

Key Food Plants for Deer in West Texas

C. Wayne Hanselka
Extension Range Specialist
The Texas A&M University System

Deer are a product of rangeland and should be considered in any range management planning. An important deer requirement is that of a suitable quantity and quality of food plants. Deer are primarily browsers but utilize forbs to a lesser extent. Perennial plants are the most preferred food items. A knowledge of the preferred plants (key species) in an area is the basis of sound management programs.

Introduction

Deer, as a product of rangeland, depend upon that rangeland to meet their basic requirements. A given area of habitat must provide sufficient quality and quantity of food, cover, water, living space, etc. to support individual animals. The aggregate of individual animals constitutes the herd. Since most Texas deer herds are located on areas used by domestic livestock, the rancher must be aware of habitat requirements of deer in determining management strategies for rangelands where these animals coexist. Proper management of a wildlife species includes a basic knowledge of its dietary habits. This knowledge is needed to devise habitat management programs that will benefit both deer and plants.

The desert mule deer (*Odocoileus hemionus crookii*) is by far the most abundant big game animal in the Trans-Pecos region of West Texas. They are in great demand by sportsmen in Texas and surrounding areas and are a tremendous economic benefit to ranchers in the region. White-tailed deer (*Odocoileus virginianus* sp.) are also native to the region, but are of lesser economic importance due to lower population densities across the Trans-Pecos.

This paper will discuss the key food plants and habitat types for white-tailed and mule deer in West Texas and the evaluation of deer range health in relation to deer numbers.

Deer Habitat

White-tailed deer and desert mule deer usually occupy distinct habitat types in the Trans-Pecos, although some overlap in range does occur. The Carmen mountain whitetails, for example, are common above 4,500 feet in Big Bend National Park but are restricted from downward movement into the Chihuahuan desert occupied by desert mule deer (Krausman 1978). Factors such as topography, water availability, habitat

preferences and behavior tend to keep the two species apart.

White-tailed deer prefer lots of brushy cover—63 percent versus 43 percent for mule deer (Wiggers and Beasom 1982). The highest densities of whitetails occur on areas supporting 53 percent woody cover, whereas the highest densities of mule deer are on areas with less than 55 percent woody cover. Topographic ruggedness is another habitat component to separate the two species.

Mule deer will occupy a variety of lowland and foothill vegetative habitats, but they avoid creosote bush and tarbush sites (Dickinson 1978).

Food Habits

Deer diets will fluctuate within seasons and between seasons based on phenology and availability of green forage. Some of the factors that influence food habits are deer population density, preferences, forage availability, season, weather, range site and range condition and composition (Chamrad et al 1979). Depending upon these factors, deer may be primarily grazers or browsers utilizing herbaceous plants (forbs and grass) or shrubs (woody plants, succulents and cactus), respectively. West Texas whitetails appear to be primarily browsers with annual diets consisting of browse and succulents (63 percent), forbs (14 percent) and grass (4 percent) (Krausman 1978). The annual diets of desert mule deer follow similar trends (Table 1). It is obvious from these and other data that deer do not prefer or utilize grass to any great extent. Grass use will vary on a seasonal basis.

Several aspects of deer diets can be interpreted from the table. The Black Gap Wildlife Management Area and Big Bend National Park consist primarily of low mountains, foothills and basins. The vegetative complex is basically a desert shrub-grassland. Mule deer diets in these areas reflect the permanent availability of shrubs and succulents and the ephemeral forb production based on rainfall (Brownlee 1971, 1981). The Longfellow Ranch is located on the Stockton Plateau and is basically a juniper savannah on the hillsides. Intervening valleys support a desert shrub vegetation. Rainfall is higher in this area, allowing a variety of forbs to exist in the vegetation, as opposed to the desert grassland areas (Keller 1975, Ratliff 1980).

Table 1. Forage Classes in the Annual Diets of Desert Mule Deer (%).

Location	Browse and Succulents	Forbs	Grass
Black Gap (1968-1969)	89.0	7.0	2.0
Black Gap (1972-1973)	69.0	25.0	6.0
Big Bend National Park	65.0	19.0	3.0
Long Fellow Ranch (1974-1975)	45.0	42.0	3.0
Long Fellow Ranch (1977)	39.0	34.0	3.0

Deer diets will vary seasonally based on nutritional value of the plant, phenology, availability, species composition of the vegetation and deer preferences. White-tailed deer diets indicate heavy usage of browse in every season. However, late spring and autumn rainfall allows a flush of annual forb growth, which is then utilized by whitetails.

Mule deer diets, by forage class, follow similar trends—heavy use of browse and succulents in desert habitats and a balance of browse and forbs in more mesic ranges. The use of forage classes by season also reflects precipitation patterns. The Black Gap Wildlife Management Area received less rainfall in 1968 to 1969 than in 1972 to 1974. Forbs were not abundant and thus were not used by mule deer.

Several generalizations can be interpreted from this information. On the Longfellow Ranch, spring use of forbs and shrubs can be attributed to an abundance of warm-season perennial forbs. Deciduous browse is the major forage component during spring, with evergreen browse being the most utilized component during summer. Perennial forbs are utilized most during fall and winter. Deciduous browse is a preferred food item but, as defoliation occurs, evergreen browse and perennial forbs become important during the fall and winter periods.

Mule deer on the Black Gap Area did not appreciably change their food habits over a 15-year period (Brownlee 1971). The same species of succulent and browse remained important over time. Forbs were taken as they became available. The succulent component may be important as a water source to deer in the desert grassland.

Key Species

Deer are opportunistic in their dietary habits. Plants that are highly preferred by deer are consumed according to their availability. These key plants for mule and white-tailed deer will be found over a range of habitat types (Tables 2 and 3).

If a rancher used these plants as an index to the productivity of deer on other similar areas, a rating system for land capability could be devised. The presence, health and extent of use of these species are aids in determining the impact of any management practices. Key plants for desert mule deer by season are listed in Tables 1A to 1D in the appendix.

Table 2. Key Forage Plants for White-tailed Deer in Big Bend National Park, Texas

Browse
Acacia sp. (Catclaw, Mescal)
Honey Mesquite
Lecheguilla
Oak
Prickly pear
Sumac (Evergreen, Littleleaf)
Forbs
Euphorbia sp.

Table 3. Key Forage Plants for Desert Mule Deer on Three Locations in the Trans-Pecos Region of Texas.

Longfellow Ranch	Black Gap	Big Bend National Park
Browse		
Mohr Shrub Oak	Lecheguilla	Lecheguilla
Redberry Juniper	Prickly Pear	Prickly Pear
Littleleaf Sumac	Guayacan	Guayacan
Roemer Acacia	Sotal	Acacia sp.
	Candelilla	
Forbs		
Dalla sp.	Euphorbia sp.	Euphorbia sp.
Gumhead		
Yuma Spurge		
Longstalk greenthread		

Management Implications

Knowledge of deer food requirements and important food item preferences is not a final determinant to overall management but merely a requisite to good management. A manager must recognize that the range plant community contains many species and that certain species, when available, are preferred over others.

Deer tend to prefer perennial plants. Perennials are a more stable food source on an annual basis and from year to year. Vegetative communities are dynamic and plant production will vary according to season, weather, grazing management and other factors. Deer diets will also fluctuate within and between seasons based on plant phenology and availability of green forage.

Deer and livestock do agree on the best range. A range in "good condition" generally produces larger quantities and a greater variety of perennial forbs. A sound domestic livestock grazing management program will also benefit deer. As with livestock, deer numbers must be balanced with food supply. Brush control practices can also benefit deer if the acreage controlled and the control configuration (such as strips, blocks, etc.) are considered. Most range improvement practices that consider the needs of deer will contribute to improved habitat and healthy herds.

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Appendix

Table 1A. Key Spring Food Plants of Desert Mule Deer at Three Locations in the Trans-Pecos Region of Texas.

Species	Longfellow Ranch	Black Gap	Big Bend National Park
Browse			
Oaks	X		
Sumac (Littleleaf and Evergreen)	X		
Acacia (Roemer, Gregg's and White-thorn)	X	X	X
Feather Dalea	X		
Mariola	X		
Skeletonleaf Goldeneye	X		
Lechuguilla		X	X
Yucca		X	
Prickly Pear		X	X
Candelilla		X	
Guayucan		X	
Sotol		X	
Redberry Juniper	X		
Forbs			
Spurges	X	X	X
Buckwheat			X
Greggs' Dalea	X		
Draba	X		
Wild Mercury		X	
Dove Weed		X	

Table 1B. Key Summer Food Plants of Desert Mule Deer at Three Locations in the Trans-Pecos Region of Texas.

Species	Longfellow Ranch	Black Gap	Big Bend National Park
Browse			
Oaks	X		
Sumac (Littleleaf and Evergreen)	X		
Acacia (Roemer, Gregg's and White-thorn)	X		X
Redberry Juniper	X	X	X
Mariola	X		
Skeletonleaf Goldeneye	X		
Mesquite	X		X
Feather Dalea	X		
Lechuguilla		X	X
Yucca		X	
Prickly Pear		X	X
Sotol		X	
Guayucan		X	
Forbs			
Spurges	X	X	X
Needleleaf Bluets	X		
Greggs' Dalea	X		X
Gumhead	X		

Table 1C. Key Fall Food Plants of Desert Mule Deer at Three Locations in the Trans-Pecos Region of Texas.

Species	Longfellow Ranch	Black Gap	Big Bend National Park
Browse			
Oaks	X		
Redberry Juniper	X		
Skeletonleaf Goldeneye	X		
Acacia	X		X
Mariola	X		X
Sumac (Littleleaf and Evergreen)	X		
Lechuguilla			X
Prickly Pear		X	X
Guayucan		X	X
Mesquite			X
Forbs			
Gregg's Dalea	X		
Gumhead	X		X
Longstalk Greenthread	X		
Spurges	X		
Draba	X	X	
Wild mercury		X	
Doveweed		X	

Table 1D. Key Winter Food Plants of Desert Mule Deer at Three Locations in the Trans-Pecos Region of Texas.

Species	Longfellow Ranch	Black Gap	Big Bend National Park
Browse			
Redberry Juniper	X		
Oaks	X		
Mariola	X		
Lecheguilla			
Cenizo		X	X
Prickly Pear		X	
Guayucan		X	X
Acacia		X	X
Yucca		X	
Skeleton Leaf Goldeneye		X	
Sumac		X	
Forbs			
Tallowweed	X		
False Nightshade	X		
Broomweed	X		
Gregg's Dalea	X	X	
Draba	X		X
Spurges	X		
Doveweed		X	
Wild Mercury		X	