



Interpreting Deer Harvest Records

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Deer harvest records are extremely important to proper deer herd management. Because deer are difficult to observe and cannot be handled regularly like livestock, records are one of the few means available to determine deer herd health, nutrition levels, trends and adequacy of the harvest. The minimum data to collect from deer harvests are: ages, weights, body conditions and measurements of antler size. The data should be grouped according to age categories and analyzed separately for bucks and does. This publication describes types of calculations to make an analysis of the results for making management decisions.

Why Harvest Records Are Important

Record keeping is basic to good ranch management. Many ranchers keep livestock records such as weaning weights, calving rates, percent lamb crop, percent kid crop and ages of animals. This information is used to make decisions about which animals to sell and to evaluate the effects of previous management decisions (such as: Was I overstocked? Did I begin feeding at the right time?). Records are equally important in deer (*Odocoileus sp.*) management programs. Deer harvest records can be used to evaluate what is occurring in the deer herd and the success of previous deer management decisions. Harvest records can provide valuable information to answer the

following four major questions about deer herd management:

1. Is the level of nutrition adequate for my deer herd or do I need to reduce deer numbers?
2. Am I harvesting too many bucks to maintain old enough deer in the herd to produce the quality I want?
3. Is my deer herd improving, remaining the same or declining?
4. If I have problems with deer quality, what are some of the likely causes?

Types of Information to Collect

The form on page 2 suggests minimal records to be kept on deer harvest.

One method of keeping these records is to use a 3 x 5 card for each animal harvested. Cards may be color coded so that one color can be used for bucks and another color for does.

Materials needed for keeping these records will include a scale for weighing field dressed animals and a steel tape (1/8-inch wide is best) for taking antler measurements. A "jaw spreader" may be used to pry open the mouths of dead deer to record age by tooth wear on the side jaw teeth.

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Deer Management Harvest Record (Doe)

Ranch _____ Hunter _____

Date _____ Location of kill _____

Carcass identification no. _____ Age _____

Field dressed weight _____

Body condition (check one)

___ good: fat across back and base of tail; fat of kidney and in body cavity.

___ fair: little or no excess fat, but bones not showing.

___ poor: ribs, backbone and pelvic girdle prominent under skin.

Deer Management Harvest Record (Buck)

Ranch _____ Hunter _____

Date _____ Location of kill _____

Carcass identification no. _____ Age _____

Field dressed weight _____

Antler data: Number of points (a point must be ½ inch or longer from the tip to the nearest edge of beam)

Right _____ Left _____

Spread (inside measurement) _____

Beam circumference (above burr) Right _____ Left _____

Length of main beam Right _____ Left _____

Body condition (check one)

___ good: fat across back and base of tail; fat of kidney and in body cavity.

___ fair: little or no excess fat, but bones not showing.

___ poor: ribs, backbone and pelvic girdle prominent under skin.

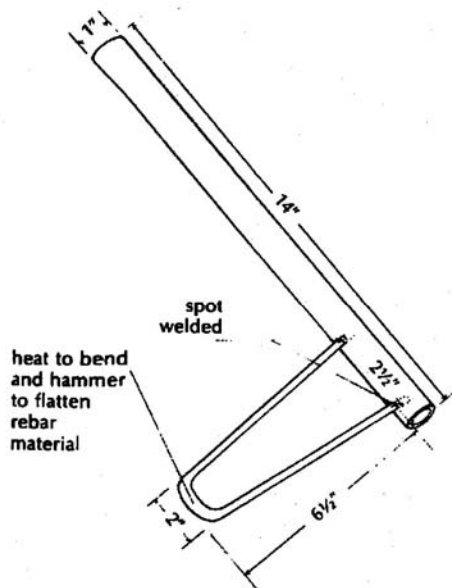


Figure 1. A "jaw spreader" can be made from 1-inch pipe and 3/8-inch rebar material.

Age of deer can be determined by examining tooth wear of the jaw teeth. A publication describing this technique is available from the Texas Agricultural Extension Service (B-1453 *The Age of a Deer*).

How to Arrange Data and Calculations

Arrangement of harvest data by ages is very important to interpretation. For example, knowing the age of a deer aids in determining why the deer may have small antlers or be light in weight. A sample worksheet is included in this publication for use in organizing and calculating harvest data.

Field Dressed Weights

The figures given are for the Edwards Plateau only and are used as an example. Specific weights will be different in other areas; however, the principle is the same.

Ramsey (1981) notes that yearling deer are the most sensitive indicator of herd welfare among deer harvested during a hunting season. The yearling deer have greater nutrition requirements than older deer and therefore reflect deficiencies.

Weights of field dressed deer should be separated on the basis of bucks and does. Then, both buck and doe recorded weights are grouped by ages. For example, all 1 1/2-year-old bucks are grouped together, all 1 1/2-year-old does, all 2 1/2-year-old bucks, and so forth. Average weights for each group are calculated and these average

weights serve as an indicator of herd nutrition levels and health. Harmel and Litton (1981) list the following field dressed weights as minimal for whitetail (*Odocoileus virginianus*) bucks within each age class during years with normal or above normal rainfall in the Edwards Plateau of Texas:

Buck fawns	35 pounds
Bucks 1.5 years old	60 pounds
Bucks 2.5 years old	75 pounds
Bucks 3.5 years old	85 pounds
Bucks 4.5 + years old	105 pounds

If average field dressed weights of whitetail deer consistently fall below the minimums listed on an Edwards Plateau ranch, this indicates that the herd needs improved management. The cause is usually lack of proper nutrition and lowering deer and/or livestock numbers is necessary.

Body Condition

Body condition can be divided into three categories (good, fair and poor). Subjective criteria for placing animals in these three categories have been given previously with listings of data to include in harvest records. Arranging this information by sex and age groups gives an overall view of herd health. During years of average or above average rainfall, few deer should be in poor body condition. If over 10 percent of your deer harvested are listed in poor condition, then a lack of nutrition is indicated and reducing deer and/or livestock numbers may be necessary.

Nutrition is extremely important in antler development. A lack of adequate nutrition first may become evident in smaller antler development. Continued lack of nutrition is characterized by yearly development of small antlers and small body size (weights) of deer.

Antler Measurements

Antler development of white-tailed deer is influenced by three factors: food quality and availability, age of the deer and genetics. The deer manager can increase the size and number of "trophy" bucks in a herd by proper management of these three factors. To aid in interpreting the reasons for antler sizes in the harvest, all bucks' antler measurements are grouped by age classes.

The prime age of a deer is 5 1/2 to 6 1/2 years old. A buck's annual set of antlers should be near their largest during this period of his life. By analyzing average spread, beam length and other antler measurements of bucks in these age classes, one can determine if quality of bucks being produced is consistent with goals, or if steps need to be taken to improve management.

Spike bucks are defined as bucks with hard antlers that have no branches or points. The percent of spike bucks in each age class is an indicator of the quality of bucks produced. Spike antler formation may be the result of lack of nutrition inhibiting antler development or it may be due to genetic influences, or both factors combined. If a high percent of spike bucks ("spikes") is found in the harvest, interpretation of causes will depend partly on reviewing body weights (low body weights support lack of nutrition as the main cause for poor antler development). If whitetail deer body weights are equal to or above the minimum listed, then genetic influence may be suspected as the major factor causing poor antler development. Emphasis on harvesting "spikes" is one method of attempting to reduce this genetic influence in Texas white tails. Minimum quality to look for regarding "spike" whitetail deer in the harvest is indicated by Harmel and Litton (1981) for the Edwards Plateau of Texas.

During years of normal or above average rainfall, at least 50 percent of the yearling bucks harvested should be fork-antlered or larger. Also, spike bucks should be found only in the yearling age class of animals.

Note: This statement assumes a harvest of bucks where hunters shoot the first legal buck they see. Obviously, if hunters are stressing shooting "spikes" or if they pass up small deer to shoot only trophy size bucks, a bias in the hunter selection will have to be taken into account when analyzing buck harvests.

Percent of Harvest Listed by Age Classes

Harvest data should be separated between bucks and does for these calculations. Numbers of buck deer harvested are summed for each age category (likewise for the does). The sum total of all bucks harvested is calculated (as well as the sum total of all does harvested). For each age category, the number of bucks (does) of that age is divided by the total harvest of bucks (does) to arrive at what percent of the buck (doe) harvest is composed of that age class. Table 1 shows an example of the calculations:

The information of interest is in the "percent of harvest" column. This information gives an idea of the

basic age structure of the buck (or doe) segment of a deer herd (factors of hunter selection must be taken into account when making this analysis). For example, suppose producing trophy bucks is a management goal, and there is a lack of large trophy bucks in the harvest. One reason may be that bucks are being too heavily harvested and they are not having an opportunity to gain enough age (5 or 6 years) necessary to produce larger antlers. To determine if this is indeed the cause of lack of trophies, an analysis of the percent of the buck harvest listed by age class is needed. If less than half the bucks are in the 4 1/2 year or older age class, then an overharvest of bucks is indicated and reducing the number of bucks in the harvest will be necessary so more bucks will have an opportunity to mature to the older age classes.

The percent of harvest shown by age class also can be graphed as in the following example. This method of displaying data can be easily interpreted by looking at the age classes where the curve peaks.

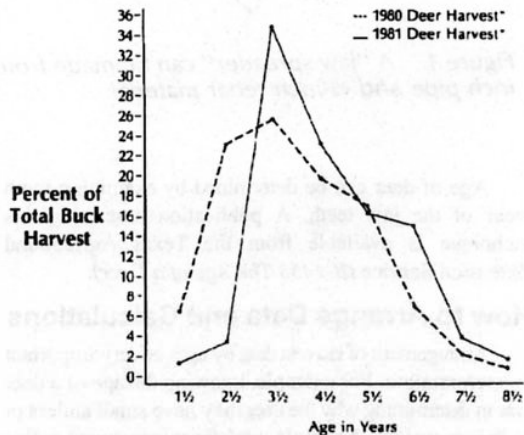


Figure 2. Age structure of bucks in this harvest peaks at 3 1/2 years. A reduction in buck harvest would be necessary to achieve an older age structure.

Age Class	No. Of Bucks Harvested	Calculation	Percent of Buck Harvest
1 1/2 years	5	5 + 20 = 0.25	25%
2 1/2 years	8	8 + 20 = 0.40	40%
3 1/2 years	4	4 + 20 = 0.20	20%
4 1/2 years	3	3 + 20 = 0.15	15%
	20		Total Buck Harvest 100%

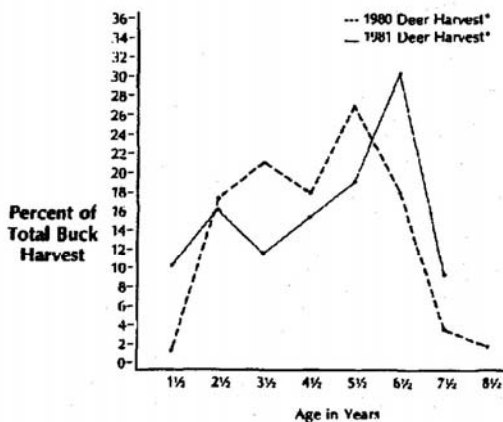


Figure 3. Age structure in this graph peaks at 5 1/2 and 6 1/2 years. This is adequate for bucks to be mature enough to produce large antlers.

Calculations and graphs can be made for the doe segment of the deer herd as well as the bucks. Analyzing this information for does compared to bucks will help determine if equal hunting pressure is being exerted on both sexes. By analyzing age composition of the doe harvest, a determination can be made of the intensity of

doe harvest. For example, if the majority of does harvested are in the 1 1/2 and 2 1/2 year age classes, indications are that a large percent of the doe population is harvested annually. If a high harvest of the doe population is desired, this is an indication that the goal is being achieved.

Trends

Analyzing each year's harvest record data can be very beneficial for making management decisions. However, equally as important as analyzing yearly harvests is comparing one year's harvest with other years. Trends may become apparent such as increasing (or decreasing) antler size for each age class, and increasing (or decreasing) field dressed weights for each age class. Observation of these trends over several years provides information as to how well your deer management program is working and offers clues to changes that need to be made.

References

- Harmel, D. E. and G. W. Litton. 1981. Deer Management in the Edwards Plateau of Texas. Texas Parks and Wildlife Department Bulletin 7000-86. 21 pp.
- Ramsey, C. W. 1981. Use of deer census and harvest information. Symposium: International ranchers roundup. Texas Agricultural Extension Service, August 10-14, 1981. pp. 349-356.

*Note: This information is from actual deer harvest records on Extension result demonstration areas in Val Verde County, Texas

APPENDIX

SUMMARY OF BODY CHARACTERISTICS FOR ANTLERED DEER BY AGE CLASS

COUNTY _____

YEAR _____

RANCH _____

Age Class	Field Dressed Weight (lbs.)	Basal Beam Circumference		Number of Points		Spread in Inches	Length of Beam	Body Condition		
		Right	Left	Right	Left			Good	Fair	Poor

Total no. deer in the age class _____

Number of spikes in this age class _____

Average spread _____ inches

Average weight _____ lbs.

Percent of deer in this age class that were spikes _____ %

Average beam circumference _____ inches

Range in total no. points _____ to _____

Average antler length _____ inches

Percent of this age deer in good body condition _____ %

Percent of this age deer in fair body condition _____ %

Percent of this age deer in poor body condition _____ %

