

Appendix F

Specific Management Recommendations for White-tailed Deer



Before 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. As 60 percent of the acreage in east Texas and much of central Texas is comprised of land tracts 200 acres or less, it is important for landowners to work with neighboring adjacent landowners to achieve deer/wildlife

management goals. Formation of landowner wildlife management co-ops or 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 white-tailed 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 white-tailed 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) controlling invading "noxious" woody vegetation, such as cedar, mesquite, or Chinese tallow tree not needed for cover or food to reduce competition and increase the production of grasses for cattle and the production and availability of browse and forbs preferred by deer.

Understanding food habits of deer is fundamental to management. Studies have shown that deer prefer forbs (weeds and wildflowers) 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 east and central Texas include honeysuckle, rattan-vine, post oak grape, Carolina jessamine, trumpet creeper, bumelia, dogwoods, American elderberry, Oklahoma plum, sugar hackberry, winged elm, and cedar elm, which are rated as "preferred" species. "Moderately preferred", but also good, species include skunkbush sumac, flameleaf sumac, coralberry, poisonivy, possumhaw, blackjack oak, chinkapin oak, post oak, yaupon, Texas redbud, common greenbrier, netleaf hackberry, and Virginia creeper. Many woody plants also produce mast (acorns, fruits, or beans) that is readily eaten by deer, but mast production is erratic and therefore it is not as reliable as a food source as the foliage. Oaks and pecans are important mast producers.

Not all of the above species are found throughout the Post Oak Savannah or Blackland Prairie. Browse is the stable component of deer diets and, unlike forbs, is available throughout the year and is relatively drought resistant. Although utilized by deer throughout the year, browse becomes most important during the winter and summer stress periods when forbs are absent or unpalatable. The woody species found in an area are dependent the ranch's geographic location and soil types. The quantity and species diversity of woody plants is typically greatest on the deeper soils of riparian areas along the stream courses and lowest on the shallow soils of the prairies.

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. Supplemental feeding and supplemental plantings, 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.

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 normally produce 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 one 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 an 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 white-tailed deer is a pattern or mosaic of woody brush and trees interspersed within open areas at an approximate 1/1 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.

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. The rule-of-thumb winter carrying capacity for east and central Texas is 1 deer per 10 acres in bottomlands and 1 per 25 acres in uplands.

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. As with cattle, it is better to maintain the deer population just below carrying capacity of the range.

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 herd in east and central Texas is 2 does per 1 buck.

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

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

The spotlight deer census 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). Refer to **Appendix L** for detailed information on conducting spotlight deer censuses.

Incidental daylight observations of deer should be used to improve herd composition estimates and for rating the quality of antlered deer. Daylight observations (totaling 100 deer, if possible) 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. On smaller tracts, or where driving is not practical, observations from deer stands during these same time periods (before the hunting season) can be used. Hunters can also record observations of deer during the opening weekend of hunting season to supplement herd composition estimates. Refer to **Appendix M** for detailed information on conducting incidental daylight observations.

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 5 times (a minimum of 15 surveyed miles) 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) census technique is another deer census technique that can possibly be used in central Texas, but it is not well-suited for estimating deer density (number of deer) in areas with dense woody cover and/or a tall overstory of trees which is typical of most of the Post Oak Savannah and Blackland Prairie. The greatest values of an aerial census 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 census 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 censuses and incidental observations.

Biologists with the Texas Parks and Wildlife Department can provide assistance to

establish the census route(s), demonstrate the techniques, and help conduct the initial census. The landowner/manager will then be encouraged to conduct all subsequent censuses 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. One of the concerns that the Texas Parks and Wildlife Department has about the deer herd in many areas of east and central Texas is the young age structure of the buck segment of the herd. Typically, 50% or more of the annual buck harvest is composed of 1 1/2 year old bucks, an indication of heavy hunting pressure. If one of the deer management objectives is to produce bucks with larger antlers, they must be allowed to reach older ages, which means that the harvest of young, immature bucks should be restricted. Restricting hunters to mature bucks only (in addition to spikes) is a good management strategy. 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.

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 1/2 years old and older) 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.

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 (census 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 / Food Plots:

Managing the habitat for proper nutrition should be the primary management goal. Supplemental feeding and/or planting of 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. Summer (June - mid-September) is the most stressful, critical season of the year for deer in the Post Oak Savannah and Blackland Prairie, not during the winter, especially if there is a good acorn crop. Fawns are being born and nursed. Bucks are growing antlers. An abundance of high nutrition is essential during this usually dry, hot period of

the year when new vegetative growth is on the down-swing.

Supplemental feeding in particular 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, most deer feeding programs which provide sufficient additional nutrients to be of value are expensive and take a 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 160 - 320 acres located adjacent to adequate escape cover. Feed areas would have to be fenced to exclude livestock. Refer to the Texas Parks and Wildlife bulletin "Supplemental Feeding" for details.

Planting food plots may be a more effective method to supplement well managed native habitats than feeding, especially in East and Central Texas where annual rainfall normally exceeds 35 inches. However, 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, 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) at least one-half the food plots be planted in cool season species (planted in early fall with forage available during winter stress periods) and at least one-half of the food plots 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. Food plots should be planted on the deepest soils available.

Cool season plantings (planted in October) are generally more successful than warm season plantings because rainfall is somewhat more dependable during the fall and winter and there is less competition from weeds. 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 to the seed mixture, or planting separately, will increase the protein content. There are some legumes that can be incorporated into supplemental plantings that are well adapted to this region. Recommended cool season legumes are: Austrian winter peas, yuchi arrowleaf clover, Louisiana S-1 white clover, and crimson clover.

Although they are usually the most important, warm season supplemental plantings are

generally less successful than cool season plantings. Typically, during drought conditions when native vegetation is in poor condition and supplemental plantings are most needed, there is not enough moisture for production of food plots. However, forage cowpeas (Iron-clay or Chinese red) and soybeans have proven to increase fawn survival and are strongly recommended during normal rainfall years. Other recommended warm season annual species are: American joint-vetch, Lab-Lab, alyce clover, common sunflower, grain sorghum, and spanish peanuts for the western blackland prairie. Most species of "improved" livestock forage grasses are not highly preferred by deer.

An NRCS recommended seed mix for permanent food plots in the western blackland prairie is: bush sunflower, Engelmann daisy, maximillian sunflower, and Illinois bundleflower. All are perennials and native to central Texas. Engelmann daisy is a cool season species, the rest are warm season. This would be a good seed mixture to use to "reclaim" improved grass pastures, i.e. convert them from a non-native species back to native species. This mixture could also be used on other deep soil sites.

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.