Appendix M

Herd Composition: An Essential Element of White-tailed Deer Population and Harvest Management in Central Texas
by
Jim Dillard, Technical Guidance Biologist (Retired)
Texas Parks & Wildlife Department, Mineral Wells

INTRODUCTION

White-tailed deer management consists of a series of strategies, practices, and other actions taken on the part of landowners and land managers to produce and sustain populations of this important game animal. **Habitat management**, **population management**, and **harvest management** are all essential ingredients for accomplishing a successful white-tailed deer management program. It is the degree of importance that landowners or wildlife managers place on these different stages of management that will determine long term results. Knowledge of the composition of a deer herd is fundamental to making sound management decisions.

Herd Composition - What Is It?

Herd composition refers to the **ratio of bucks, does, and fawns in the population.** In addition, the ratio of <u>does to bucks</u> and <u>fawns to does</u> are also key population relationships used to implement and evaluate management and harvest strategies. An estimate of the **percent bucks, does, and fawns** in the total population is one of the most important factors that must be known before harvest rates can be formulated.

Deer are born at approximately a one-to-one sex ratio; however, few free ranging populations reflect this ratio. Herd composition is not static but changes throughout the year due to the cumulative influences of hunting pressure, reproduction, natural mortality (diseases, accidents, predation, etc.), range conditions and land use, and environmental factors such as rainfall patterns, temperatures, drought, or floods.

Although the exact number of deer living on most ranches is impossible to determine, various techniques are available that estimate their numbers. Techniques such as spotlight surveys, walking Hahn transects, mobile daytime census, and aerial counts are common methods used to estimate the relative density of deer. With each of these techniques, deer are counted on a given area of space or acreage. The number of deer observed divided by the number of acres sampled is expressed as **<u>acres per deer.</u>** An estimate of the total population can then be determined by expanding this figure to the total ranch acreage. For example, a 5,000 acre ranch with an estimated density of 25 acres per deer has an estimated total deer population of 200 deer. Unless a significant number of observed deer are identified as to sex and age class, estimated herd composition is unknown. In most situations, not enough deer are identified while conducting these types of surveys which must be supplemented by additional **herd composition counts.**

When Do You Conduct Herd Composition Counts?
Deer herd composition counts should be made during that time of the year when bucks, does, and fawns are most easily identifiable. The exact time of the year may vary across the state due to differences in fawning dates and antler formation on bucks. Counts initiated before peak fawning has occurred or prior to advanced antler formation will not provide data reflective of the population sex or age composition. Also, fawns are not actively up and moving with does until they are 6-8 weeks of age. It is recommended that herd composition counts in central Texas be conducted during **August and September**. The differential size between fawns and adult deer is most evident during this period. The spotted hair coat on fawns begins to disappear during late September when molt occurs, making identification difficult unless a mature size deer is nearby. Fawns also begin to grow rapidly by this time, making positive identification difficult. Early fawns may be misidentified as yearlings on counts made after this time. Antler development on bucks has also progressed during this period so that they too are readily identifiable.

Herd composition counts should also be completed by the end of September to allow time for harvest rates to be calculated and preparations made for the upcoming archery and general gun seasons.

How Do You Make Herd Composition Counts?
Herd compositions counts can be made any time of the day or night. However, since deer are most active during the **early morning and late evening**, efforts to observe deer during these periods are most productive. Identification of deer during daylight hour is also easier than night observations with spotlights and a higher percentage of deer can be identified. Most counts can be made from a slow moving vehicle along ranch roads. Counts can be made at random, along a systematic route, or at specific locations where deer are feeding or congregating. Grain fields, food plots, water sources, natural crossings, or tree lines are good places to observe deer. Counts may also be made from hunting blinds or other stationary structures where deer are known to occur. **The use of binoculars or spotting scopes is a must!**

Record **only** deer that can be identified as a buck, a doe, or a fawn. When a group of deer is observed, **do not** record **any** of the deer unless **all individuals** can be positively identified. If you see a deer but can not identify it - don't record it. Do not assume the identity of deer or counts will become biased. Fawns and mature bucks are usually easy to identify. Yearling bucks or spikes are often mistaken as does. Every effort must be made to be sure you properly identify all deer. Avoid recording the same individual deer on different dates if possible. Your objective is to observe a representative cross section of deer throughout the total population on your ranch.

Remember, many deer during this time of the year will still be in small family groups that may consist of a doe with this year's fawn or fawns, and her doe or buck yearling from the previous year. Other groups may consist of several does and their collective fawns. And, during August, bucks are often observed in groups away from the does. As September progresses, buck become less tolerant of each other and begin to be observed more as singles.

Take your time when you see a deer. Often, there are other deer standing nearby that you won't see unless the group begins to move or run. Fawns may be hidden in tall grass and not seen until the doe begins to move away. Be patient!

Data should be recorded on a simple form that has columns for the date, bucks, does, fawns, and total. When all herd composition observations are completed, simply add to total number of bucks, does, and fawns observed together. It is recommended that a minimum of **100** individual deer be identified if possible. **The more the better!**

How Do You Determine Herd Composition from the Data?
From your data sheet, **total** the columns for **bucks, does, and fawns** and **add them together**. This figure represents **total deer identified**. To determine estimated herd composition, **divide** each individual group (bucks, does, and fawns) by the **total identified deer figure**. For example, if a total of 100 deer were identified and 20 were bucks, 50 were does, and 30 were fawns, calculate herd composition as follows:

20 (# of identified Bucks) divided by 100 (total identified Deer) = .20 x 00 = **20% Bucks**
50 (# of identified Does) divided by 100 (total identified Deer) = .50 x 100 = **50% Does**
30 (# of identified Fawns) divided by 100 (total identified Deer) = .30 x 100 = **30% Fawns**
100 Total Identified Deer   **100%**

In addition, **doe to buck** and **fawn to doe** ratios can also be determined. To determine the **doe to buck ratio**, **divide the number of identified does** _by_ **the number of identified bucks**. To determine the **fawn to doe ratio, divide the number of identified fawns** _by_ **the number of identified does:**   For example:

> Divide 50 (# identified Does) _by_ 20 (# identified Bucks) = **2.50 Does per Buck**
> Divide 30 (# identified Fawns) _by_ 50 (# identified Does) = **0.60 Fawns per Doe**

How Do You Use Herd Composition Data?
Once you have estimated what your deer herd composition is and expressed it as **percent bucks, does, and fawns,** you may now apply these figures to your total estimated deer population. For example, a ranch containing 2,000 acres with an estimated deer density of one deer per 20 acres has an estimated population of 100 deer. Calculate herd composition as follows:

> 100 Total Deer **X** .20 percent (% identified Bucks) = **20 Bucks**
> 100 Total Deer **X** .50 percent (% identified Does) = **50 Does**
> 100 Total Deer **X** .30 percent (% identified Fawns) = **30 Fawns**
>   **100 Total Deer**

With the knowledge of approximately how many bucks, does, and fawns are present on your ranch, you may now make important decisions about how many deer should be harvested during the upcoming deer season. Buck to doe ratios and fawns to doe ratio also are good indicators of your progress toward obtaining your goals and objectives.