

# White-tailed Deer Management in Florida Part 1: Collecting Information on Herd Health<sup>1</sup>

---

Martin B. Main <sup>2</sup>

## Background

The white-tailed deer (*Odocoileus virginianus*) in Florida is important ecologically, economically, and recreationally. For these reasons, there is considerable interest in managing deer herds to maintain herd quality and to prevent habitat degradation. Florida is home to three subspecies of white-tailed deer. The Florida coastal white-tailed deer (*O. v. osceola*) occurs primarily in the northern panhandle, the Florida white-tailed deer (*O. v. seminolus*) occurs in peninsular Florida, and the endangered Florida Key deer (*O. v. clavium*) occurs exclusively on a limited number of islands in the Florida Keys, with the majority of the population occurring on Big Pine Key.

Deer management programs are an effective way to monitor and influence the health of deer herds and the habitat upon which they depend. With the exception of the endangered Florida Key deer, management programs are essentially the same for deer in north and south Florida and include annual harvests during the hunting season and habitat management practices such as prescribed fire. The

objectives of management programs are primarily to maintain healthy populations that do not exceed carrying capacity and degrade habitat, which may have negative consequences for a wide range of species. Objectives may also include increasing recreational and economic benefits by maintaining balanced sex ratios and producing greater numbers of mature bucks for increased hunter satisfaction. Maintaining healthy deer herds results not only in healthy habitat, higher herd productivity, and greater numbers of mature bucks, but also enables herds to better cope with events such as periodic floods or drought.

This document provides information on record keeping necessary for monitoring herd health and achieving management and harvest goals.

## Management Strategies and Setting Goals

Management programs should establish specific goals, such as increasing buck to doe sex ratios, increasing fawn production, and maintaining deer at low enough densities to prevent habitat degradation. Other goals may be to increase the number of mature

- 
1. This document is WEC140, one of a series of the Department of Wildlife Ecology and Conservation, Florida Cooperative Extension System, Institute of Food and Agricultural Sciences, University of Florida. First published: January 2001 as "Management of White-tailed Deer in Florida Part 1: Collecting Information on Herd Health". Minor Revision: August, 2001. Reviewed: June 2008. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>
  2. Martin B. Main, Assistant Professor, Wildlife Ecology and Conservation Department, Southwest Florida Research and Education Center, Immokalee, Institute of Food and Agricultural Sciences, University of Florida

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. U.S. Department of Agriculture, Cooperative Extension Service, University of Florida, IFAS, Florida A. & M. University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Larry Arrington, Dean

bucks to increase herd productivity and provide high quality hunting opportunities. Often, multiple goals may be achieved simultaneously. Goals also may be conflicting. For example, the goal of having more mature males in the herd is not consistent with a goal to maximize harvest of legal bucks.

Goals, therefore, need to be realistic. Also, goals take time. For the most part, Florida has infertile soils that produce nutrient deficient forages for deer during most of the year. Consequently, trophy class bucks such as those found in south Texas and other areas of the country where high quality forages are abundant are rare in Florida. Healthy deer herds and satisfying trophies do exist in Florida, however, and well-executed management plans can help to make this happen.

### **Monitoring Deer Herd Health with Surveys and Harvest Data**

Herd health is influenced primarily by habitat condition and hunting pressure. Several indicators of herd health can be monitored to assist making decisions regarding habitat management practices and harvest strategies. These include animal condition, productivity, fawn survival, buck to doe sex ratios, age structure of harvest, and changing trends in herd size. Although intuition can be helpful in making management decisions, information collected over several years provides the opportunity to review trends and to determine whether management plans are being effective or need to be modified.

There are two basic approaches to collecting information directly from deer herds that can provide a realistic assessment of herd health over time. These include collecting data from deer surveys outside of the hunting season and measurements from harvested animals during the hunting season.

### **Deer Surveys and Incidental Observations**

Observations of deer that are recorded and maintained as annual records can provide information on:

- Sex ratios

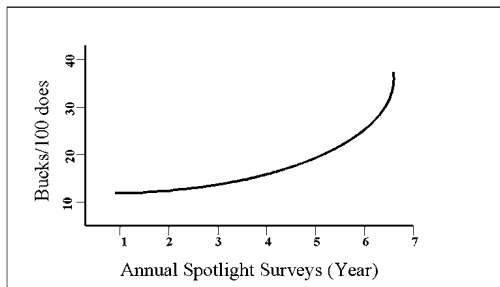
- Fawn production
- Abundance of branch antlered bucks
- Distribution and habitat preferences
- Trends in herd size

Although estimating the actual number of deer on your property is not realistic, repeated, systematic surveys over several years will provide you with a trend of a stable, increasing, or decreasing herd size. Likewise, trends in sex ratios, numbers of mature bucks, and fawn production also can be detected. As stewards of the deer herd and the habitat upon which they depend, it is important to have objective information on these components of herd health both for making management and harvest decisions, and to ensure a quality hunting experience is maintained.

Observational data are most useful when collected in a systematic manner during the same time of year and along the same survey route each year. The most effective way to do this is to establish survey routes for counting deer by spotlight. Surveys should be conducted during the same time each year and best results will be obtained if routes are driven when deer are most active, which is approximately 1 hour before and 1 hour after sunset. With each successive year surveys are conducted, the information becomes more useful because annual results can be examined for trends to determine whether management programs are producing desired results. For example, if increasing the buck to doe sex ratio is an objective, survey data can tell you whether you are moving in the right direction (Figure 1).

Several things should be kept in mind when establishing survey routes. The routes will be traveled each year so they need to be accessible. The routes also should be representative of the habitat in the area and they shouldn't be so long that deer bed down well before the survey is finished. A 10-mi. survey route can usually be completed in about 2 hours. A survey data form (Table 1) should be used that includes information on the date, starting and ending time, and survey route. Names of the data collectors and notes

Evaluating Survey Information - are trends going the direction of your goals?



**Figure 1.** Evaluating buck: doe sex ratios observed during surveys - are trends headed in the direction of your goals?

on weather conditions also can be useful, particularly when they may explain unusually low numbers of observations, such as might occur during poor weather. It is best, however, to avoid conducting surveys during poor weather such as during thunderstorms or high winds. Notes on habitat use can be especially important for indicating successful habitat management practices and for influencing land use decisions. Notes on observations of other wildlife also can be useful for evaluating how other species are using the area or responding to habitat management programs.

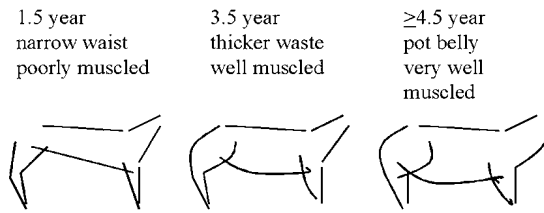
Surveys should be conducted prior to hunting season, and typically are conducted during July-August in Florida. In south Florida, rut occurs during July-August and surveys during this time maximize the number of bucks observed. Regardless of when rut occurs, conducting surveys prior to hunting season is important because deer become much less visible from the road when hunter activity increases. If annual spotlight surveys cannot be conducted, incidental observations should be collected at every opportunity. Incidental observations should provide the same information as would be collected during surveys and survey forms (Table 1) can be re-labeled for this purpose. It is important that one person in the lease be designated to tally and organize data each year, be it from incidental observations or surveys. Cooperation with other local landowners and hunting groups in conducting surveys and reviewing results can provide a more comprehensive evaluation of regional herd health and can result in more effective management and harvest strategies.

## Harvest Data

As with information from surveys, harvest data are best evaluated over time. Information from harvested animals can provide insight into the

- Age structure of the population
- Condition of animals (body weight, antler quality)
- Productivity (evidence of lactation, pregnancy, timing of rut and fawning periods).

Data forms (Table 2) should include a code or number for deer identification, date of harvest, sex, age, field dressed weight, antler measurements, and reproductive information for females. Establishing harvest goals, such as harvesting more mature males, requires establishing harvesting guidelines, such as passing on younger bucks to allow them to mature. Often, harvesting guidelines are based on minimum antler point counts, such as 6-point and above. Although this approach is better than no guidelines, it is not the best approach because young males will be harvested that have the potential to become high quality bucks when mature, and older bucks that have poor antler quality will be allowed to continue breeding. In effect, the selective process favors poor-antlered bucks to survive, and removes animals with the genetic potential to develop large antlers from the herd. A better approach is to develop the ability to recognize older bucks from younger bucks based on body contours. There is an excellent video produced by the Institute for White-tailed Deer Management and Research that is available through outdoor supplier catalogs that describes how to judge deer in the field. Briefly, judging whitetail bucks in the field is based on the amount of body fat and body muscle that creates differences in body shape contours (Figure 2). Yearling males are narrow waisted and poorly muscled. At 3.5 years of age bucks take on a racehorse appearance and are well muscled but relatively flat stomached. Mature bucks greater than 4.5 years are very muscular and have a heavy gut, taking on a pot-bellied appearance (Figure 2). Harvest objectives, therefore, need to include some knowledge of how to judge animals in the field and restraint from harvesting younger bucks.



**Figure 2.** Judging age of bucks based on body shape.

Once deer are harvested, age can quickly and easily be estimated based on the presence and absence and wear on the teeth of the lower jaw. Only one side of the lower jaw is needed, and only the molars and premolars are examined, so it is important not to damage them when removing the jawbone. The front teeth (incisors) are not used to age deer by this method. There are a few simple guidelines to aging deer. For example, adult deer have 3 premolars and 3 true molars; fawns lack the 6th and sometimes the 5th molar. The 3rd tooth (from the front) on yearling deer will have 3 cusps (points), but a bicuspid (2 cusped) tooth replaces this tooth by the 2nd year. Evaluating wear is only slightly more difficult and can be accomplished simply with the aid of a SpeedAger™ kit for aging white-tailed deer, which is available for less than \$10 through most outdoor supply catalogs. The kit provides photos and guidelines for aging jaws from the age of fawns to 6.5 years. Removal of the deer jawbone is easily accomplished using a pruning shears and a jawbone extractor, which also is available through outdoor supply catalogs for approximately \$10. The jawbone extractor is used to separate the jawbone from the skin and flesh and can be used to remove a lower jaw without damaging the cape. In the event the head is not going to be mounted, a sharp knife can be used to cut away the skin and jaw muscle. If jaws are to be saved for aging at a later date, they should be scraped clean of flesh, labeled, and air-dried. Hanging jaws in a wire fish basket or similar container works well. It is important to remember to label the jaws so age can be recorded for the correct deer along with other harvest records such as weight, antler measurements, or reproductive information.

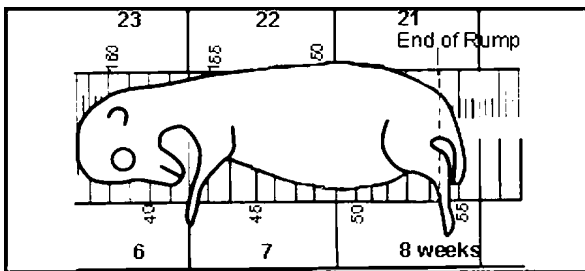
The weight of field dressed deer is an important piece of information when ages are also collected and provides information on whether the average size of deer of specific age classes is increasing or

decreasing. This provides a means to evaluate the effectiveness of habitat management practices or identify when herd density may be too high. When collecting deer weights it is best to collect and compare weights from field dressed deer because live weight will vary depending upon the volume of stomach contents present.

Antler measurements are important if harvest management goals include harvesting larger antlered males or increasing numbers of mature males in the herd for improved productivity. Basic measurements for antlers include the length of the main beam and should be measured by following the contour of the antler. Measurements also include circumference of the main beam above the burr (where antler joins the skull) and below the first tine. Length and circumference of main beams should be measured on both antlers. The last two measurements include inside spread at the widest point and total number of tines (points) greater than 1 inch. Any of these measures can be plotted or a combined score of total inches can be plotted to evaluate trends in antler size. The Pope and Young and Boone and Crockett systems of scoring trophy animals are more detailed. Instructions for these scoring systems can be obtained from these organizations or from most sporting goods stores.

Reproductive information from female deer provides a measure of productivity of the herd and can be important for determining several key pieces of information that can influence harvest and habitat management decisions. For instance, low rates of pregnancy may indicate insufficient numbers of mature males to effectively impregnate the female portion of the herd. Low rates of twinning among mature does may suggest poor habitat quality, a circumstance that may not be uncommon on Florida's sandy soils. In south Florida where rut occurs primarily during July-August, many does will be carrying fetuses approximately 100 days old and roughly 8 inches in length. The actual conception date and expected fawning date of these fetuses can be estimated with a fetus aging scale that converts length to age in days, and provides a conversion for conception and birth date. The example illustrates a fetus at age of 54 days, using the white-tailed deer fetus scale (Figure 3). Fetus aging scales are

available through outdoor supply magazines for less than \$10. Knowing the peak periods of rut and fawning can influence management decisions, such as the timing of prescribed fires. In northern Florida, where rut occurs later in the Fall, aging fetuses may be difficult or impossible due to the short amount of time available for fetal growth. Pregnancy in does can still be determined even when fetal development has not begun by examining the ovaries for presence of corpora lutea, which are glandular tissue formed during ovulation. Examination for corpora lutea is not straightforward, however, and is impractical without the assistance of a biologist. In northern Florida, therefore, fawn production is best estimated by counting fawns during annual surveys and recording incidental observations.



**Figure 3.** Aging deer fetus with a fetus scale for white-tailed deer.

Evaluating harvest data should be done in a manner similar to evaluating survey data, which is by looking for trends over several years of data collection. The longer that harvest data are collected consistently, and the more complete that reporting is by hunters, the better the information will be for interpreting the health of the herd and for identifying whether trends are headed in the direction of your goals. For example, if a goal is to harvest larger branch-antlered bucks, harvest data plotted over time can tell you whether your harvest goals are being reached.

### Combining Survey and Harvest Data

Both survey and harvest information is useful, but they are most powerful when combined. By collecting both survey and harvest data, questions can be addressed that may not be answerable with data from only surveys or only harvest information. This can be important when attempting to determine whether trends are heading toward management goals

and whether habitat management or harvest practices should be modified.

For example, assume that survey information indicates the number of does has increased or remained relatively stable, but the number of fawns observed during recent surveys has decreased dramatically during the last few years. There are a number of potential possibilities that could explain this data, but a clearer picture of the causes may emerge if one had gathered harvest data. For example, if the average weight of harvested does followed a declining trend, then doe densities may be too high. High numbers of does can degrade habitat quality by reducing the availability of high quality forage and protective cover, which can cause lower doe weights and higher fawn mortality. Another possibility may be that habitat quality has declined due to changes in vegetation and prescribed fire or other management practices may be needed to increase the availability of high quality forage.

Ultimately, survey and harvest data may reflect events beyond your control, such as the effects of a prolonged drought. Although poor fawn crops and low overall numbers of deer from droughts, destructive wild fire, or floods may be beyond the control of resource managers, modifications in the level of harvest to allow deer populations to recover is not. In summary, collecting information that can assist deer management programs takes time and commitment. Doing so, however, can be rewarding and maintain high-quality hunting experiences.

### Additional Reading

Kroll, J. C. 1991. A practical guide to producing and harvesting white-tailed deer. Stephen F. Austin State University Press, Austin, TX. 590 pp.

Miller, K. V. and R. L. Marchinton. 1995. Quality whitetails: the why and how of quality deer management. Stackpole Books, Mechanicsburg, PA. 322 pp.

Yarrow, G. K. and D. T. Yarrow. 1995. Managing wildlife: managing wildlife on private lands in Alabama and the Southeast. Sweetwater Press, Birmingham, AL. 452 pp.

Halls, L. K. 1984. White-tailed deer ecology and management. Stackpole Books, Mechanicsburg, PA. 870 pp.

Bookhout, T. A. 1994. Research and management techniques for wildlife and habitats. The Wildlife Society, Bethesda, MD. 740 pp.

### **Educational Videos on White-tailed Deer**

Kroll, J. C. A practical guide to producing and harvesting white-tailed deer. Volume 1: Food plots and supplemental feeding. Stephen F. Austin State University Press, Austin, TX.

Kroll, J. C. A practical guide to producing and harvesting white-tailed deer. Volume 2: Aging and judging trophy white-tails. Stephen F. Austin State University Press, Austin, TX.

Kroll, J. C. A practical guide to producing and harvesting white-tailed deer. Volume 3: Record-keeping. Stephen F. Austin State University Press, Austin, TX.

Quality Deer Management Association. Let him go so he can grow. Video Wisconsin.



