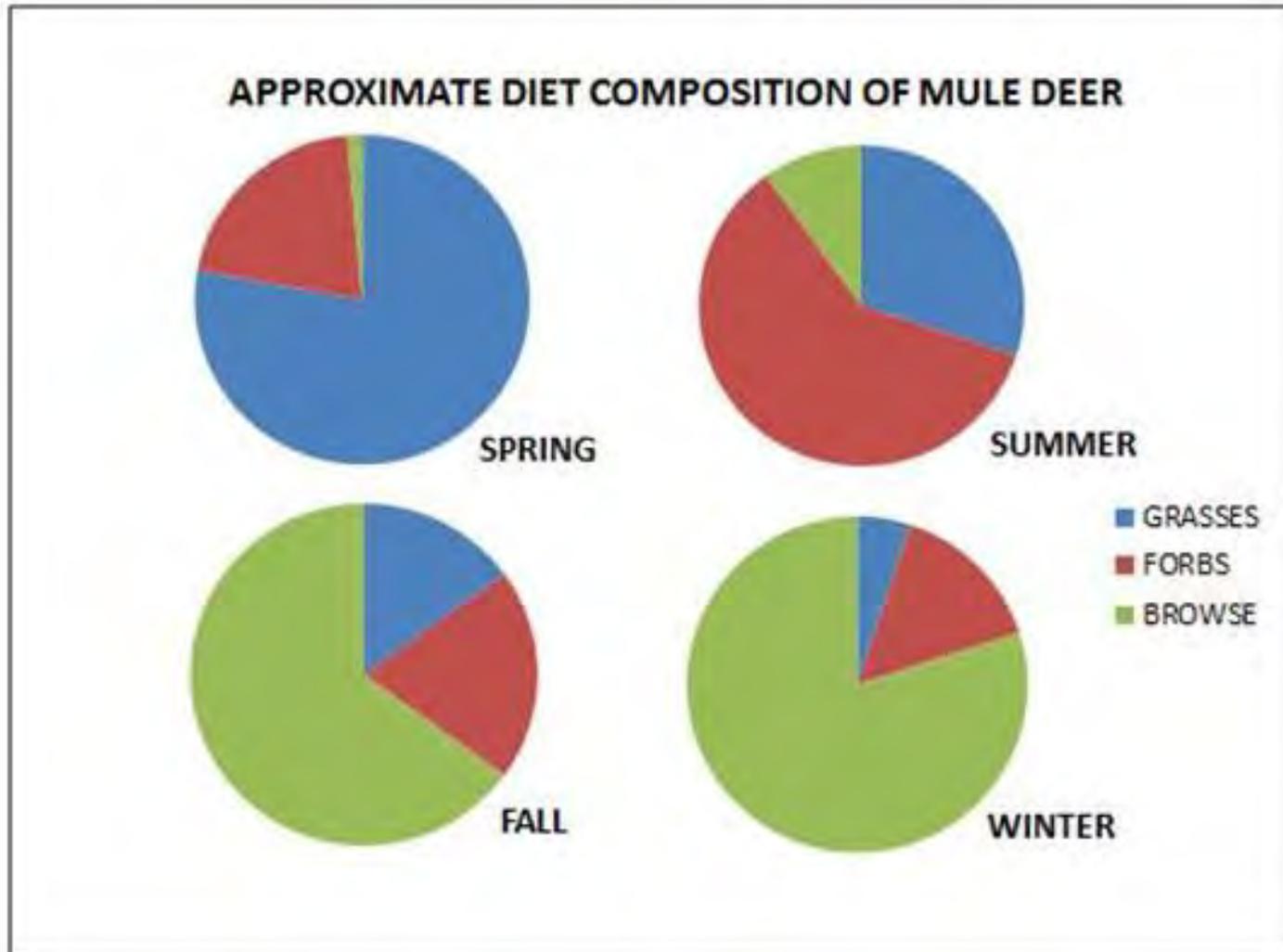
Food availability is the main limitation on daily intake at low food abundance.

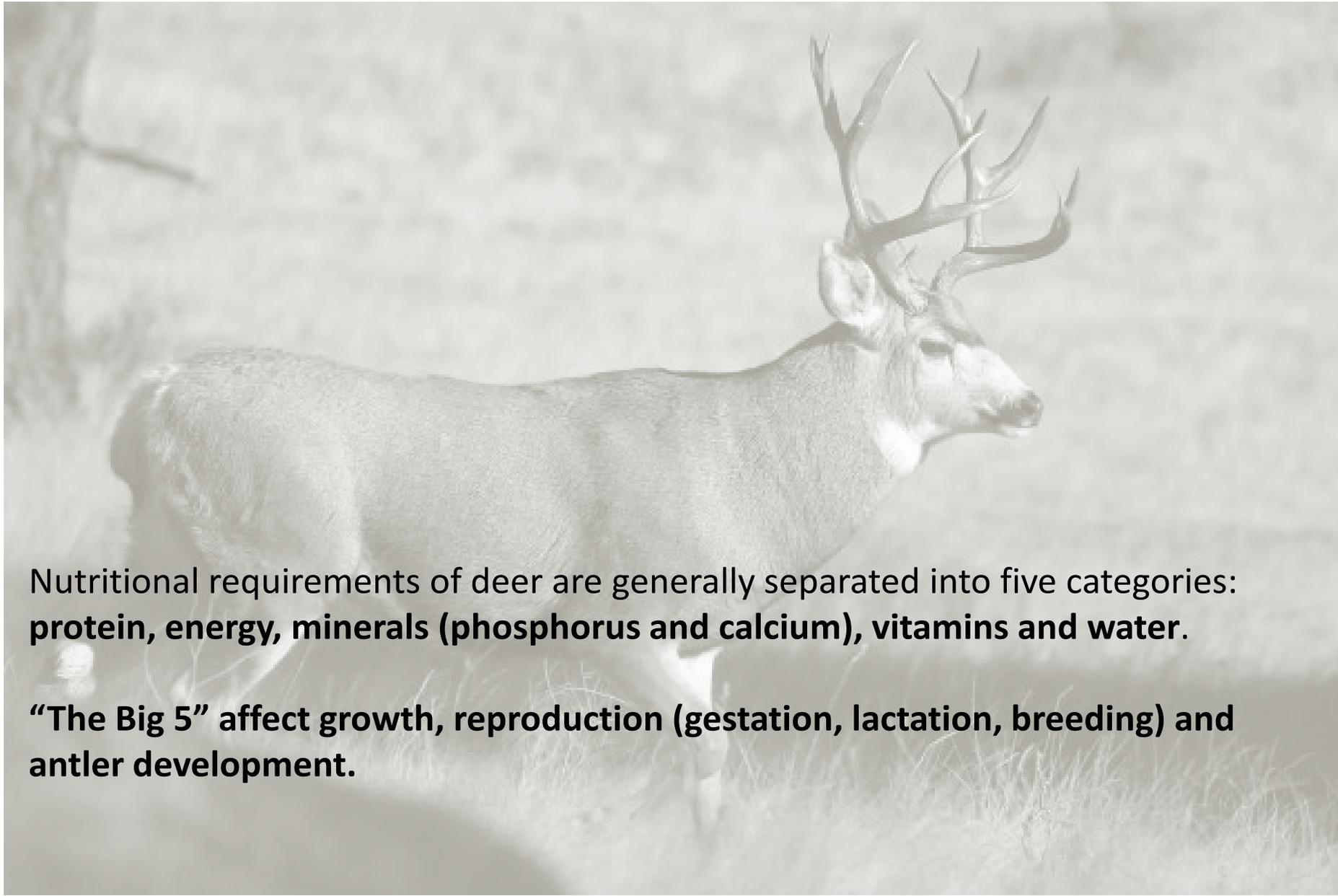
Digestive processing capacity limits intake at 1) high food abundance, 2) when food quality is low, or 3) metabolic demands are very high.

Example: Elk vs. Deer – rumen capacity

Surplus energy intake beyond the immediate metabolic needs of the deer may be successfully stored for later use = overwinter survival, production, and survival of fawns.

The seasonal deer diet varies from a **growth promoting (high protein and phosphorous) diet in spring** to a **fattening (high carbohydrate, fat, and energy) diet in fall**, to a **maintenance (low protein and energy) diet in winter**





Nutritional requirements of deer are generally separated into five categories: **protein, energy, minerals (phosphorus and calcium), vitamins and water.**

“The Big 5” affect growth, reproduction (gestation, lactation, breeding) and antler development.

Protein (CP)

6 to 7 percent CP maintains rumen function, 13 to 16 percent range is required for successful growth, antler development and reproduction.

Milk/Lactation

If maintenance requirements are met, remaining protein is used for milk production to support a fawn(s). Protein requirements increase during fetal growth, particularly during the third trimester, when fawns are growing rapidly in the does' uterus. Protein levels in available forages are at their lowest levels during this time of year as well. During lactation, protein requirements increase.

Individual Plant Variation

Deer may be able to distinguish differences in the protein content of individual plants and increase foraging rates on browse species exhibiting the highest protein content during winter months.

Demands of Rut

Buck mule deer rapidly lose protein stored in the body during the rut and continue to lose body protein through the winter months.

Impacts of Poor Protein Levels in Forages

Dietary protein usually is used before body protein. The use of body protein by a female in late winter and early spring may have negative impacts on fetal growth and result in decreased body size of fawns at birth and post-parturition.

Energy

Energy deficiencies can result in slowing or stopping of growth, weight loss, reproductive failure and impaired rumen function.

Nutrient availability in summer drives replenishment of body reserves and reproductive success. Over the winter, fat deposits and protein stored from summer and fall forage intake determines whether animals survive, reproduce, or both.

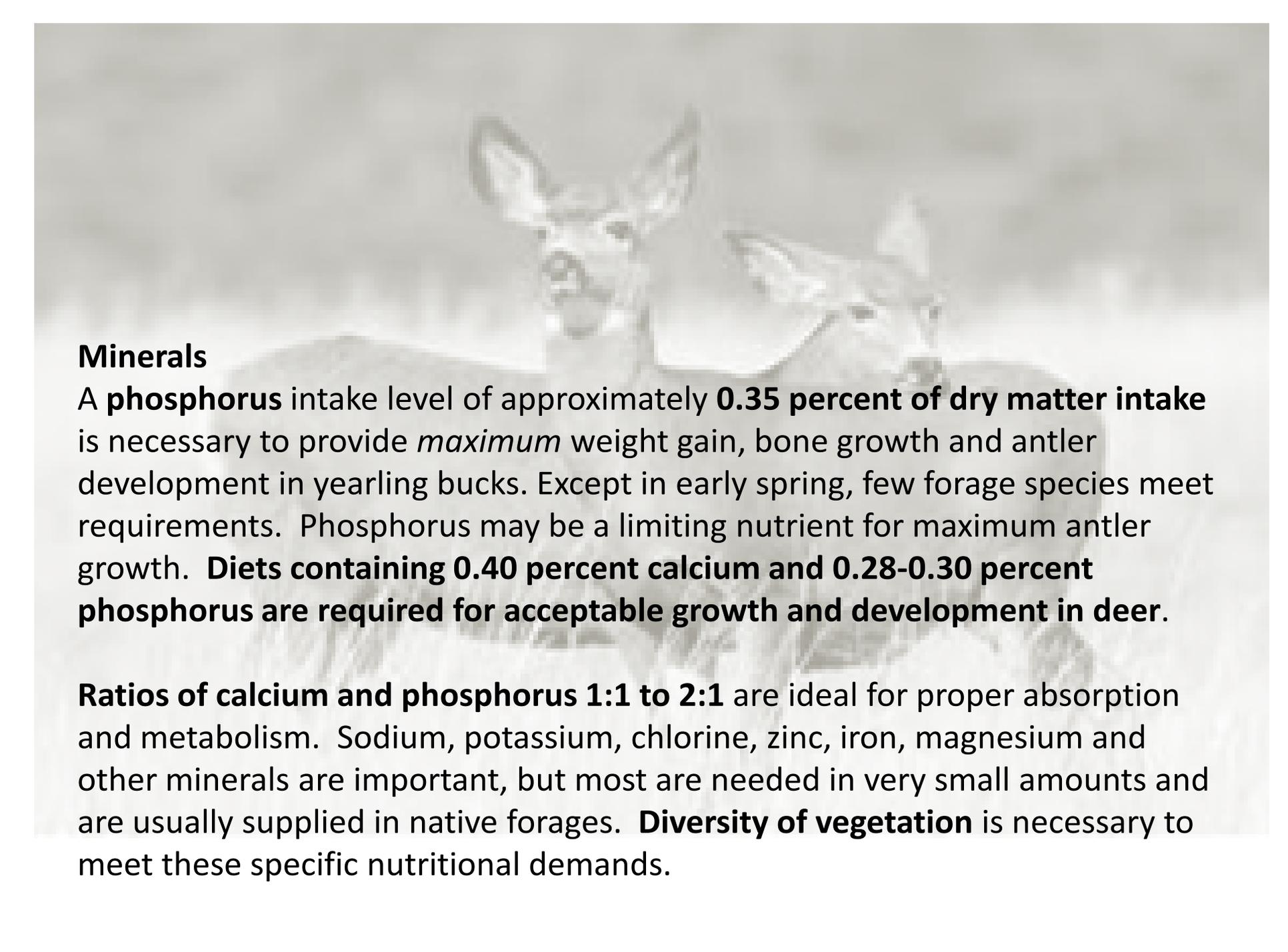
Mule deer reduce activity and daily food intake in winter when food quantity and quality are limited. Under extreme environmental conditions, deer can reduce the amount of body reserves utilized by limiting all other activities besides eating and resting.

(Standing results in 9% more energy use than lying down)

***Importance of winter range closures, parturition areas**

***Determining ways to minimize disturbance**

Using less fat reserves to meet energy demands spares the use of body protein. Failure to conserve these body resources can ultimately lead to unsuccessful fawning.



Minerals

A **phosphorus** intake level of approximately **0.35 percent of dry matter intake** is necessary to provide *maximum* weight gain, bone growth and antler development in yearling bucks. Except in early spring, few forage species meet requirements. Phosphorus may be a limiting nutrient for maximum antler growth. **Diets containing 0.40 percent calcium and 0.28-0.30 percent phosphorus are required for acceptable growth and development in deer.**

Ratios of calcium and phosphorus 1:1 to 2:1 are ideal for proper absorption and metabolism. Sodium, potassium, chlorine, zinc, iron, magnesium and other minerals are important, but most are needed in very small amounts and are usually supplied in native forages. **Diversity of vegetation** is necessary to meet these specific nutritional demands.

Vitamins A, D and E are among the more important vitamins for proper growth and development in deer.

Green, leafy forages contain adequate levels of Vitamin E and A, and sunlight is a natural provider of Vitamin D.

Fawns receive a higher concentration of vitamins when receiving colostrum and milk from their mothers. Vitamin A is known to affect growth of antlers in males.



Platte Valley Habitat Partnership

A mule deer with large, dark antlers is the central focus of the image. It is standing in a field of dry, brownish shrubs and grasses. The background is a soft-focus landscape of rolling hills under a hazy, overcast sky. The overall tone is natural and somewhat somber due to the muted colors.

Mule Deer Herd Concerns, MDI (mule deer population management / Season Structure, predator control, PVHP, Public Meetings / Collaborative Learning Process, Habitat Plan / Working Document, \$ (5:1 match requirement by WGF Commission)
Year 1 - \$80,000 PVHP / \$500,000 match

PVHP, Private Landowners (in-kind), MDF, MFF, RMEF, SERCD, BOW, SGLWG, WLCI

Prescribed Burns in Mixed Mountain Shrubs

Aspen Management

Sagebrush Spike 20P and Aeration and Seeding

Grazing Management

Cheatgrass Control

Riparian Woody Plantings / Fencing and SD/HI grazing schemes

Travel Management / Road De-Commissioning and Re-Seeding

Fence Modifications

Water Developments





Nutrients, Production, Utilization

Pre and Post Treatment



Cheatgrass Control

Imazapic 6 oz/acre + 6 gallons water/acre

Granular???

Post-fire rehabilitation, mapping efforts pre-treatment

Re-Application?





Spike vs. 2-4D vs. Mechanical



CHI 6/12/13
BIG CREEK RANCH
-STR/PATR



Cutting — Prescribed Fire - Ripping





Livestock Grazing Management

Pre- and Post-Treatment



Fence Conversions

*use of collar data to support

Conservation Easements



Habitat Fragmentation
Complexity in Management
“Habitat Effectiveness”
Winter / Transition Ranges Often Affected

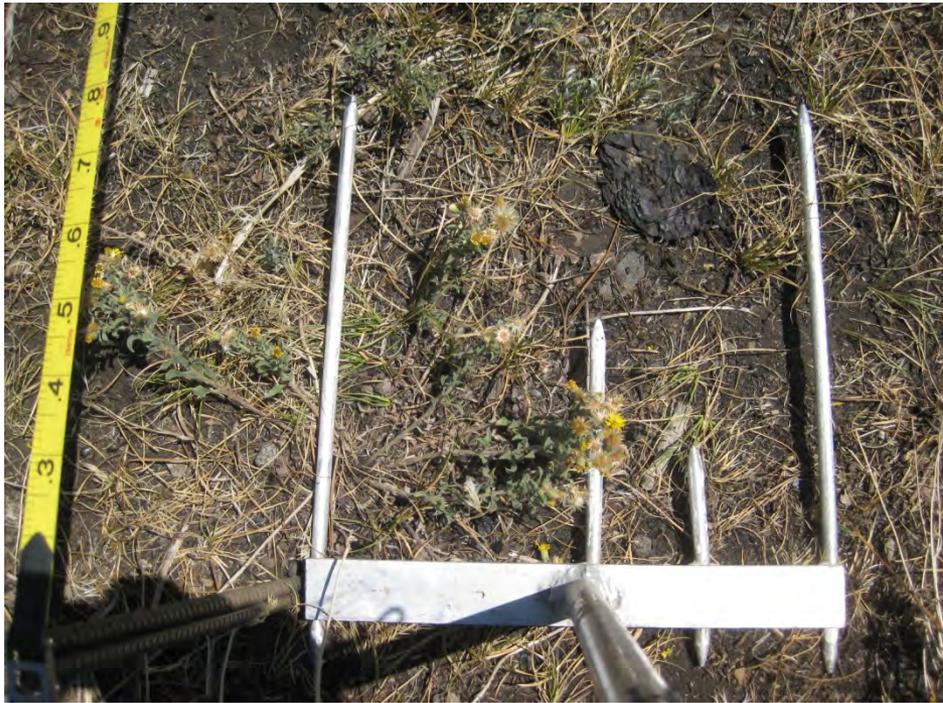






MONITORING

Vegetation Response – Production, Nutritive Content, Species Diversity, Invasives (Eat'ums and No eat'ums), Utilization Rates (Deer, Elk, Livestock, and Others), Age Classifications, Hedging Classes, Precipitation Data



Fecal Analysis – diet composition, preferred plants on landscape at key times of year



Body Fat / Body Condition

PARTNERS

Private Landowners
Bureau of Land Management
U S Forest Service
Office of State Lands and Investments
Wyoming Game and Fish Department – Commission Owned Lands
USFWS – Wildlife Refuges
City of Laramie and Other Communities

Mule Deer Foundation
Muley Fanatics Foundation
Rocky Mountain Elk Foundation
Wyoming Wildlife and Natural Resource Trust Account
Water For Wildlife Foundation
Bowhunters of Wyoming
Wyoming Game and Fish Department
Wyoming Governor's Big Game License Coalition
University of Wyoming
Laramie Rivers Conservation District
Private Donors (in-kind services or \$)

Agreements, Management,
Recreational Access, Grant
Processes, Timelines,
Reporting



THANK YOU!

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