

## Appendix G

# Specific Management Recommendations for White-tailed Deer/Desert Mule Deer

**B**efore entering into a discussion on the management of white-tailed deer, it should be noted that because of the large home range size of deer, adjacent lands are also included in the home ranges of many of the deer on a ranch less than 3,500 acres in size. Only those deer within the interior of a larger ranch may have home ranges



located totally within the ranch, while those in a wide band around the ranch's perimeter likely move back and forth onto adjacent lands. The quality of a ranch's deer population will in large part be dependent on the habitat quality and deer population management strategies (i.e. hunting pressure and deer harvest) found on the adjacent lands. In areas of smaller landownership within "plains habitats", it is important for landowners to work cooperatively to achieve deer/wildlife management goals. Formation of landowner wildlife management associations is a practical, workable solution. TPWD or TCE personnel can assist with formation of these WMA's.

### General:

The key to producing a productive and healthy deer population is dependent upon 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\*, to maintain total deer numbers at or below the capacity of the habitat; (2) not stocking with exotic big game animals, or keeping their numbers at a low level, since exotics compete with deer for browse, forbs, and mast; (3) stocking the range with a moderate number of domestic animals (preferably species that do not directly compete with deer) and utilizing some form of a deferred-rotation system of grazing, and; (4) managing "noxious" woody vegetation with the cover needs of wildlife in mind (i.e. the production and availability of browse and forbs preferred by deer).

\*Mule deer doe harvest is generally much more restricted/not allowed due to low herd productivity in many areas throughout the High Plains and Rolling Plains

Understanding food habits of deer is fundamental to management. Studies have shown that deer prefer forbs and browse (leaves and twigs from trees or shrubs). Grasses make up a very small portion of a deer's diet and they are utilized only when tender and green. Deer cannot digest mature grasses. Forbs are generally high in protein and important to deer size, antler development, and fawn production. However the production, quality, and palatability of forbs is highly dependent on rainfall and the season of the year. Forbs will be absent or unpalatable at least during portions of a year, typically during late summer and late winter. Key browse plants occurring in northwest Texas include bumelia, netleaf hackberry, aromatic sumac, littleleaf sumac, mountain mahogany, redberry juniper (most utilized during winter), fourwing saltbush, lotebush, elbowbush, and ephedra. Sand shinnery oak produces mast (acorns) are readily eaten by deer, wild turkeys, prairie chickens, and other wildlife; however, production is erratic and therefore it is not as reliable as a food source as the foliage. Important mast producers are netleaf hackberry, western soapberry, bumelia, western dogwood (limited distribution), persimmon (limited distribution), bur oak (limited distribution), little walnut (limited distribution), and pecans, especially in association with river and creek bottoms where the moisture regime generally favors mast production. Important forbs include bladderpods, globemallow, primrose, doveweed, ragweed, crotons, ground cherry, spectacle-pod, nightshades, sagewort, plains zinnia, trailing ratany, and half-drop sundrop.

Antler development (main beam length, antler spread, basal circumference, and number of points) is dependent upon three factors: nutrition (quantity and quality of food), age, and genetics.

Nutrition: Nutrition can be optimized by the methods discussed above: controlling the numbers of deer and exotic ungulates, utilizing a rotational system of domestic livestock grazing with moderate stocking rates, and controlling noxious vegetation. Native perennial plantings and supplemental feeding\*, in conjunction with the above practices, can be used to help meet the nutritional needs of deer. Both practices will be discussed in more detail in a later section. See Appendix xxx entitled

\*Supplemental feeding *is no substitute* for a balanced habitat management program featuring enhancement of native food and cover through the use of tools such as planned grazing, prescribed fire, etc.

Age: Maximum antler development of buck deer is attained at 5 to 6 years of age. Allowing bucks to reach older ages through selective harvest will allow them to attain their potential antler growth.

Genetics: Spike antlered bucks are the result of inadequate nutrition, genetics, or a combination of these two factors. Research has shown that yearling (1 1/2 year old) bucks have the potential to produce 4 to 8 points as their first set of antlers if nutrition is adequate and they have the proper genetic background. Conversely, bucks may only produce spike antlers as yearlings if they have "spikes genes", even with adequate nutrition. Although the subsequent sets of antlers of yearling spikes generally will not

be spikes, their antlers tend to be inferior to those of bucks that were forked antlered as yearlings. Consequently, the incidence of inferior antlered bucks in the population should be minimized by the combination of optimizing nutrition (habitat management) and including spike antlered bucks in the total deer harvest.

Stocking deer from another area into a deer population in an attempt to introduce new genes and improve quality is a controversial and much discussed subject. The genetic contribution of 1 individual buck is limited where it is introduced into a population where other bucks are already present and also breeding does. There is no research available that indicates that introducing several bucks improves quality. Unless the pedigrees of the deer (bucks as well as does) stocked are known, there is a good chance that undesirable, but not easily recognizable, characteristics are being introduced. Stocking deer is costly. Also, the animals may have difficulty adapting to their new environment and mortality can be unusually high. It is much better to work with the resident population and cull bucks with poor antler characteristics and retain bucks with desirable characteristics. There are numerous examples where the "native" deer in a area where the average antler quality has been historically low have produced outstanding antlers through a combination of good habitat management, population management, and supplemental feeding. Deer within these populations had the genetic potential for large antlers, but were unable to express their potential because of inadequate nutrition and/or they were harvested before reaching mature ages.

#### Cover Requirements:

The best cover for either species of deer in "plains habitats" within the High Plains and Rolling Plains is a pattern or mosaic of woody brush and trees interspersed within open areas at an approximate 2:1 ratio of open area to woody cover. Clumps or strips of brush should be wide enough so that an observer cannot see through them from one side to the other during the winter months when deciduous species are bare of leaves. Cover strips should be as continuous as possible to provide travel lanes. Canyonlands interspersed with native rangelands and/or Conservation Reserve Program (CRP) Lands are very important to desert mule deer in both ecological areas; likewise, riparian woodlands interspersed with native range, crops, and CRP are important to white-tailed deer in the Rolling Plains.

#### Population Characteristics:

Maintaining the deer population density within the food supply is very important to prevent die-offs during extreme habitat conditions, such as during droughts. Maintaining deer numbers within the carrying capacity will improve fawn production and survival, increase body size and improve antler development, and prevent habitat deterioration from overuse.

Overuse of preferred vegetation on rangeland that is overpopulated with deer and/or overstocked with domestic animals on a long term basis can kill individual plants and prevent woody plant seedlings from being established, leading to a decline in the

carrying capacity.

The objective is to maintain deer numbers at a level where every deer in the population is receiving adequate nutrition without causing a degradation in the quantity and quality of native range plants. Factors such as fawn production, body size, antler development, and degree of browse utilization are good indicators to monitor to evaluate if a range is stocked at, above, or below its carrying capacity.

An unbalanced sex ratio favoring female deer results in a limited number of bucks available for harvest. Also, a surplus of does can contribute to a rapid increase in deer numbers with the potential for exceeding the carrying capacity of the range. The recommended sex ratio for a free-ranging deer (white-tailed and/or desert mule deer) herd in northwest Texas is 2-3 does per buck.

The fawn production objective is .75 fawns per doe or better.

#### Method(s) Used to Determine Population Density and Composition:

The spotlight deer survey technique is the primary method used to estimate population density (acres per deer). It can also be used to make an estimate of herd composition (buck/doe/fawn ratio).

Incidental daylight observations of deer should be used to improve herd composition estimates and for rating the quality of antlered deer. Daylight observations should be recorded by sex, age (adult or fawn), and antler quality (number of points, spread, etc.). Daylight observations can be made by slowly driving pasture roads during early morning and late evening hours. Hunters can also record observations of deer during the opening weekend of hunting season to supplement herd composition estimates.

The surveys should be conducted on an annual basis during the late summer and early fall (August 1-September 15), during the time of the year when bucks have identifiable antlers and fawns are old enough to be up and moving around yet still small enough to be recognized as fawns. Replicating the spotlight census 3 to 4 times during the annual census period will increase the sample size and improve the population estimates. A minimum of 100 daylight observations (or as many as practical) of deer should be recorded. Binoculars should be used to aid in identifying deer.

The aerial (helicopter) survey technique is another tool that can be used in northwest Texas. The greatest values of an aerial survey are the herd composition and buck antler quality estimates that can be made by observing a large sample size of deer in a short period of time. A total coverage aerial survey could be used periodically, perhaps every 3-5 years, to verify and support density, herd composition, and antlered buck quality estimates derived from annual spotlight surveys and incidental observations.

Biologists with the Texas Parks and Wildlife Department can provide assistance to establish the route(s), demonstrate the techniques, and help conduct the initial surveys.

The landowner/manager will then be encouraged to conduct all subsequent surveys and provide the data to the Department biologist for assistance in analyzing it and making harvest recommendations.

#### Recommendations for Harvest or Other Use:

Harvest is the key method to manage a deer population. It is utilized to maintain deer numbers within the carrying capacity, or food supply produced by the range. Harvest also is used to obtain and maintain a desired adult sex ratio and a desired age structure of the population by adjusting both the buck and doe kill.

Bucks: The harvest rate of bucks will be dependent on the objectives of the land owner/manager. Texas Parks and Wildlife Department has noted increased buck deer harvest in many areas of northwest Texas where agricultural land is interspersed with CRP, riparian, and canyon habitats. If 50% of the annual buck harvest is composed of 1 1/2 year old bucks (white-tailed deer or mule deer), heavy hunting pressure is indicated. If one of the deer management objectives is to improve buck quality (i.e. produce bucks with larger antlers and heavier body weights), they must be allowed to reach older ages, which means that the harvest of young, immature bucks should be restricted. Deer body characteristics, in addition to antler characteristics, should be used to determine the relative age of bucks "on-the-hoof." However, since many of the deer on a ranch will also roam onto neighboring lands, the benefits of not harvesting young bucks may be partially negated if these bucks are subject to being harvested on adjacent lands. For a deer population management program to be most successful in an area, most or all the land managers in the area must have similar deer harvest strategies, especially where smaller landownership and interspersed of agricultural land exists.

Under a Quality Management strategy, buck harvest must be restricted to 20% or less of the estimated buck population. This limited harvest will result in low hunter success rates, but will permit a significant portion of the buck population to reach maturity (4.5 years old and older in white-tailed deer; 6.5 years old in desert mule deer) and increase the proportion of bucks in the population. This strategy may only have limited success on smaller tracts of land (5,000 acres or less that are not high-fenced\*) where hunting pressure on surrounding lands is moderate to heavy.

\*Should not be interpreted as a recommendation for high fences. *High fencing* requires a serious, long term commitment to a balanced program of habitat management and intensive big harvest management.

Under a Quantity Management strategy, up to 50% of the estimated buck population can be harvested annually to provide maximum hunter success. This strategy will result in a relatively young, immature buck herd, with most of the bucks harvested being 1 1/2 to 2 1/2 years old.

Under an Optimum Management strategy, 30% to 33% of the estimated buck

population is harvested annually to allow for a generally acceptable level of hunter success while restricting pressure on bucks that allows a portion of the buck population to reach older age classes.

The harvest of spike antlered bucks should be included in the buck harvest quota, not added to the quota, regardless of the management strategy used. Spikes may comprise from 20% to 50% of the total buck harvest quota. Harvesting spikes will remove poor quality bucks from the herd at an early age. Also, if spike antlered bucks comprise a portion of the buck harvest quota, hunting pressure will be reduced on the better quality bucks.

Does: The recommended doe harvest will depend upon the overall deer density, the estimated carrying capacity of the range, the observed sex ratio, and fawn production and survival.

Note: Specific harvest recommendations for both bucks and does should be made annually after deer censuses are completed.

### Records Management:

Records should be kept to monitor the status of the deer herd and measure the success of management over time. As a minimum, record keeping should include:

- 1.) annual deer population data (survey data)
- 2.) number of deer harvested annually
- 3.) biological data from deer harvested, to include:
  - a.) field dressed weight
  - b.) antler measurements: inside spread, number of points, main beam lengths, circumference of antler bases. The Boone and Crockett antler scoring system can be used to measure overall antler quality.
  - c.) age: the manager can age the deer at the time they are harvested or the lower jaws can be removed from deer and stored for later aging by a biologist until the manager is proficient at aging.
  - d.) presence or absence of lactation (milk production) of does (to supplement fawn production estimates).

Note: Weight, antler, and lactation data from a deer, without knowing the age of the deer, is of minimum value. Conversely, age without corresponding weight/antler/lactation data is of minimum value.

### Supplemental Feeding

Managing the habitat for proper nutrition should be the primary management goal. *Supplemental feeding and/or planting of annual food plots are not a substitute for good habitat management.* These practices should only be considered as "supplements" to the native habitat, not as "cure-alls" for low quality and/or poorly managed habitats.

This is not to say that deer do not use agricultural crops; on the contrary, agricultural fields are important to deer and other wildlife species in the High Plains and Rolling Plains.

Supplemental feeding is not a recommended practice unless it is integrated with other deer population/habitat management practices. It may be beneficial if the herd is harvested adequately each year and the range is in good condition. However, for deer feeding programs to provide sufficient additional nutrients to be of value requires considerable expense and long term commitment. The most popular feed used to supplement the diet of deer is corn, although it is one of the poorest types of deer feed available. Corn is low in protein (7-10%) and high in carbohydrates. It does not provide adequate protein levels needed for development of bone and muscle. Knowing these limitations, corn may be used: 1) as an energy supplement (carbohydrates) during very cold periods of the winter, and 2) to "bait" and hold deer in an area. If supplemental feeding is integrated into the overall management, the preferred method is to use a 16% to 20% protein pelleted commercial feed, fed free-choice from feeders distributed at the rate of one feeder per 300-600 acres located adjacent to adequate escape cover. In certain situations, feeder locations may have to be fenced to exclude livestock. Refer to the Texas Parks and Wildlife bulletin "Supplemental Feeding" for details.

### Annual Food Plots

Planting annual food plots with domestic grains *may be* a more effective method to supplement well managed native habitats than feeding, but like feeding, its cost effectiveness needs to be taken into account, considering factors such as climate, soil type, slope and drainage, labor, material, and equipment costs, and fencing from domestic livestock. Like feeding corn, annual food plots are typically used to bait and hold deer in an area. To provide optimum nutritional benefits to deer, the Texas Agricultural Extension recommends that 1) food plots comprise between 2% to 5% of the total land acreage, 2) one-half the plots be planted in cool season species (planted in early fall with forage available during winter stress periods) and one-half be planted in warm season species (planted in spring with forage available during the summer stress period), and 3) the plots be between 1/2 to 5 acres in size, long and narrow, and well distributed over the entire area adjacent to escape cover. Annual food plots should be planted on the deepest soils available.

*Cool season plantings* of domestic grains are generally more successful than warm season plantings if adequate rainfall occurs in the High Plains and Rolling Plains because weed competition is less of a problem. To provide a safe-guard against complete failure, it is recommended that a mixture of species be planted rather than planting a single species. A recommended cool season mixture is a combination of at least two of the following cereal grains: wheat, oats, and rye. All are annuals and will have to be replanted annually. Adding a cool season legume (alfalfa, sweetclover) to the seed mixture would increase the protein content.

*Warm season plantings* of domestic grains are generally less successful than cool season plantings. Typically, during droughty conditions when native vegetation is in

poor condition and supplemental plantings are most needed, there is not enough moisture for production of food plots. There is no one species that can be recommended for a warm season planting to supplement the diets of deer. Recommended warm season annual species are: spanish peanuts, grain sorghum, cowpeas, common sunflower. Most species of "improved" livestock forage grasses are not highly preferred by deer.

Supplemental food plots should be fenced to control livestock grazing so that the maximum amount of production is available for wildlife. It may also be necessary to control deer access into planted areas until the plants are well established (the perennial mix species may need protection for a full growing season), unless sufficiently large areas are planted so deer grazing pressure can be distributed.

### Perennial Food Plots

Unlike the undependable nature of annual plantings with domestic grain (non-irrigated), *seeding of native perennials* in conjunction with planned manipulation of native annuals by soil disturbance has a high probability of success, especially on nearly level, sandy loam sites in the Rolling Plains. For a discussion of a possible management scenario on rangelands, see the following appendix entitled *A Strategy for Management of Wildlife Openings in the Rolling Plains*.