

White-tailed Deer Biology

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Deer are an important component of renewable natural resources of rural lands. There are more than 4 million deer in Texas. The white-tailed deer is the major game species, measured by hunter participation and money spent on the sport. About 75 percent of all Texas' licensed hunters hunt whitetails. In recent years, hunters have harvested more than 450,000 head each year. Aside from bunting, perhaps no wildlife species has more universal appeal than the white-tailed deer.

Many people are interested in deer-ranchers, rural landowners, farmers, nature lovers, gardeners, suburban homeowners, etc. But their perspectives are not the same. Nature lovers like to see many animals that are gentle and easy to observe. Hunters want hunting opportunities, primarily for bucks. Gardeners and farmers may just wish that the deer would feed on something besides their plants. Ranchers may view deer as potential sources of revenue or as competitors for livestock forage.

Healthy deer herds have several common attributes such as big antlers, prime body condition, productive does, good fawn survival, rapid growth and early maturity of the young.

Large antlers are the most desired attribute because antlers characterize deer. Hunting is primarily for the recreational experience of being outside. However, the trophy value of a "set of horns" to recall the pleasant experience is significant to many hunters. An important facet to keep in mind is that "big" is relative to one's experience. A "big" four-point to the novice may be a "little yearling" to the old timer. Yet, "big" to the old timer may not come close to recognition in a Boone and Crockett record book. Hence, deer management for "big" antlers is guided by the goals of each individual land manager.

Antler size can be measured in various ways, such as the number of points, spread or beam diameter. Measurements show that the average number of points per age class increases through the age of 4 or 5 years, but not above that. Antler spread increases in a similar manner. The third measure, beam diameter, best describes the "old mossy-horn." The average diameter increases with age up to some point, perhaps 6 or 7 years, about when the teeth are worn smooth. However, even though the averages increase with age there is great variation between individuals within each age class.

Harvest records further illustrate that above average yearlings can have antlers as large as the average 3-year-old. A harvest restriction based only on the number of points could have the effect of removing the best of the young bucks while retaining the average and below average animals. Over-simplified harvest restrictions may have the opposite effect of that intended if they address a symptom instead of the cause of a problem.

Harvest records from across the state indicate that many yearlings are spikes, but not all yearlings are spikes and not all spikes are yearlings. Age is important to antler size; however, nutrition more strongly influences antler growth.

Average antler size of a group of deer may reflect the nutritional status of the animals. Small antlers go hand in hand with inadequate food. If a high percentage of the yearling bucks are "spikes," it indicates poor food conditions. It might be a short term effect due to a drought or a chronic problem due to too many animals. The point is that harvest records of antler and body size, when linked to the age of an animal, can give valuable information to a deer manager.

Large body size and prime condition are other attributes of high quality deer herds. Measurements of bucks show that the average size (weight, length and heart girth) increased with age through age 4. Four to 5 years is the age of physical maturity for males. Does attain their mature body size between 2 and 3 years of age. Variability within an age class is prevalent. For example, a good yearling may be as large as an average mature animal. As with domestic animals, nutrition and genetics are important causes.

Productive does are characteristic of high quality herds. Does must supply young to replace animals removed by accidents, disease, old age and harvest. Under good nutritional conditions, a mature doe will give birth to twin fawns and a doe that breeds as a yearling will have a single fawn. This gives whitetails a tremendous potential for population increase. Under unfavorable conditions, reproduction will decrease in mature does and not take place in yearlings. Yearlings may comprise one-third of the does in a herd; therefore, not having their reproductive contribution to the herd is significant. Even though yearlings have a lower reproductive rate than mature does, the does under good conditions that breed as yearlings can produce more fawns than any other age class.

To be of value to a deer herd, fawns must not only be born, but they also must survive. In much of Texas, twins are born to adult does, but only one fawn survives due to poor nutrition. A large percentage of the yearling does do not breed, and a large percentage of their fawns do not survive. The ratio of fawns per doe is descriptive of reproductive success. Yearly values on a county basis have ranged from practically zero to a high of two fawns per doe.

Over the past 10 years, counties in the Cross Timbers have averaged .62 fawns per doe, with counties in the Edwards Plateau averaging .57 fawns per doe. While these values are relatively high compared with the Pineywoods' .22 fawns per doe, there is still room for improvement.

Nutrition is the key to producing a quality deer herd. Sufficient food to meet the physiological demands of each deer must be present. Sufficiency is measured in several ways: quantity, quality and availability in terms of time and space. An over-abundance in one respect may not compensate for an inadequacy in another. A bumper acorn crop will not produce big antlers. Excess food in the fall is retained by individuals as a fat reserve into the winter. The timing is wrong for antler growth, but right for the energy needs of the breeding season.

There is a priority in meeting nutritional needs which is determined by the deer's physiology. In order to produce maximum size antlers, there must be sufficient food for optimum body growth plus the food required for antlers. Probably the most important principle related to managing deer is that body growth needs are met first. Antler growth and reproduction needs are second.

Since body growth needs are met first, it is important as a deer manager to understand when these needs occur. Body growth takes place primarily from April to the beginning of rut in October or November. Bucks stop growth at this time and exist on stored body fat, actually losing weight. Does have a similar pattern, though not as pronounced. The point is that the animals do not grow uniformly year-round. There is actually a time in the winter that the animals are physiologically programmed to stop growing, thereby reducing nutritional needs. They may lose up to 20 percent body weight during this time without long-term effects.

Nutritional requirements due to pregnancy or growth of antlers coincides with that of body growth. The last quarter of pregnancy and the lactation period put high nutritional demands on the females. The rapid growth of antlers in bucks parallels the high need period of females.

The amount of food consumed coincides with the changes in body weight. Consumption is lowest in the

winter. It increases through the spring, summer and fall until the peak is reached at the beginning of rut. With males, food consumption drops to a low level during the rutting period. Females exhibit a similar, less obvious pattern. They reduce food consumption in the fall during their individual 3-day estrous period.

Whitetails are sedentary. They may spend their lives on 1 square mile. Food must be present where they live. A lush oat field will not help deer on a ranch 5 miles away because it is out of their home range. Food must be available at the right time and in the right place.

Forage must also be adequate in terms of quantity and quality. Maintenance level ratio is about 1.5 pounds of air-dry forage per day for a 150-pound adult deer. Maximum forage consumption just prior to rut in males reaches 4.5 pounds of air-dry forage per day. Doe forage consumption is greatest during summer lactation. Quantity requirements have been examined briefly, but they are only a part of the picture. Quality needs must be considered as well. There can be sufficient volume to fill the stomach, but malnutrition could still be a problem if forage quality is poor.

The quality needs of the diet vary with the state of the animal's growth. The highest quality needs occur simultaneously with the periods of greatest growth, both seasonally and with age. Young animals have greater quality needs than adults. Quality is measured in many ways in order to compare nutritional needs of the animal with what the forage can provide: calories of energy, percentage in diet of protein, calcium, phosphorus, etc.

Protein, for example, is the major constituent of muscle. A fawn needs about 20 percent of its diet as protein, an older growing animal needs about 16 percent and a mature animal needs about 8 percent for maintenance. Does also have high protein needs during lactation. Deficiencies will be reflected in animal quality. A buck whose diet contains only one-half the required protein, or one-half the required energy throughout its growing years, will be stunted and never reach its genetic potential. Deficiencies with does are reflected in poor fawn survival.

The point is that the most important objective of deer management should be directed toward providing adequate nutrition for each deer present on the range. Inadequate nutrition may be the result of poor forage production and/or competition between animals for the forage produced. Management must consider both problems simultaneously. Brush control, forage plantings, deferred grazing systems, balancing livestock and deer numbers with forage production and matching kinds of livestock to kinds of forage are all valuable management tools. Remember, the deer herd will be no better than the habitat on which it depends.