

## Mule Deer (*Odocoileus hemionus*) Fact Sheet Colorado NRCS March 2000

### General Information:

Mule deer are an important economic wildlife species occurring statewide in Colorado with highest densities in the foothills, mountains, and West Slope. Mule deer abundance is highest in shrubby/brushy land, riparian woodland, and at the edge of forest and meadow areas where shrubs and brush are found. Food, cover, water, and space are necessary habitat components for mule deer. Home ranges vary throughout the state from about 1 square mile in the Northern Front Range to 4-5 mile long ranges along river bottoms on the Eastern Plains. Most mule deer show high fidelity to the same winter and summer ranges from year to year (Freddy et al. 1993). Winter range quality and quantity is often cited as the key habitat component for mule deer in Colorado (Freddy et al. 1993) although recent research shows predation, loss of habitat, changes in habitat, disease, competition with elk and livestock, hunting, and harassment/displacement are the main limiting factors for Colorado's mule deer (Ellenberger 1999).

### Life History

Mule deer weigh approximately 8 pounds at birth. Adult males average 160 pounds while adult females weigh about 130 pounds. In captivity, does live up to 22 years and bucks 16 years. Lifespans for wild deer are one-half that of captive deer.

Deer breed from mid-November to mid-December. Gestation averages 203 days (plus or minus 30 days). Does average 1.4-1.8 fetuses per doe and pregnancy rates are 75-100% of does greater than 1-1/2 years of age (Ellenberger 1999).

### Food Requirements:

Food and nutritional requirements for mule deer vary seasonally. The following table, prepared from Kufeld, et al. (1973) provides general information on Rocky Mountain mule Deer diets.

Diet percentages			
Shrubs and trees	Forbs	Grasses and Grasslikes	
74	15	11 (Varies 0-53%)	Winter
49	25	26 (Varies 4-64%)	Spring
49	46 (Varies 3-77%)	3 (Varies 0-22%)	Summer
60	30 (Varies 2-78%)	9 (Varies 0-24%)	Fall

This study (Kufeld, et al. 1973) showed *Artemisia tridentata* (big sagebrush), *Cercocarpus ledifolius* (curlleaf mountain mahogany), *Cercocarpus montanus* (true mountain mahogany), *Cowania mexicana* (Mexican cliffrose), *Populus tremuloides* (quaking aspen), *Purshia tridentata* (antelope bitterbrush), *Quercus gambelii* (Gambel oak), and *Rhus trilobata* (skunkbush sumac) were the most commonly eaten trees and shrubs. The forbs listed were *Achillea millefolium* (western yarrow), *Antennaria* sp. (pussytoes), *Artemisia frigida* (fringed sagebrush), *Artemisia ludoviciana* (Louisiana sagewort), *Aster* spp., *Astragalus* sp. (milkvetch), *Balsamorhiza sagittata* (arrowleaf balsamroot), *Cirsium* sp. (thistle), *Erigeron* spp. (fleabane), *Erigonum* spp. (buckwheat), *Geranium* sp., *Lactuca serriola* (prickly lettuce), *Lupinus* spp. (lupine), *Medicago sativa* (alfalfa), *Penstemon* spp., *Phlox* spp., *Polygonum* sp. (knotweed/smartweed), *Potentilla* spp. (cinquefoil), *Taraxacum officinale* (dandelion), *Tragopogon dubius* (western salsify), *Trifolium* sp. (clover), and *Vicia americana* (American vetch). The preferred grasses

and grasslike species were *Agropyron*, *Elymus*, *Elytrigia*, *Pascopyrum* sp. (wheatgrasses), *Pseudoroegneria spicatum* (bluebunch wheatgrass), *Bromus tectorum* (cheatgrass), *Carex* spp. (sedge), *Festuca idahoensis* (Idaho fescue), *Poa fendleriana* (muttongrass), *Poa pratensis* (Kentucky bluegrass), and *Poa* spp. (bluegrass).

Deer are classified as intermediate feeders rather than grazers or browsers. Early stages of plant succession which provide adequate browse species are generally better for deer than later stages. Plant communities consisting of mixed species are considered more beneficial for deer than single species communities (Hoover and Wills 1984).

### **Winter Range:**

Most deer in the mountainous areas migrate to lower elevations for the winter months. Timing of this migration is often dependent on weather conditions. Heavy snow cover tends to concentrate deer into areas where food is available. Persistent snow cover greater than 12 inches deep generally results in deer moving to suitable winter range at lower elevations (U.S. Forest Service 1981).

The most important habitat types on the western slope winter range are sagebrush stands and pinyon-juniper forest. The understory in the pinyon-juniper woodland often includes serviceberry, mountain mahogany, bitterbrush, and Gambel oak. Front Range winter habitat is generally ponderosa pine forest with mountain mahogany understory or open areas where mountain mahogany dominates. On the eastern plains, riparian areas dominated by cottonwood, willow, and salt cedar are important winter habitat types (Freddy et al. 1993). (Note: Salt cedar is an invasive species and should not be planted for habitat, however, in places where it exists, it can provide hiding and escape cover). Snowberry, golden currant, American plum, skunkbush sumac, and Wood's rose are common understory plants in these riparian areas.

Riparian areas statewide provide important mule deer habitat. One exception to this seems to be in the Arkansas River Basin where recent research shows mule deer are only rarely found in riparian areas (Kufeld and Bowden 1995). For further descriptions of the riparian plant communities found in Colorado, see the Colorado Natural Heritage Program's series of riparian vegetation classifications by river basin (Kittel et al. 1999).

### **Cover Requirements:**

Mule deer need hiding cover to conceal them from predators and thermal cover to protect them from weather. The general guideline recommended for optimum mule deer cover is 40% of a deer's use area. Half of this cover should be thermal cover and half should be hiding cover. Hiding cover is defined as vegetation capable of hiding 90% of a standing adult deer from the view of a human at a distance equal to or less than 200 feet. In forest or brush stands this need can be met by areas of continuous trees or shrubs 800 to 1,600 feet wide. Thermal cover needs are generally met by maintaining evergreen stands in the pole-sapling stage with at least 75% canopy closure or 60% canopy closure if the stand is pole-size or larger. These stands should be 2-5 acres and minimum of 300 feet wide (Hoover and Wills 1984).

### **Water Requirements:**

Mule deer generally do best if free water is found within 1/2 mile of the center of their summer range (Rintamaki 1986, U.S. Forest Service 1981). This distance is reduced to 600 feet for optimal fawning sites (Hoover and Wills 1984). Adding water to sites where all other critical habitat elements are available should enhance the site for mule deer. The other required habitat components must be available in the home range in order for water developments to enhance habitat. One consideration when planning water developments is how the additional water will influence wildlife and livestock concentration. If the additional water opens up previously inaccessible areas to livestock or large numbers of wildlife, the competition could ultimately be detrimental.

**Livestock Management:**

Implement a prescribed grazing system that maintains the recommended shrub/brush cover to forage ratios (see Cover Requirements section).

**Fencing:**

When planning wildlife practices, fencing is generally used to control domestic livestock access to certain areas at certain times of the year. Deer and elk can easily become tangled in a fence if the fence isn't constructed properly. Mule deer can usually clear (or crawl under in the case of young deer) fences where the bottom strand is at least 16 inches off the ground and the top wire is no higher than 42 inches. The top two wires should be at least 12 inches apart and the top wire should be kept very tight. A top pole or 1" vinyl tape/ribbon placed horizontally with the top wire will make a fence more visible and reduce deer-fence collisions. The Colorado Division of Wildlife recommends using barbless wire for the top strand (Colorado Division of Wildlife 1998).

If the goal is to prevent deer from getting into an area (e.g.-a hay field), a 6 foot tall, woven wire fence is usually adequate for level sites, although deer are capable of clearing an 8 foot fence if pressured. On sloping ground, fences may need to be as much as 10 or 11 feet high to prevent jumping from above. In areas where snow drifting is a problem, taller fences are also warranted (Yoakum, J. and W.P. Dasmann 1969).

**Colorado Planning Recommendations:**

When planning for mule deer habitat, limiting factors should be identified and addressed. In order to do this you will need to clearly identify whether the site provides winter or summer range or both; the dominant plant communities providing food and cover; water locations; successional stage(s) of the shrub/tree communities; and grazing practices. Once you have a clear idea of existing conditions on a site, you should be able to identify the limiting factors in need of improvement. The planner needs to decide how the planned practices will remove the limiting factors for the deer. A wildlife plan should look like a plan targeting any other resource with an objective; planned practices and the affiliated components; scheduled dates of practice application; a map; and job sheets or specifications for the practices and components. The recommended grass, legume, forb, and shrub species should be suited to the site. The Ecological Site Indices (Range Site Indices) or soil survey manuals should be used to determine the best suited plants for a site. If there are questions about the planting recommendations, consult an NRCS Biologist for site specific seeding recommendations. The job sheet needs to specify the species of grasses and shrubs that are needed to improve the habitat; how these species will be managed if livestock are a factor; the amount of shrub coverage expected (e.g. 50% canopy coverage over 20% of the acres in the planning unit); the arrangement of grasses and shrubs on the planning unit (e.g. antelope bitterbrush shrubs will be seeded/planted in thickets at least 800' wide covering 20% of the acres in the tract); information on how to establish the plantings (e.g.-interseed bitterbrush seed at 1.0 pound PLS per acre); and management requirements for the habitat (e.g.-livestock grazing will be managed so that 50% grass remains after a grazing cycle). In addition to these items, the plan must include a CPA-052, technical notes, and other similar required documents.

**References:**

Connolly, G.E. 1981. Limiting factors and population regulation. pp. 245-285 in Mule and Black-tailed Deer of North America, ed. O.C. Wallmo. University of Nebraska Press, Lincoln.

- Ellenberger, J. 1999. Notes from presentation made at Wildlife Planning Training, Grand Junction.
- Colorado Division of Wildlife. 1998. Fencing with wildlife in mind. Colorado Division of Wildlife, Hot Sulphur Springs, CO.
- Freddy, D.J., D.L. Baker, R.M. Bartmann, and R.C. Kufeld. 1993. Deer and Elk management analysis guide, 1992-94. Colorado Division of Wildlife Division of Wildlife Report #17. 77 pp.
- Fitzgerald, J.P., C.A. Meaney, and D.M. Armstrong. 1994. Mammals of Colorado. Denver Museum of Natural History, Denver. University of Colorado Press, Niwot. 467 pp.
- Hoover, R.L. and D.L. Wills, ed. 1984. Managing Forested Lands for Wildlife. Colorado Division of Wildlife in Cooperation with U.S. Forest Service, Rocky Mountain Region, Denver, Colorado. 459 pp.
- Increasing wildlife on farms and ranches. F.R. Henderson, ed. Great Plains Ag. Council, Kansas State University, Manhattan. pp 136c-141c.
- Kittel, G., E. VanWie, M. Damm, R. Rondeau, S. Kettler, A. McMullen, and J. Sanderson. 1999. A classification of riparian wetland plant associations of Colorado. Colorado Natural Heritage Program, Colorado State University, Fort Collins, CO.
- Kufeld, R.C., O.C. Wallmo, and C. Feddema. 1973. Foods of the Rocky Mountain mule deer. USDA Forest Service Research Paper RM-111. Rocky Mountain Forest and Range Experiment Station, Ft. Collins, 31 pp.
- Kufeld, R.C. 1979. History and current status of the mule deer population on the east side of the Uncompahgre Plateau. Colorado Division of Wildlife Report #11. 24 pp.
- Kufeld, R.C. and D.C. Bowden. 1995. Mule deer and white-tailed deer inhabiting eastern Colorado plains river bottoms. Tech. Pub. #41, Colorado Division of Wildlife. Fort Collins, CO. 58pp.
- Rintamaki, R. 1986. Biology Technical Note #110, Mule Deer. USDA-NRCS Biology Technical Notes. Casper, WY. 6pp.
- U.S. Forest Service. 1981. Wildlife and Fish Habitat Relationships. Rocky Mountain Region, Denver. p. M030.
- Yoakum, J. and W.P. Dasmann. 1969. Habitat Manipulation Practices, pp. 223-231. In H.S. Mosby and R.H. Giles (Eds.), Wildlife management techniques, Third Edition. The Wildlife Society, Washington, D.C. 633pp.