

## APPENDIX G

# Specific Management Recommendations for Mule Deer

Mule deer are one of the most valued game animals in the Trans-Pecos region of Texas. Whether it's their limited distribution, low numbers, or their unique appearance and behavior, most landowners view mule deer as a precious resource. Many landowners have recognized mule deer as a financial asset and have capitalized on this value through lease hunting.



Other landowners choose not to lease and some do not allow hunting, and yet almost all closely protect this resource.

Mule deer differ from white-tailed deer in many respects. Because of the tremendous amount of information available concerning white-tailed deer management, many landowners have applied these management techniques to mule deer herds with inconsistent results. Therefore, it is important to implement management practices that are specific to mule deer.

One of the most important factors influencing the health and productivity of a mule deer herd is the quantity, quality, and variety of food plants produced by the habitat or range. Food availability can be improved by : (1) harvesting deer, including does where applicable, to maintain total deer numbers at or below the capacity of the habitat, (2) preventing competition with exotic big game (eg., Aoudad sheep) for forage by eliminating them or reducing their numbers, (3) using compatible kinds/classes of livestock (i.e., cattle) at light or moderate stock densities, (4) using a deferred-rotation grazing system, (5) and controlling invading woody vegetation (e.g., cedar and mesquite) where densities exceed optimum cover requirements for mule deer.

## HABITAT REQUIREMENTS

### Deer Foods and Deer Diets

Whether a mule deer herd is managed for quality antler production or high deer

numbers, nutrition is the most important factor to consider. Deer require a diet of approximately 16% protein along with carbohydrates, fats, vitamins, and a variety of trace minerals. No single forage provides adequate levels of all these requirements, which emphasizes the importance of managing for a wide variety of foods. The Trans-Pecos has a tremendous diversity of vegetation types that can provide excellent nutrition for mule deer, especially when rainfall is adequate.

Deer are extremely selective feeders, eating a wide variety of the most nutritious foods available during each season of the year. Food plants can be classified as shrubs/succulents, forbs and grasses. The leaves, twigs, buds, and blooms of woody plants eaten by deer are called browse. Succulents like cactus, lechuguilla, and cholla are often included in this category. Water obtained from these succulents is important, perhaps critical, especially if free water is not available in semi-arid and arid areas.

The bulk of mule deer diets (70%) consists of browse. Key browse plants in the Trans-Pecos include kidneywood, acacias, netleaf and sugar hackberry, oaks, littleleaf sumac, skunkbush sumac, four-wing saltbush, mountain mahogany, Apache plume, bernardia, foresteria, mesquite, littleleaf lead tree, sotol, and juniper. Mast (fruits) of woody species can be seasonally important, and they generally are good sources of energy.

Forbs are annual or perennial broadleaf plants and are highly preferred by deer when available. Although their availability is highly variable and largely dependent on environmental conditions, forbs average about 25% of a mule deer's diet. Annual forbs are seasonal; therefore, perennial forbs provide a more reliable source of forage, and should be present on properly managed ranges. Some of the more important perennial forbs used by mule deer include menodora, golden eye, long stalk greenthread, bluets, bladder-pod, Engelmann daisy, and spiderwort.

Abundant throughout the Trans-Pecos, native grasses are not a preferred mule deer food and usually represent no more than 5% of most mule deer diets. Although not important on an annual basis, tender grass shoots may be very important on a seasonal basis during brief periods when other forage is unavailable.

Deer nutrition, as it relates to reproduction, is important to the land manager. Successful breeding depends largely upon the doe's health during the rut. The ovulation rate is strongly affected by the doe's level of nutrition and physical condition just prior to and during the rutting period. The doe's nutritional condition during gestation has an effect upon the size and survival of fawns at birth.

## **Cover**

Woody plants are important to mule deer in providing shelter from weather extremes, escape from predators and hunters, and security cover. They are also a key food source; however, woody cover can become too dense for optimum mule deer habitat, can reduce forage production, and create livestock management problems. Brush management can be beneficial or detrimental to mule deer, depending on how it

influences food and cover.

In many areas where the height and density of brush is increasing, the habitat is becoming more suitable for white-tailed deer and less desirable for mule deer. Research indicates that mule deer prefer a brush canopy cover of 40% or less, while white-tailed deer showed positive population responses with brush canopies exceeding 50%. Brush density and canopy are important considerations when managing mule deer habitat.

## **Water**

Water is a critical component of mule deer habitat in the Trans-Pecos. Studies of mule deer water requirements indicate that their home range is closely associated with permanent water sources. Research has shown that mule deer numbers increased significantly in habitats where permanent water was developed. In areas where water sources deteriorated, a concurrent reduction in deer numbers occurred.

The tendency for mule deer and livestock to congregate around permanent water sources often results in excessive use of forage plants in the surrounding area while other areas receive little use. This can be corrected by distributing water sources throughout the deer herd's range. Permanent water sources should be no greater than 2.5 - 3 miles apart.

## **POPULATION MANAGEMENT**

Mule deer management is sometimes viewed as two separate phases: Habitat management and population management. Habitat management primarily involves the manipulation of food, water, and cover to improve deer nutrition and survival. Population management manipulates deer numbers, sex ratio, age structure, and genetics. In reality the two "phases" are inseparable. The habitat quality has a direct influence on deer numbers just as excessive deer numbers can impact habitat quality.

Population management is similar to conducting a business. You must first inventory the product (census), then sell the product (harvest), and keep records (age, weight, antler measurements) to evaluate management decisions. This process allows the manager to determine the deer herd status at a given point in time, as well as evaluate the herd trend over a period of years.

## **Deer Surveys**

A deer survey provides an estimate of the number of deer occupying a range, but more importantly, it provides an indication of trend in deer numbers over a period of years.

The most commonly used technique for surveying mule deer is the spotlight survey. After an appropriate route is determined, the route is driven after dark and deer are counted with the aid of spotlights. Visibility estimates are taken to calculate the area

observed during the survey. Based on the area observed and the number of deer observed, a density estimate can be produced (acres per deer). Because it is critical to proportionately sample all available habitat types, this technique may not be applicable on ranches with limited road systems.

Helicopters can be used to conduct a partial or total ranch survey for mule deer. This technique allows the manager to estimate deer density, herd composition, and buck quality in a relatively short period of time. However, research has shown that only 35 - 85 % of the deer on a ranch are actually observed from a helicopter, depending on terrain and canopy cover.

No survey method is 100 percent accurate; however, either of the two methods described can provide valuable information on deer numbers and herd composition trends. The manager must choose the most appropriate survey method by considering ranch size, vegetation, terrain, finances, management objectives, available manpower, and time constraints. Refer to **Appendix I** for a more detailed discussion of deer survey methods.

### **Harvest Management**

A basic tool in the management of a mule deer herd is a regulated harvest during the hunting season. The appropriate harvest level and resulting age-class distribution in the herd depend largely on the manager's objective. Mule deer tend to be more susceptible to hunter harvest than white-tailed deer because mule deer inhabit more open terrain and are more hesitant to flee than whitetails. This vulnerability to harvest, combined with lower reproductive rates and periodic drought-related die-offs, result in the potential for over harvest of a mule deer herd. This is especially true in areas where fawn recruitment is low.

Except in very limited areas of the Trans-Pecos, mule deer hunting is for bucks only. The harvest of doe mule deer is carefully regulated through the issuance of antlerless deer permits. Protection of the doe segment of the herd is often necessary to offset low fawn recruitment rates.

With the relatively low harvest rate of bucks and the control maintained by most landowners, hunting is rarely detrimental to mule deer populations. However, the suppression of mule deer populations through harvest has been documented in areas where many small land tracts exist. The best alternative in this situation is to form a landowner cooperative and manage the deer herd in a group effort, with strict enforcement of harvest limits.

Improving antler size of mule deer bucks requires a harvest strategy which allows them to reach maturity (5 1/2 to 7 1/2 years of age). This can generally be accomplished by restricting the harvest to 10-15% of the estimated buck population.

The appropriate buck:doe ratio for mule deer depends on overall herd numbers, relative

to the carrying capacity of the habitat, and fawn survival rates. A 1:3 buck:doe ratio is desirable for mule deer when fawn production and survival is relatively low. In areas where natural mortality is high and deer densities are low, a higher number of does may be needed to maintain or increase the population. Doe harvest is appropriate when a herd has exceeded the carrying capacity of the habitat, but doe harvest should not be used to improve a skewed buck:doe ratio (e.g., 1:4, 1:5, or greater).

### **Harvest Records**

Harvested deer provide an excellent opportunity to collect biological information as well as valuable answers concerning harvest strategies, harvest rates, nutrition, and management decisions. Information collected should include age, field-dressed weight, antler measurements, and body condition. This information, when combined with annual survey information, can be used to guide habitat management decisions and adjust harvest rates.

### **SUMMARY**

The key to mule deer management is habitat management. Successful managers are aware of deer requirements for food, cover, water, and understand how management practices impact these requirements. Providing adequate food for mule deer means balancing the forage supply with animal numbers, which includes both deer and livestock. Because of the generally low fawn recruitment rates, providing adequate hiding cover for fawns can be the difference between success and failure in a management program. The primary tools available to the manager for enhancing mule deer habitat are grazing management, brush management (including prescribed fire), and water development.

*For more information, see PWD Booklet W7100-303 Mule Deer Management in Texas (1997) by R. Cantu and C. Richardson (22 pp.)*