

Wildlife

MONITORING DEER AND PRONGHORN: AGE AND CONDITION.

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MONITORING AND BIG GAME MANAGEMENT: Monitoring big game is essential to the management of their populations when specific goals are desired. To optimally manage and understand big game, a wide range of variables affecting their population dynamics must be monitored, but there are some relatively simple things landowners can monitor to help them manage for quality deer and pronghorn. Antler/horn score can provide at least some insight into the age and/or condition of big game – both of which are important variables in the quality and productivity of big game. Age and body condition also can be more specifically targeted for monitoring in a relatively simple way.

ANTLER/HORN SCORING: Scoring trophy deer or pronghorn can provide more than just bragging rights. Monitoring antler and horn size of harvested big game can provide some indication of trends in age structure of the male population and nutrition available to them. Keeping records of antler/horn scores can also aid a fee hunting operation in advertising, price setting, and establishment of “trophy” fees.

The most commonly used method of scoring is the Boone & Crockett score, obtained through a series of length, width, and circumference measurements. Scoring sheets are available from the Boone & Crockett Club on the internet at www.boone-crockett.org. Completing a form for every animal harvested also can provide a useful record of harvest for future reference (including date, exact locality harvested, and hunter).

There are three primary factors influencing antler size in deer and elk; Age, Nutrition, and Genetics. Which is most important is often debated, but we know all three are essential for consistent production of record-class trophy deer and elk. In pronghorn, age appears to be irrelevant for horn size beyond the 2nd year, and horn size of bucks may even decrease with age.

Age and Nutrition are factors that deer managers have some ability to influence. Age structure of a population can be influenced by harvest rates and hunt structure. Nutrition can be influenced through management of the natural forage supply, through supplemental feeding (in some cases), or by maintaining a population size in balance with the supply of high quality forage. Genetics are difficult to evaluate and/or manipulate, and though important, genes can not compensate for deficiencies in age or nutrition.

While pronghorn gain most of their horn size by 2 years, mule deer do not peak in antler size until approximately 6-1/2 years. In the Sacramento Mountains, Howard and Eicher (1984) found only 1 in 5 of over 1,000 mule deer bucks harvested from 1975-1977 were older than 3.5 years. A scarcity of trophy bucks may indicate a young male population. This is often the case where mortality of bucks is high, such as in heavily hunted populations.

Monitoring antler size and age of harvested bucks and bulls can allow managers to determine where a deer or elk population is in terms of trophy production potential. Management actions can be enacted to increase available nutrition and/or reduce male mortality, allowing bucks and bulls to reach ages closer to peak antler growth.

AGING MULE DEER AND PRONGHORN: Knowing what the age structure of a big game population is can provide valuable management information (including trophy potential). The age of harvested mule deer and pronghorn can be estimated by tooth eruption and wear or by the cementum annuli method. Mule deer can be aged by tooth eruption up to 2 to 2½ years and pronghorn to 3 to 3½ years. Tooth wear can help age mule deer beyond 2½ years but is unreliable for pronghorn. After tooth eruption is complete, the cementum annuli method is more accurate for aging deer and pronghorn.

Tooth wear. Tooth wear can be used to infer age of mule deer after all permanent teeth are in. But, a buck's teeth will wear differently than a does, and the rate of may depend upon diet and other factors affecting coarseness of forage which can vary regionally.

Some general guidelines have been established to aid in aging a deer by tooth wear – such as Jim Knight's extension publication "Determining the Age of a Deer" – but to be reasonably confident in your aging accuracy, it is best to develop a reference collection of known age deer jaws specific to you area. These can be displayed on a "jaw board" and used for side by side comparisons to more accurately age jaws.

Cementum annuli. Because it is impractical for most people to collect jaws from deer of positively known age deer – such as by documenting age from birth to death – jaw boards can be calibrated by cementum annuli aging of one of the teeth from each jaw. Cementum accumulates within a tooth somewhat the same as tree rings, and age can be determined by counting the rings. Although still used, this method is less accurate for deer from more arid climates such as ours because rings are less defined.

For deer and pronghorn, the tooth best used for cementum annuli aging is one of the 1st incisors (the two center- and fore-most incisors). Commercial laboratories provide cementum annuli for a fee (Matson's Lab, LLC in Milltown, Montana charges \$10/tooth, \$50 minimum) and can provide you with detailed instructions on removal and shipping of teeth for aging.

BODY CONDITION: Productivity of a big game population is dependent upon body condition of the individual animals. A deer or pronghorn herd with a high percentage of its population in good or excellent condition will be more resilient to disease and predation. Body condition of an individual deer or pronghorn is most affected by the nutrition available to it. Monitoring body condition allows us to determine if nutritional deficiencies exist within the habitat.

For most big game managers, there is greater opportunity to collect dead animal indices (from hunter harvested animals) than live animal indices. The Kidney Fat Index and a subset Kistner Score are both relatively easy to perform and have been shown to have strong relationships with total body fat and body condition.

The Kidney Fat Index (KFI), described by Riney (1955) can be valuable in estimating body condition but should not be used to compare condition at different times of the year (i.e. spring to fall). It can, however, be valuable for year to year comparisons (i.e. Fall 2003 vs. Fall 2004). *Procedure for determining KFI (Figure 1):*

- 1) Remove both kidneys and attached fat (freeze them in a labeled plastic bag if you can't process them right away)
- 2) Trim and discard fat from the ends of kidneys
- 3) Remove remaining fat from kidneys
- 4) Record weight of both kidneys as well as fat removed in previous step
- 5) $KFI = (\text{Grams Fat} \div \text{Grams Kidneys}) \times 100$

Kistner scores, like **KFI**, seek to predict total body fat by examining fat accumulation on certain areas of the body. The “full” Kistner Score is calculated by subjectively evaluating the amount of fat on six different organs/regions. They are 1.) Omentum 2.) Kidney 3.) Pericardium 4.) Heart 5.) Rump 6.) Brisket. The summed scores of the six areas have been shown to have a strong relationship to percent body fat of mule deer.

A subset Kistner Score was developed using rankings of fat from only the kidney, pericardium, and heart, making it much easier to estimate. The subset Kistner Score has performed nearly as well as the full Kistner Score in predicting percent body fat. Procedures and reference photos for estimating the subset Kistner Score may be available from the NM Department of Game and Fish or you can contact the state Extension Service Wildlife office at (505) 646-2053.

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