

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 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 large ranch are likely to have home ranges located totally within the ranch, while those deer 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. Because much of east Texas is comprised of land tracts 200 acres or less, it is important for landowners to work with neighboring 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, 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 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.

Woody browse plants make up the majority of the annual diet of deer in the Pineywoods. Preferred browse plants include greenbriar, rattan vine, Carolina jessamine, honeysuckle, blackberry, sassafras. Other important browse plants are winged elm, American beautyberry, yaupon, poison ivy, dogwood, hawthorn, and red maple. Many woody plants also produce mast (acorns and fruits) 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. Important mast producers are the oaks, hickories, beech, American beauty berry, dogwood, blackberry, hawthorn and grape.

A list of common east Texas woody browse plants and their palatability rating can be found in appendix.

Not all of the above species are found throughout the Pineywoods. 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 on 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 deep sandy soils.

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, controlling noxious vegetation, and proper timber management. 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 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 "spike 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 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 forestland interspersed within open areas comprised of native herbaceous vegetation (not tame pastures) 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.

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 Texas is 1 deer per 10 acres in bottomlands and 1 per 25 acres in uplands; however, these guidelines may vary greatly depending on the quality of the habitat and past management practices.

Overuse of preferred vegetation on habitat 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 herd in east 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).

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.

Track counts are another method to monitor deer population trends over time. A track count is conducted by locating a stretch of sandy road and smoothing old tracks by raking or dragging the road, usually early in the morning. The count is conducted 24 hours after the road is dragged and the number of deer that have crossed the road are counted. Each 1 mile section of road equals 640 acres being sampled. For instance if 20 deer crossed the one mile section of road that would equate to one deer per 32.0 acres (640 acres divided by 20 deer). A one mile section of road may be suitable on small areas but larger properties will require two or more mile or survey. If 1 mile sections of suitable road are not available, the survey can be divided into several one-half mile sections.

The survey should be conducted two or three times between August 1 and September 15, and the average should be taken. Tract counts should be repeated each year during the same time of year on the same sections of road. Tract counts will not give an

absolute measure of the deer density, but when repeated year after year, will provide trend data to determine if the deer herd is increasing, decreasing, or remaining stable.

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 Texas is the young age structure of the buck segment of the herd. Typically, 40 to 70 % 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.

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 300-600 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, 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, 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. Food plots should be planted on the most productive soils available. These soil types are generally well drained, but not droughty, and generally should not be subject to flooding.

Planted food plots provide a highly nutritious food source that can be very beneficial during periods of stress. Summer is often the most stressful period of the year for wildlife, especially doe deer that are nursing fawns. During the dry summer months, as plant growth slows, the nutrient levels in native vegetation is much lower than when the plants are actively growing during the spring.

Warm season plantings for deer include cowpeas, alyceclover and American jointvetch. While alyceclover, jointvetch, and cowpeas are annuals, the jointvetch may reseed if it is allowed to produce seed and then mowed in the fall.

In order to insure proper growth, all warm season plantings should be planted on bottomland sites (if possible) where soil moisture will be sufficient during the summer to insure proper growth. These crops can be successfully established using "no-till" planting methods. Best results have been obtained by spreading the seed and then mowing any standing herbaceous vegetation to cover the seed. The mowed debris serves as a mulch

and protects the seed and new seedlings from drying out and from sun scald. After a few years (2-3) of planting an area by "no-till", the grass and weeds may become so thick that the food plot will need to be thoroughly disked to ensure proper growth of the forage species.

Cool season plantings for deer should be combinations of elbow rye, clovers, rye grass, and wheat. Cereal grains such as rye and wheat will also benefit quail and turkeys in the spring, and the clover will provide good bug production areas for turkeys in late spring. A variety of clovers should be planted and can include varieties such as Arrowleaf, Crimson or Louisiana S-1. Permanent strips (food plots) of arrowleaf clover should be established to provide forage for deer. These clovers are annuals, but should reseed if properly managed. Arrowleaf clover generally "comes on" later than clovers such as crimson, but will stay palatable later into the spring. If rainfall is adequate during late spring, Arrowleaf will stay palatable into early summer, and Louisiana S-1 may continue to grow throughout the year.

A good goal is to have approximately 3 to 5 percent of the area in some type of permanent opening (food plots, native openings, or managed roadsides). To minimize the distance that wildlife must travel, openings should be distributed across the property as much as possible. It is always best to establish a variety of plantings to provide more diversity and to insure against the failure of any one type of planting. It is essential that food plots are properly fertilized and limed in order to receive the maximum benefit. Each food plot should have a soil test in order to determine the correct lime and fertilizer rates.

Food plots can be established in existing open areas to prevent additional clearing. If additional openings are desired they should be planned prior to any future timber harvests. Any new openings that are developed should be at least 1 acre in size, preferably 3 to 5 acres, and should be narrow and long rather than rectangular. By distributing food plots or openings across the property it will minimize the distance that deer and other wildlife will have to travel to utilize the openings. All major food plots should have a heavy, mesh wire enclosure in the middle to measure the productivity of the food plot. This will allow you to see the amount of utilization of the food plot compared to the protected enclosure.

An NRCS recommended seed mix for permanent food plots is maximilian sunflower and Illinois bundleflower. All are perennials and native to east Texas. Both 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.