

2010 - 2011 Lake Shelbyville White-tailed Deer Checkstation Results

In order to obtain information on the status of Lake Shelbyville's white-tailed deer population, 40% of all successful shotgun applicants were required to check any deer they harvested during the 1st shotgun season. Data collected helps determine herd health and aids in setting harvest regulations to ensure habitat quality is not degraded.

METHODS

Forty percent of all successful shotgun applicants in Lake Shelbyville Project (LSP) Moultrie (n=92) and LSP Shelby (n=108) were sent incidental observation cards and were required to bring any deer they harvested during the 2010 1st shotgun season to the check station located at Wolf Creek State Park. These 3 days were picked due to the high volume of hunters afield increasing the odds for obtaining a high sample number of deer. Sixty-two of those surveyed checked deer through the station for a 31% return rate. Additional deer were checked from Wolf Creek State Park but the data was excluded from this analysis due to higher herd densities in these areas potentially skewing the results. Cementum annuli aging, which is about 90% accurate, is used to assign age classes to every deer checked through the station (except fawns). Teeth are pulled and sent to a lab where they are stained and sectioned in order to count the rings, much like the rings on a tree. Persons who returned their results are referred to as cooperators in the following tables. All data was summarized by year and compared to baseline data collected during the 2006 season.

RESULTS AND DISCUSSION

Doe Harvest Results

Figure 1. Age structure of does harvested during 1st shotgun season by cooperating deer hunters at Lake Shelbyville. *Note the jump in older age class does in 2008 and 2009.*

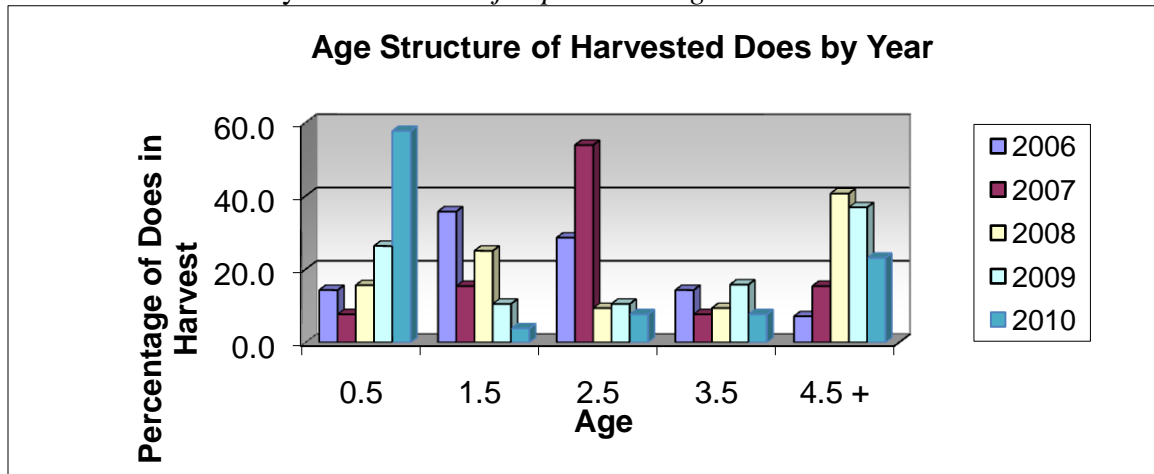
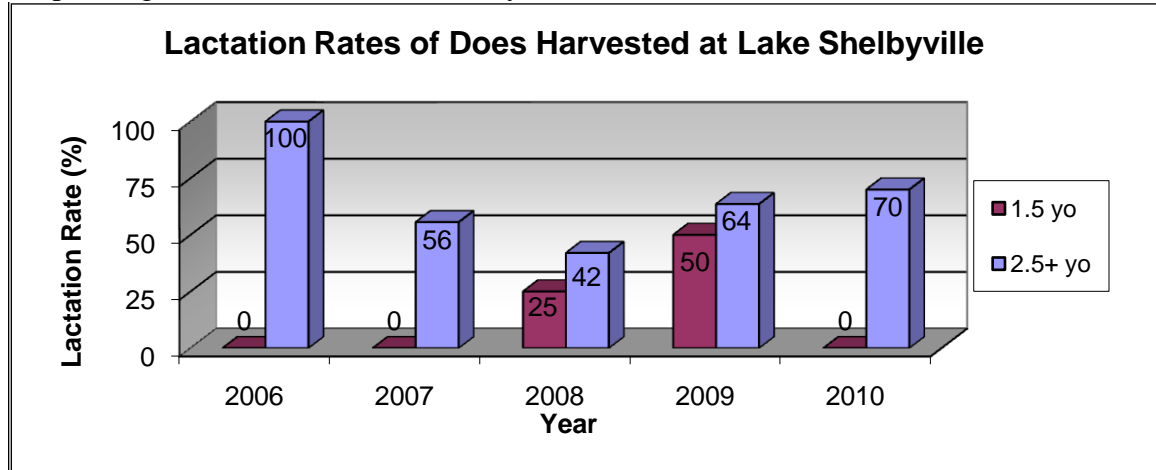


Figure 2. Lactation rates of 1.5 year old and 2.5+ year old (adult) does checked by cooperating deer hunters at Lake Shelbyville.

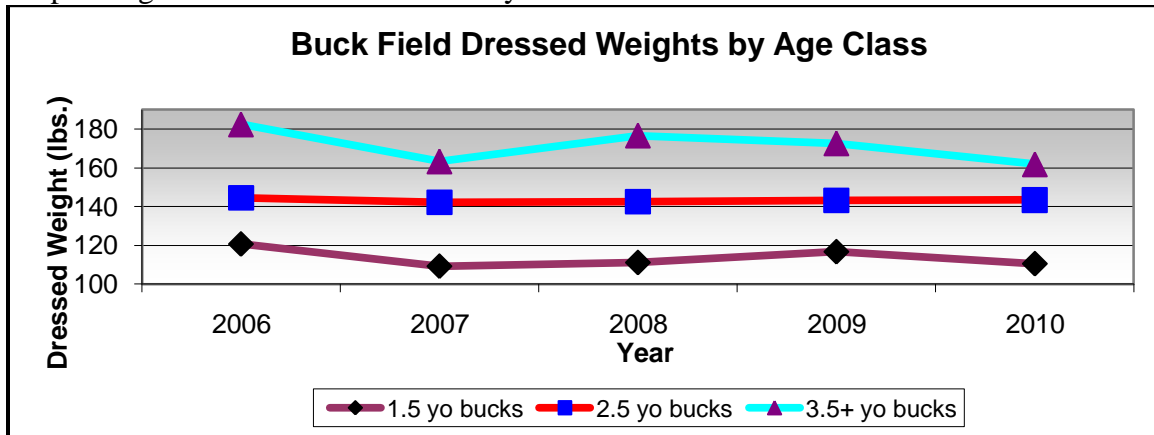


Lactation is a term for whether a doe is “in milk”. This information is important because it provides evidence that a doe successfully raised one or more fawns. The percentage of adult does (2.5 years old or older) lactating in a given year provides an estimate of the reproductive health of the herd and the number of fawns that were recruited into the population. A lactation rate of 70–80 percent or higher for adult does is considered good. The actual lactation rate is generally higher, but does that give birth early, lost a fawn, and/or weaned their fawns early often are recorded as “dry” when harvested during the season. In the northern and Midwestern portions of the whitetail’s range, a moderate to high percentage of yearling does may be lactating during the hunting season indicating they bred as fawns. This is a very healthy situation and a sign of high quality habitat. Lactation rates this year hit the 70% mark for mature does with no 1.5 year old does in milk. However, the sample size for 1.5 year old does was very small compared to other age classes.

Note the uptick in lactation rates for the adult does since 2008. This tracks very closely the increased doe harvest on the lake (see Figure 7). Basically, the lower the herd density the healthier the herd is. In 2006, the first year of the survey, there were few adult does in the harvest – we suspect that due to this small sample size or possibly reporting errors, that the 100% lactation rate is not accurate. As dramatic as the drop was in 2007 and subsequent years it is unlikely that this is correct.

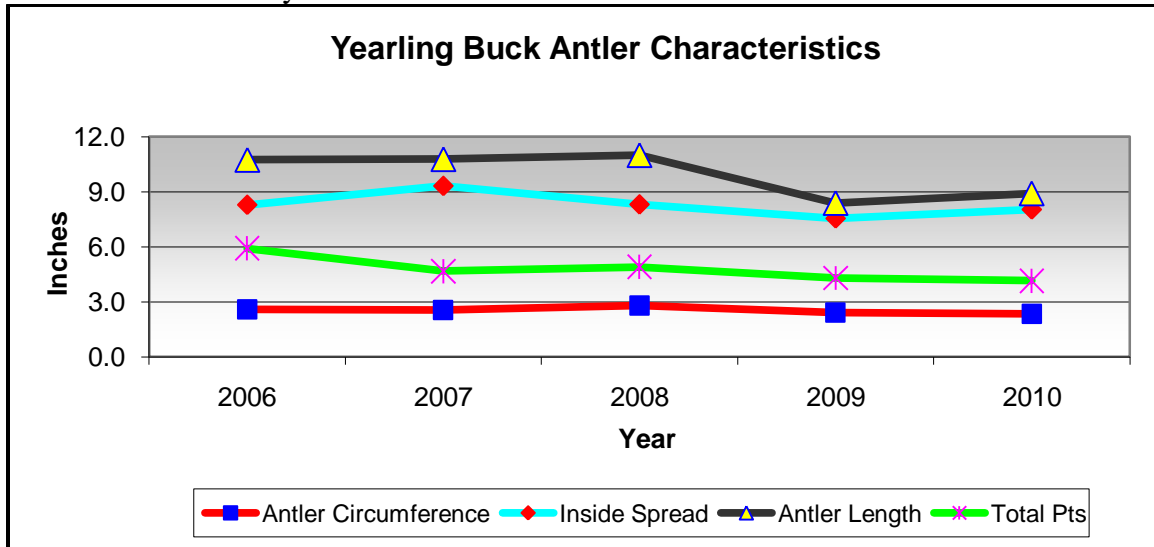
Buck Harvest Results

Figure 3. Field dressed weights by age class and year for all bucks checked by cooperating deer hunters at Lake Shelbyville.



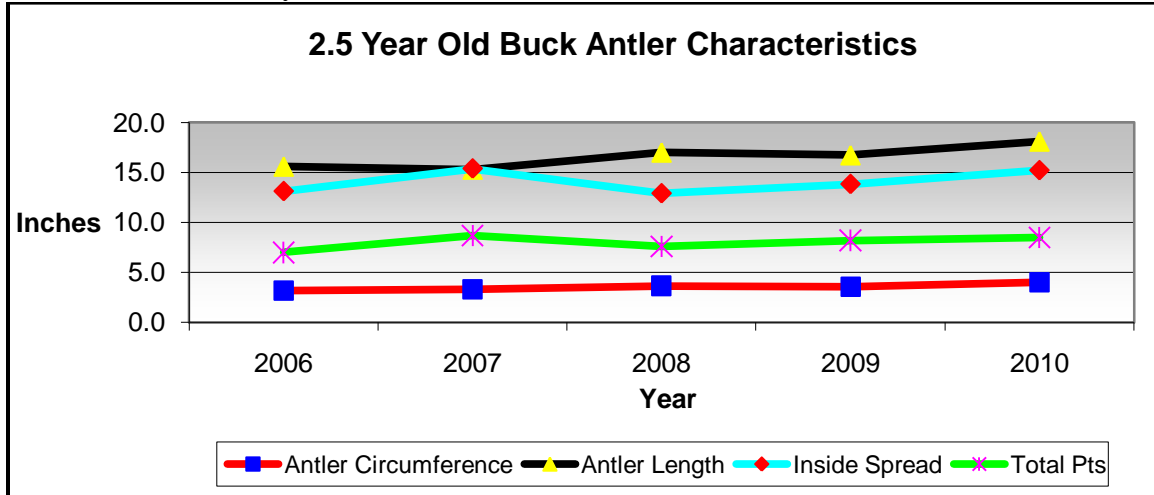
Field dressed weights of bucks were either static or slightly lower than 2009 across all age classes. Yearling bucks are the best indicators of health when analyzing field dressed weights among bucks because they do not lose as much weight during the rut as the older age class bucks (which are more active participants). The 3.5+ year old age class weights often fluctuate by 20 or more pounds for this reason.

Figure 4. Yearling buck antler characteristics by year checked by cooperating deer hunters at Lake Shelbyville.



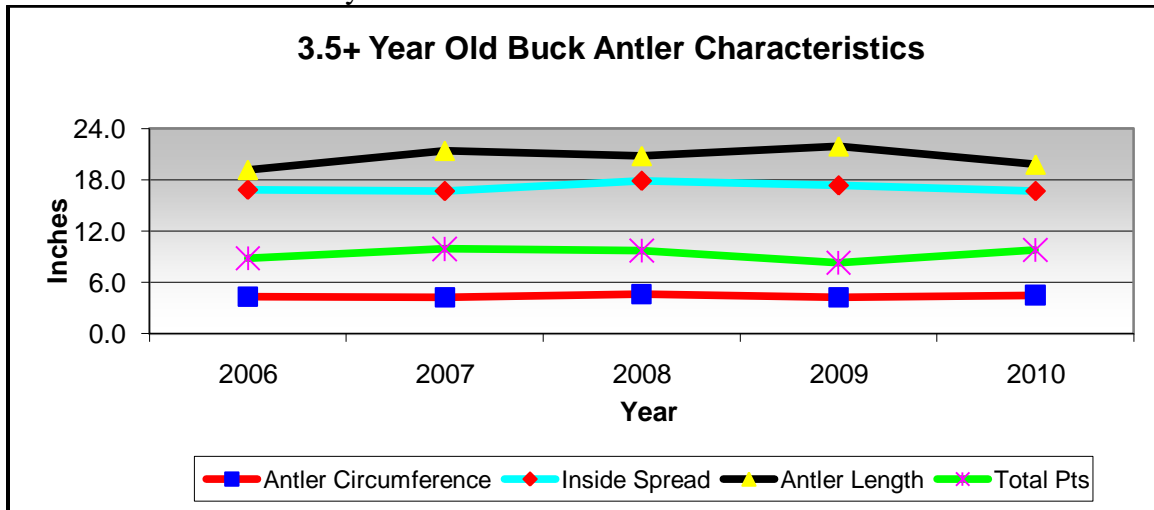
Antler measurements taken from yearling bucks increased slightly or stayed about the same as 2009.

Figure 5. Antler characteristics of 2.5 year old bucks by year checked by cooperating deer hunters at Lake Shelbyville.



The 2.5 year old age class increased slightly across all measurements. One of these bucks would make the Pope and Young (archery record book) minimum score of 125 inches of antler. This note is included because many hunter's contact us each year expressing an interest in harvesting a trophy buck. A buck meeting the archery record book standard of 125 inches is considered by many to be a trophy buck.

Figure 6. Antler characteristics of 3.5+ year old bucks by year checked by cooperating deer hunters at Lake Shelbyville.



In the 3.5+ year old age class there was very little change across the board. All but one of the deer in this age class would make the Pope and Young minimum of 125 inches with a few in the 150 – 160 inch range. The heaviest buck in this age class field dressed 195 lbs. and was 5.5 years old.

Inside Spread – An Excellent Indicator of Age

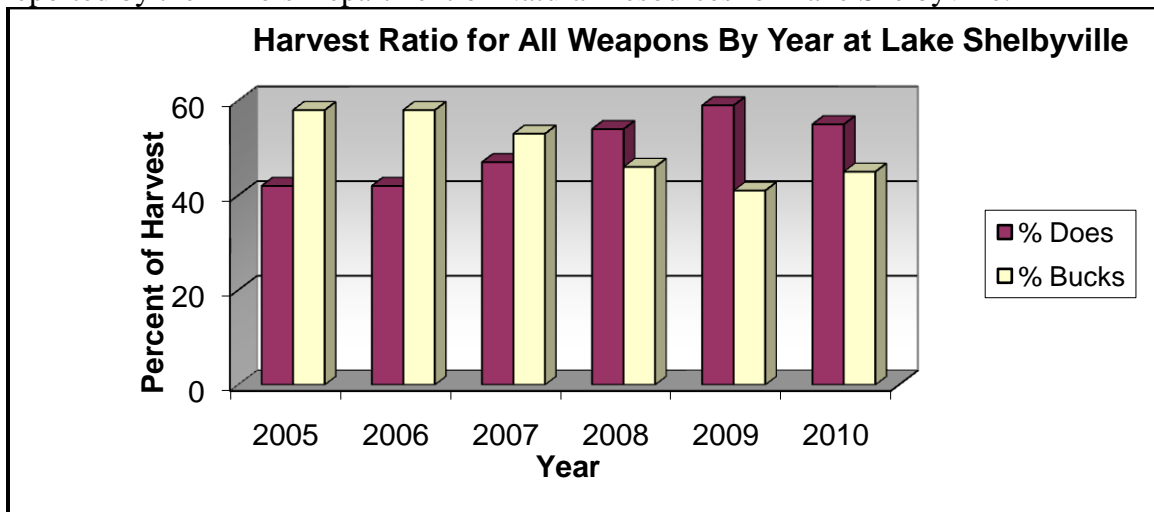
A public meeting was held in July of 2008 to discuss adding antler restrictions to the lake regulations in order to protect young bucks. This section was added to point out that the best indicator of age for Lake Shelbyville bucks is inside spread (the distance between the antler beams) and **not** the total number of points. The data in the table below comes **directly** from antler measurements taken from known age class bucks harvested on Lake Shelbyville over the last 5 seasons. The total number of antler points is a very **poor** indicator of age and would protect very few bucks as indicated by Table 1. Under these 2 scenarios, a 16” inside spread restriction clearly protects many, many more bucks than a point restriction does. If a hunter wants to ensure they pass on younger bucks, look for an inside spread as wide or wider than a bucks ears and more than 90% of the time the buck will be 3.5 years or older.

Table 1. Percentage of antlered bucks on Lake Shelbyville that would be **protected** from harvest under a 4 points to 1 side rule or a 16” inside spread restriction.

| Age Class (Years) | 4 Points to 1 Side | 16” Inside Spread |
|-------------------|--------------------|-------------------|
| 1.5 | 67% | 100% |
| 2.5 | 18% | 90.9% |
| 3.5+ | 0% | 9.9% |

Harvest Ratios by Year on Lake Shelbyville

Figure 7. Deer harvest ratios for all weapons combined for the 2005 - 2009 seasons as reported by the Illinois Department of Natural Resources for Lake Shelbyville.



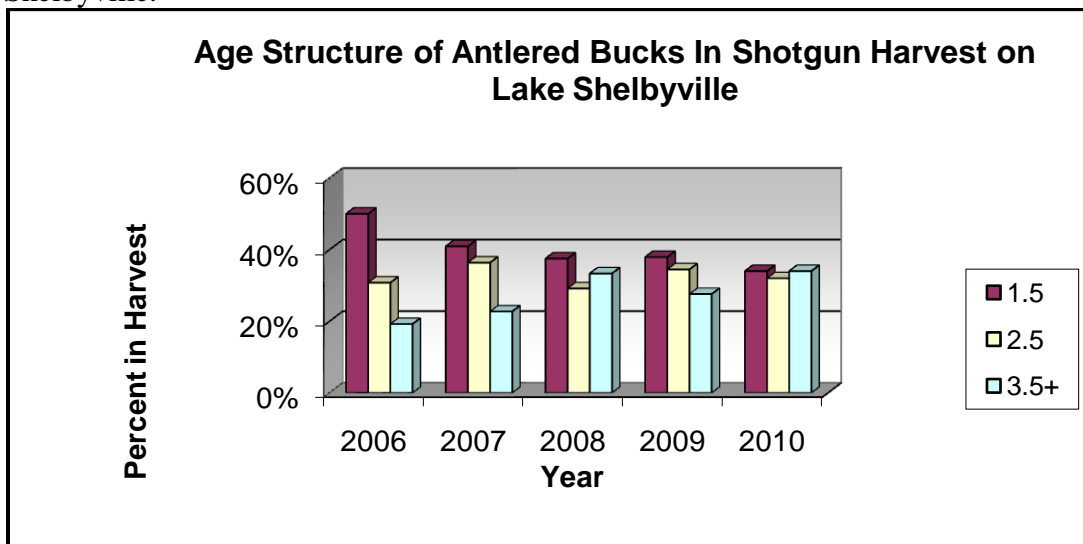
With the reduction of Either Sex shotgun tags beginning in 2008, we have seen a dramatic shift in the harvest ratios of does: bucks over the last six seasons for all deer killed on Lake Shelbyville/season. In 2005 and 2006, approximately 160 more bucks than does were harvested off the Lake. In 2007, we added a special antlerless only (AO)

muzzleloader season to Lake Shelbyville with 100 AO tags in an effort to increase the doe harvest, bringing the harvest ratio up to 47% doe/53% buck. In 2008, 40 of the Either Sex shotgun tags were changed to AO and 80 additional AO tags were added. This shifted the harvest ratio to 54% doe/46% buck in 2008, 59% doe/41% buck in 2009, and 55% doe/45% buck in 2010. Note the high percentage of does 4.5 years and older harvested in 2008 – 2010 in **Figure 1**. A number of the does we checked were 8.5 and older with one 14.5 year old doe in the group in 2008 and a 10.5 year old doe in 2009! This dramatic jump in older age class does is not surprising since the does have historically been harvested at a much lower rate than bucks, thus allowing the does to advance in age. We expect to see the doe age classes to shift more towards younger does in the future as more does are taken annually – this is already starting to be seen in 2010 (Figure 1).

Harvest ratios are now about where they should be and tag allocations will be kept the same unless future data warrants a shift.

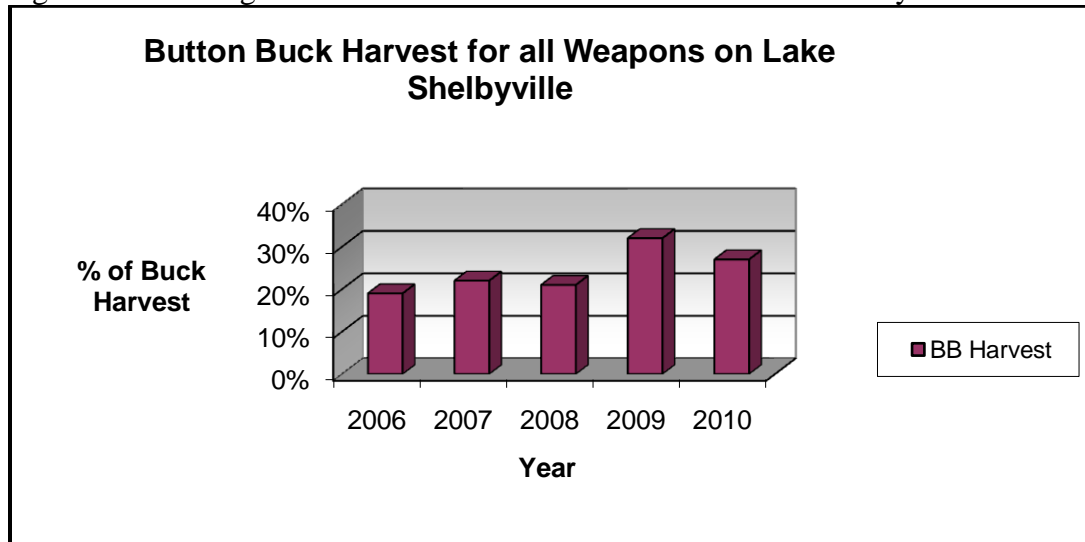
Lake Shelbyville Buck Age Structure

Figure 8. Age structure of **antlered** bucks checked by cooperating deer hunters at Lake Shelbyville.



This section was placed after the harvest ratio results to point out the shift in older age class bucks. Even though we do not have data prior to 2006 on age structure – there is little doubt it was similar to 2006. Notice the decreasing trend in yearling bucks and increasing trend in 3.5+ year old bucks – a decrease of 16 % in yearlings and an increase in 15% of 3.5+ year olds since 2006. This is undoubtedly due to the reduction in Either Sex firearm tags and a shift to harvesting more does taking harvest pressure off of the buck herd. However, harvest of yearling bucks is still high at 34%.

Figure 9. Percentage of Button Bucks in Buck Harvest on Lake Shelbyville.



We've included Figure 9 to point out the high incidence of button bucks (buck fawns) showing up in the harvest on Lake Shelbyville. Almost 1/3 of bucks killed on Lake Shelbyville in 2009 were buck fawns. This is obviously a consequence of a shift towards increasing the doe harvest on the lake. While some button bucks showing up in the harvest is of little consequence, high button buck harvests **will** impact the number of bucks advancing towards the older age classes in subsequent years. We would like to see button bucks make up no more than 10% of the buck harvest. While it sometimes can be difficult to tell a button buck from a doe it can be done if a few simple steps are taken before an arrow is loosed or the trigger pulled. Generally, button bucks are more curious and bold and are often the first one to enter the fields, etc. Wait for a few minutes and allow other deer to filter into the area so a size comparison can be made – it is difficult to judge the size of a single deer. Quite often a single antlerless deer by itself is a button buck – give them a pass if they are clearly by themselves. When first spotted, check their head for the “buttons”, which often can be seen with the aid of binoculars or scope. At bow ranges, the “buttons” are often visible to the naked eye and deer with very short muzzles and a “fuzzy” appearance are often fawns. We encourage you to take a few moments before the shot to ensure it is not a button buck.

Below, we've attached an article written by Brian Murphy, President of the Quality Deer Management Association, about reasons to harvest does. As evidenced by the increase in the doe harvests, hunters are willing to shoot does, especially when given sound reasons. Brian Murphy's article is an excellent resource for why we need to include an adequate doe harvest to meet our management goals.

Antlerless Deer Management

By

Brian Murphy

The obvious first question regarding antlerless harvest is why. Much has been written and researched on this topic, and many of the key reasons are listed below.

1. To reduce deer density.

In many areas, whitetail populations are at or above the carrying capacity of the land (how many deer the land can support without degrading the habitat), and herd reduction or stabilization is needed. This can only be achieved through the harvest of adult does — the reproductive segment of the herd. Ironically, one of the greatest obstacles to the acceptance of doe harvest by some hunters is the adage, “I won’t shoot a doe because it would be like killing three deer.” While on the surface this would be true — assuming the doe was mature (generally 2 1/2 years old or older) and carrying twin fawns — it demonstrates a lack of understanding of deer biology. Numerous studies have shown that as deer herds approach carrying capacity, reproductive success and fawn recruitment rates decline. In other words, fewer fawns are actually recruited into the pre-hunting season population than could be recruited from a smaller, but *healthier* herd.

2. To balance the sex ratio.

Distorted adult sex ratios are common under traditional management programs featuring heavy buck harvests and inadequate doe harvests. Given that fawns are born in approximately equal sex ratios (if not slightly favoring males), the only way to achieve and maintain a balanced adult sex ratio is through antlerless harvest. Since bucks have higher natural mortality rates due to fighting, post-rut stress, larger home ranges, and other factors, the sex ratio will eventually slightly favor does, even in unharvested populations. With the added hunting mortality on bucks, in most cases more does than bucks must be harvested annually to maintain a balanced population.

3. To make room for and improve the quality of young bucks.

A goal of most QDM programs is the protection of young bucks. However, protecting a group of animals (i.e., yearling bucks) that has historically been harvested only compounds existing deer density problems — unless an adequate number of antlerless deer are harvested. Most bucks protected under QDM are 1 1/2 and 2 1/2 years old, and these bucks consume nearly 1 1/2 times as much forage as a doe of the same age. This should be considered when calculating doe-harvest needs.

4. To reduce the harvest pressure on young bucks and provide additional venison.

Let's face it, deer hunters like to harvest deer, especially the first one of the season. I suspect there is something deep inside hunters that becomes satisfied when the freezer is full of venison. Consequently, by harvesting a doe early in the season, this helps relieve the "pressure" on both the hunter and the young bucks in the area.

5. To increase reproductive success and fawn recruitment.

In areas where deer populations exceed the carrying capacity of the habitat, doe reproductive rates as well as fawn survival and recruitment rates suffer. In such areas, reducing herd density through antlerless harvests often results in increased herd health and, consequently, increased reproductive success. In other words, a smaller herd can produce more and healthier fawns with higher survival rates. This is why many moderate-density herds managed under QDM guidelines can sustain much higher annual antlerless harvest rates than high-density herds under traditional management.

6. To provide reproductive data.

Until someone can prove that bucks give birth to fawns, only pregnant does can provide valuable reproductive data. Such data typically includes evidence of lactation ("in milk") and the presence of fetuses. Lactation data provides evidence that the doe produced one or more fawns from the previous year, while fetal information provides evidence of breeding during the year of harvest. Lactation data is especially useful on yearling does; because this provides evidence they bred as fawns — an indication of a healthy herd. In many parts of the whitetail's range, late hunting seasons enable the collection of measurable fetuses from harvested does. Fetuses typically are not measurable until 40 days after conception. As such, fetuses from does bred in mid-November would not be measurable until late-December or early January.

7. To reduce dispersal of young bucks.

Research suggests that active doe harvests reduce the average home range size of young bucks (five to 18 months old) and the percent of yearling bucks that disperse from their birth area. Both result in more bucks staying closer to home instead of dispersing the typical one- to five-mile range found in most studies.

8. To reduce negative impacts of white-tailed deer.

Active antlerless harvests also provide benefits to society. Increased antlerless harvests typically result in a lower overall deer population. Fewer deer results in fewer deer-vehicle collisions, reduced crop and ornamental damage, and fewer overall negative interactions with humans.

Which Ones?

Which antlerless deer to harvest — fawns, yearlings, or adults — is another consideration. In general, I recommend *the first one that offers a good harvest opportunity*. This is because in many areas it is difficult to harvest enough antlerless deer, and every harvest opportunity wasted only complicates this situation. When multiple antlerless deer are present, I recommend harvesting the dominant, adult doe. One reason for harvesting adult does is that fewer buck fawns will be harvested by mistake due to the difference in body size. Another reason is because adult does are the most reproductive segment of the herd. In other words, harvesting adult does lowers the population faster than harvesting fawns and yearlings, which either don't breed or produce fewer fawns. Fewer buck fawns in the harvest results in more bucks surviving to maturity.

A dominant doe is the leader of her family group and generally the oldest. They can be identified if there is sufficient time to watch interactions among members of her group. The dominant doe generally leads her group from bedding to feeding areas and also is more likely to display aggressive behaviors toward other members of her group at feeding areas.

We appreciate your support in helping us monitor herd health at Lake Shelbyville. This allows us to ensure no long term habitat damage is sustained at Lake Shelbyville and that our herd remains healthy. By seeing how the data you provided is being used, we hope you continue to support our efforts in the future. Just in the last 4 seasons we've added a special muzzleloader season and changed the shotgun tag allocations to successfully increase the antlerless harvest based on the information you have provided and seen a dramatic increase in older age class bucks on the lake.

Sincerely,

Ricky D. Raymond
Operations Manager