

Deer Data Collection—Part II: Observation Data

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Introduction

When properly collected and analyzed, deer observation data can reveal important details about a herd's population size, sex ratio, fawn recruitment, age structure, and overall management success. Since relatively few bucks are harvested in many Quality Deer Management (QDM) programs, observation data, particularly on bucks, can be even more useful than harvest data.

The most important aspect of collecting good observation data is consistency. Regardless of whether the information is collected throughout the entire year or during specific periods of the year (e.g., the hunting season), it should be collected the same way each year and compared only to observation data collected during same period in future years.

When collecting observation data, count every deer you see during each outing, even if you have seen the same animal during a previous observation period. This means the same animal may be counted several times during a season. This is fine. The purpose is not to count every individual deer on a property, but rather to determine the relative abundance of deer and the proportion of bucks, does, and fawns. In general, large deer herds produce more observations than small herds. Likewise, deer herds with large numbers of bucks generally produce more buck observations than herds with few bucks present. Also, unless you can positively identify the deer as a buck, doe, or fawn, record it as "unknown." Do not guess. A small amount of reliable data is better than a large amount of data containing numerous misidentified animals.

Some hunters may be reluctant to collect observation data or may provide dishonest data because they do not wish to reveal locations of buck sightings during the season. Two ways to address this problem are either to have a locked box in which deer observation cards are placed that is not opened until after the season or to allow hunters to retain their deer observation forms until after the season ends. The locked box approach is generally better because hunters are more likely to record the information on a daily basis and not wait until after the season and try to remember what they observed.

Types of Observation Data Collected

Date. The date of the observation.

AM/PM. The time of day (morning or evening) the observation period (or hunt) took place. If the observation period took place throughout an entire day, divide the day into two observation periods (AM and PM) and assign all observations occurring before 12:00 noon to the morning period and all observations after noon to the PM period.

Total Hours. The total number of hours spent observing deer during a given observation period. If you record observations while traveling to or from your hunting area, or while scouting, include this time in your estimation of total hours. When estimating the total number of hours, round to the nearest 15-minute interval. For example, 3 hours and 10 minutes would be rounded to 3 hours and 15 minutes or 3.25 hours.

Area/Stand. The property, area, or individual stand where the observations occurred. This is considered optional information since many hunters do not wish to divulge information about specific hunting areas. Some hunting groups allow members to keep their observation information until after the season ends before submitting it for analysis. Other groups divide the property into broad regions or units for analysis.

Quality Bucks. The number of bucks observed that meet the minimum harvest criteria established for the property. For example, if the property harvest minimum was 8 points and an antler spread of at least 15 inches, then all bucks meeting this minimum would be classed as quality bucks.

Other Bucks. The number of bucks observed that do not meet the minimum harvest criteria established for the property. These are

generally immature bucks, although occasionally mature bucks do not meet the minimum criteria. In these situations, it is useful to note this in the "Comments" section for future reference.

Does. The number of does observed that are at least 1.5 years old.

Fawns. The number of fawns, both male and female, observed.

Unknown. The number of deer observed that could not be positively identified as a buck, doe, or fawn. Do not guess. A reasonable number of observations should be classed as unknown.

Comments. This column is used to record any other information not listed elsewhere on the observation form. Such information may include unusual observations, comments about what deer were feeding on, individual sizes of bucks observed, individual times of observations, observations of bucks chasing does, etc.

Estimated Deer Herd Attributes With Observation Data

Observation data can be used to estimate the following attributes of a deer herd:

Relative Abundance

Sex Ratio

Fawn: Doe Ratio (fawn recruitment)

Age Structure

The examples listed below are based on the following data.

500 total observation hours

300 total deer observations including:

70 adult buck observations (1.5+ years old)

140 adult doe observations (1.5+ years old)

90 fawn (male and female) observations

Relative Abundance. Observation data can be used to estimate the relative abundance of a deer herd and/or the relative abundance of specific segments of the herd (e.g., number of quality bucks). To calculate an index of relative abundance for the entire herd, simply add all deer observations for a given year or period of the year, and divide this figure by the total number of hours spent observing deer during that same period.

For example, if the hunters on your property collectively spent 500 hours observing deer during the hunting season and recorded 300 deer observations, simply divide 300 by 500 and you get a sighting rate of 0.60 deer per hour. This is your starting point for future comparisons. Assuming that habitat conditions and observer ability are relatively constant over time, this sighting rate can be a useful index of the herd size. While it does not give you an actual herd estimate, it can be used to estimate trends in deer abundance.

Sharp increases in this index usually indicate an increasing herd while sharp decreases suggest a declining herd. However, always consider factors such as unusual weather patterns (e.g., droughts), habitat modifications (e.g., timber harvest), food availability (e.g., food plots or abundant acorn crop), and observer experience when considering changes to management practices based on observation data. It is recommended that you consult with an experienced wildlife biologist if you have any questions regarding observation data.

Observation data also can be used to estimate the relative abundance of specific segments of a herd, such as the number of quality bucks (as defined by that property's management objective). Using the same figures from above, assume that 30 of the 70 adult buck observations were quality bucks. Simply divide 30 by 500 (total observation hours) and you get a sighting rate of 0.06 quality bucks per hour. This index is among the most important because it is the primary indicator of the abundance of quality bucks in the herd. Examining individual segments of the herd is very useful because it may be a property management goal to reduce the total number of deer on the property (i.e., decrease the overall sighting rate per hour), but increase the number of quality bucks (i.e., increase the quality buck sighting rate).

Sex Ratio. The sex ratio of a deer herd is defined simply as the ratio of females to males. Within this broad definition, both the adult sex ratio and the total sex ratio can be estimated. The adult sex ratio is the ratio of adult does (1.5+ years old) to adult bucks (1.5+ years old) in the herd. This ratio is determined by dividing the total number of adult doe observations by the total number of adult buck observations. For example, 140 adult doe observations divided by 70 adult buck observations would produce a 2:1 adult sex ratio. In a QDM program, the adult sex ratio is generally more useful than total sex ratio because it is the best indicator of the number of adult bucks present in the herd. However, the adult sex ratio obtained from observation data gathered by hunters will often underestimate the abundance of bucks, particularly mature bucks, in the herd. This is because adult bucks are more nocturnal than younger bucks and more skilled at avoiding hunters. When possible, it is a good idea to compare observation data collected with infrared game cameras to that collected by hunters. If they differ significantly, the camera-collected data should be considered more accurate due to the unbiased method of collection and reduced opportunity for observer error.

The total sex ratio is the ratio of all males to all females in the herd including fawns. This ratio is determined by dividing the total number of fawn observations in half (because the sexes are born in approximately equal numbers) and adding half to the total number of adult doe observations and the other half to the total number of adult buck observations. For example, 90 fawn observations divided in half would give 45 female fawns and 45 male fawns. Using the data from above, add 45 to the total number of adult doe observations (140) and the total number of female observations would be 185. Repeat the procedure for males and the total number of male observations would be 115. Next, simply divide 185 by 115 and the total sex ratio would be 1.6:1 or 1 male for every 1.6 females.

Fawn: Doe Ratio/Fawn Recruitment. The fawn: doe ratio is simply the average number of fawns per adult doe (1.5+ years old) in the herd. When this information is collected during the late summer or early fall, it also provides a useful estimate of fawn recruitment, or the number of fawns that have survived long enough to be recruited into the fall hunting population. The fawn: doe ratio is calculated by dividing the total number of fawn observations by the total number of adult doe observations.

For example, 90 fawn observations divided by 140 adult doe observations would result in a fawn: doe ratio of 0.64 or about 64 fawns per 100 adult does. Keep in mind that adult does in high quality habitats generally produce twins or even triplets. Therefore, it is common to have more than one fawn recruited per adult doe.

Age Structure. Although the age structure of a deer herd is best determined through the aging of lower jawbones after harvest, observation data can provide useful insight regarding the general age structure of a deer herd. This is particularly true in situations where observers are experienced enough to estimate the general age of deer (particularly bucks) in the field.

For example, with minimal experience, observers can generally assign does to three age classes including, fawn, yearling, and 2.5+ years old. Experienced observers may be able to assign bucks to at least four age classes including fawn, yearling, 2.5years old, and 3.5+ years old.

In most situations, observation data and harvest data will provide similar trends for does because, except for fawns, little selection is involved in doe harvest. However, due to hunter selectivity on bucks, harvest data and observation data may differ considerably. Therefore, observation data on bucks can provide useful information regarding buck age structure not provided by harvest data.

It is hoped that this two-part series on data collection has provided you with a sound understanding of the importance of collecting both harvest and observation data on your deer herd. Serious practitioners of QDM are constantly seeking ways to "fine-tune" their deer herds and the information obtained from these sources is one of the best places to start.

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