

Detecting The Rut Peak

By Kip Adams

Fetal aging sounds like a technique used by Ob/Gyn doctors and ultrasound technicians, but deer managers can learn a lot about the population they're managing by taking some annual fetal measurements. This practice is not new or limited to the South, as the initial studies on fetal development in white-tailed deer began in the 1940s in New York. However, Joe Hamilton, QDMA's founder and Southern Director of Education and Outreach, led a research project from 1979 to 1983 that ultimately developed the fetal-aging criteria and scale that deer managers throughout North America still use today.

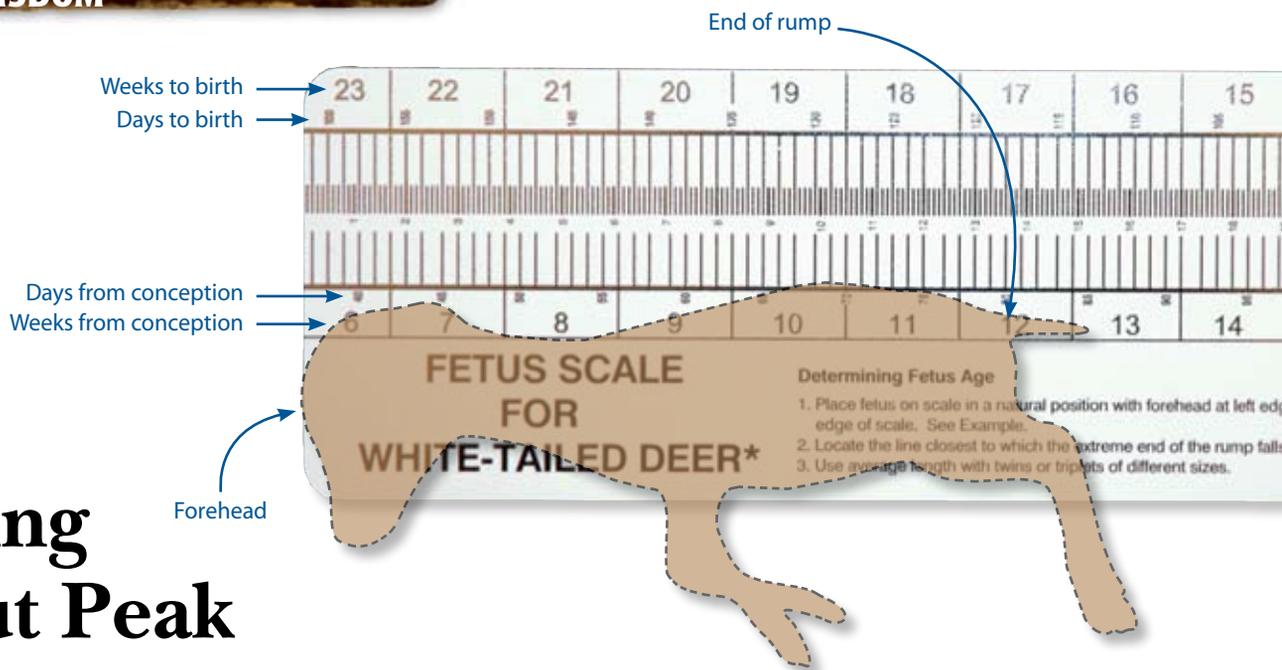
The technique was developed using "crown-to-rump" measurements of known-aged fetuses. Therefore, by measuring the length from the forehead (crown) to the junction of the tail and back (rump) of a fetus on the fetal scale, you can determine the fetus's age. Then, you can use the scale to backdate and determine the date the fetus was conceived, and foredate to estimate the date it would have been born. This analysis is the preferred method for determining the length of and especially the peak of the rut across the whitetail's range, and it allows managers to detect changes in breeding dates with respect to herd management programs.

Getting Started

Expensive equipment isn't necessary. All you need is an \$8 fetus scale, available from QDMA, and a little knowledge about where to find the fetuses. Fetuses are located in the reproductive tract, and that lies low and at the back end of the abdomen (just above the udder). If you hang a doe for field dressing, hanging by the hind legs makes locating the reproductive tract very easy. It will be hanging below but close to the bladder and above the intestines. If you field dress a doe on the ground, it is easier to locate the reproductive tract before you remove the entrails. That way blood and/or stomach contents (for those who aren't careful with their knife) don't make identification more difficult.

Once you locate the reproductive tract make one incision and cut it away from the body. Then place the tract on a flat surface. The tract consists of the uterus (or birth canal), which branches into halves that each contain an ovary. There may be a fetus in

each half of the tract, only one half, or no fetuses. Cut into the tract and remove any fetus(es). You can cut the umbilical cord flush with the body. It's that simple, and it's even easier than pulling a jawbone. However, make sure you collect a fetus and not a cotyledon. Cotyledons are part of the placenta, have a capsule-like appearance and may look somewhat similar to very young fetuses. However, a quick inspection will easily distinguish between the two. Once the fetus is in hand, you can age it and determine con-



How to Age a Whitetail Fetus

1. Place fetus on the fetal scale in a natural position with the forehead at the left edge and the back parallel to the top edge of the scale.
2. Locate the line closest to which the extreme end of the rump falls.
3. Use average length with twins or triplets of different sizes.
4. There are five sets of measurements on the fetal scale. These include a millimeter scale, days from conception, weeks from conception, days to parturition (birth), and weeks to parturition.

Once you know the number of days from conception, flip over to the other side of the fetal scale to determine the date of conception.

5. Locate within a calendar the date the doe was harvested and convert that date to a Julian date (which runs from one to 365 days on one calendar and from 366-730 days on the calendar for the subsequent year). The fetal scale has a calendar that makes this conversion simple.
6. Subtract the age of the fetus in days (days from conception as measured on the scale) from the Julian date noted in No. 5.
7. On the calendar on the fetal scale, locate the date block with the Julian date found in No. 6. This is the date of conception.
8. The procedure for determining date of birth is similar, except days to birth (as measured on the scale) are added to the Julian date noted in No. 5. Two calendars are provided on the scale. Select the calendar that allows you to subtract the days from conception from the Julian date and also allows adding the days to parturition to the Julian date.

ception and birth dates in less than five minutes at camp or on your tailgate using a fetus scale. If you don't have a scale, store the fetus(es) in the freezer for analysis at a later date.

For Example

Let's say you harvested a doe on December 15, and you determined the age of the fetus was 51 days. Refer to the easy-to-use Julian date chart on the back of your fetus scale. Julian dates allow you to calculate the number of days between two calendar dates by simple subtraction. The Julian date of December 15 is 349 (it's the 349th day of the year). This number minus the fetal age in days (51) is 298, the Julian date for October 25. This is the date of conception. The number of days to parturition, or birth, was 147, as determined on your scale. This number, added to the Julian date of the harvest (349) is 496. The Julian date of 496 occurs on May 11, the date the fawn would have been born.

Graphing the Data

Once you determine conception dates, it's time to graph the data. According to Joe Hamilton, a simple bar chart works well, and you plot the number of pregnant does in your harvest data (the sample size) on the vertical axis. Plot the conception dates on the horizontal axis and group them on a weekly basis. This chart will reveal the range of breeding dates and the peak of the rut for your area.

In all deer populations, there will be does that are bred earlier and later than most, and this occurs for a variety of reasons. Thus, the conception date from one pregnant doe is not a reliable indicator of the rut peak. With more does in your data set, you will gain a more complete picture of the rut.

In general, as a deer population goes from unmanaged and unbalanced toward a balanced sex ratio, improved adult age structure and increased health, the span of time from first to last conception date will be shorter, and the rut peak will be stronger.

Fetal Aging For Everyone?

Fetal aging is a great way to determine the relative length and peak of the rut in your area. You simply need a fetal scale and some fetuses. Unfortunately, that second requirement can be difficult to collect in some locales. Crown-to-rump measurements are an accurate technique for aging fetuses, but fetuses must be at least 35 to 40 days old for the technique to work (and about 60 days old to determine sex). This isn't a problem in areas with late deer seasons and/or early ruts. However, many northern firearms seasons coincide with or immediately follow peak breeding. In some areas of the South, the rut peaks later in the year, near the end of hunting season. Thus most harvested deer, even if pregnant, have fetuses far younger than 35 to 40 days. If this is the case in your area you can still check for fetuses as some does breed early. For example, in Pennsylvania peak breeding generally occurs between November 10 and 20, but Game Commission conception data shows breeding routinely occurs in October. The fetuses from these early-bred does would be old/large enough during the firearms season to determine conception date using the fetal scale.

Many states have late antlerless or primitive weapons seasons where you could collect fetuses from harvested does. A word of caution, however: Don't wait until these late seasons to achieve the majority of your antlerless harvest simply to collect fetuses. The benefits of early antlerless harvests far outweigh the benefits of collecting 35-day-old or older fetuses. A third option is to collect fetuses from road-killed does during winter or spring. This option is a little messier, and it is illegal in some areas, so be sure to check your local regulations. A final option is to contact your state or provincial wildlife agency and ask for conception dates in your area. This may not be as representative as data you can collect locally, but it's better than nothing.

Is It Flawless?

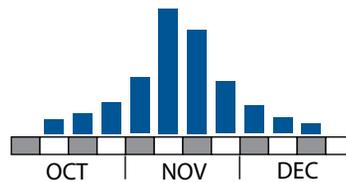
Researchers in Mississippi recently determined *newborn fawns* from the Lower Coastal Plain (lower-quality habitat) were lighter and shorter than fawns from the Thin Loess and Delta soil regions (higher-quality habitats) in Mississippi. The researchers also found twins were lighter and shorter than singletons, and males were heavier than females. This research may have implications for the accuracy of the fetal scale. However, since 82 percent of fetal growth occurs during the final trimester of pregnancy, 35- to 135-day-old fetuses (first and second trimester fetuses) may not exhibit the differential growth rates identified in newborn fawns in Mississippi's different soil regions. Fortunately the vast majority of

harvested does will have fetuses less than 135 days old, and the technique described above should be accurate for management purposes.

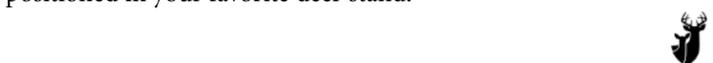
The technique may not be perfect, but it's been successfully used across the whitetail's range for more than 20 years. This is due in part to rigorous testing during development of the criteria and scale. Joe and his colleagues compared measurements between males and females, singletons and twins, fresh and preserved fetuses, and fetuses from 1½- to 3½-year-old does, and found negligible differences. The researchers suggest using the average length of twins or triplets, but otherwise the scale is robust with respect to sex, number and "freshness" of fetuses and mother's age (at least through 3½ years).

Not a Make-or-Break Proposition

Aging versus not aging fetuses won't make or break your management program, but it is a quick and simple technique to collect valuable data about the deer population you're managing. The data can provide insight toward the relationship between the deer population and the habitat's ability to support it, the adult sex ratio, the adult age structure and even herd health. More importantly, it provides solid data on the best dates to be firmly positioned in your favorite deer stand.



Breeding data charted by week should resemble a bell-shaped curve like the one in this example, with some early and some late breeding on either side of the main peak. The timing of the peak will vary by region.



About the Author: Kip Adams of Pennsylvania is a certified wildlife biologist and QDMA's Director of Education & Outreach in the North.