

Aging Whitetails

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Introduction

This fact sheet provides physical criteria for estimating age and identifying gender of white-tailed deer (*Odocoileus virginianus*) to aid hunters, land managers and hunting clubs in improving their harvesting decisions. Physical characteristics of whitetails can be judged (a) in the field, (b) from photos taken by infrared-triggered trail cameras and (c) from tooth replacement and wear of harvested deer.

The decision a hunter makes to shoot or not shoot can affect the composition of a deer herd. Being able to distinguish antlerless bucks from does and mature adults from yearlings is an important skill for herd improvement (Figure 1). Making accurate judgments is required for participation in some

hunting clubs that employ selective harvest criteria for herd improvement and antler growth.

Guidance about aging whitetails is based on generalizations, since variations of physical characteristics occur naturally. The body condition of an individual deer can change dramatically from season to season. A buck will look different in the fall during rut than it did a few months before in summer. Body condition and tooth wear in whitetails may vary among years and regions based on diet, nutrition availability and other factors. In Arkansas, the reported average body weight of deer harvested in the Delta is 20 percent higher than the Coastal Plains. Information in this fact sheet should serve as general guidelines; individual results may vary.



Figure 1. Each hunter's decision to shoot or not shoot contributes to the future of the deer population in Arkansas. Photo by Steve Maslowski, U.S. Fish and Wildlife Service

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Inevitably, mistakes will happen when aging whitetails based on physical characteristics. A study of whitetail deer biologists with experience aging deer in the field using physical characteristics found this was not a reliable method (Table 1). Gee (2010) used photographs of 70 wild whitetails of known age, between 1½ and 10½+ years, and found the average score for biologists was 36 percent correct with a range of 16 to 56 percent.

Tooth wear has been used extensively for aging whitetails, yet one study found deer biologists correctly aged only 72 percent of known-age whitetail jawbones (Marchinton et al., 2010). Gee (1997) found a similar pattern, with a majority (> 50 percent) correctly aging 1½- and 2½-year deer (Table 1). Jawbones of fawns and immature deer (1½ to 2½ years) are easier to determine because of tooth eruption patterns. Aging jawbones becomes more difficult after 2½ years when tooth wear is the sole determinate of age.

Table 1. Percent of experienced deer biologists who correctly identified the age class of free-ranging whitetail deer of known age in two studies from south-central Oklahoma using photographs (photo) or teeth eruption and wear patterns (jawbone) (Gee, 2010 and Gee, 1997).

Known Age Class of Deer	Correct Response (%)	
	Photo (n = 107)	Jawbone (n = 34)
1.5 year old	62	91
2.5 year old	43	55
3.5 year old	25	29
4.5 year old	30	23
5.5 year old	25	44
6.5 year old	15	4
7.5 year old	7	0
8.5 year old	7	0
9.5 year old	7	0
10.5 year old	2	0

In 2010 several deer biologists reported a decades-old error in the wildlife techniques manual from which biologists are trained. This error was replicated in subsequent editions of the book and has been attributed to inaccuracies in aging deer. The error pertains to the width of the dentine in the upper lingual crest versus lower buccal crest of the first and second molars in the 3½ year age class. The actual effect of this error on aging deer has not been documented.

Despite these flaws, aging and judging live deer sharpens observational skills for better harvest decisions in the majority of cases. Assessing tooth replacement of harvested deer can yield general information about their relative ages.

This fact sheet classifies deer as fawns (6 months), immature (1½ to 3½ years), middle age (4½ years to 6½ years) and mature adults (7½ years and older) to help hunters improve their harvest decisions. Because fawns are typically born in April, May or June, biologists refer to fawns as 6 months of age when hunting season takes place in November, though fawns may range from 7 to 9 months actual age since deer season lasts into January. A yearling that survives to the next hunting season is thus 1½ years and so on. Insights gained from harvest “mistakes” among younger age classes of deer can be used to improve future harvest decisions.

Identifying Does and Fawns

The difference between does and fawns can be difficult to detect when antlers are not present. Here are some tips for identifying differences between adult does, buck fawns and doe fawns.

- **Coloration.** By the time most hunters head to the field in the fall, most fawns have lost their spotted coats. However, some fawns born late in the breeding season may still have spots.
- **Antler nubs.** The pedicles or antler bases of a “nubbin” or button buck are difficult to see. They become easier to see late in the hunting season, particularly from the side (Figure 2). Binoculars may be needed to see antler nubs.



Figure 2. Antler nubs are difficult to see in fawn bucks. Photo by Karan A. Rawlins, University of Georgia, Bugwood.org

- **Head shape.** A fawn's forehead and snout (nose) are shorter than that of an adult doe. A doe's head normally is more rounded on top between the ears. A buck fawn's head is flattened by the presence of the pedicles (Figure 3). Look with binoculars for the pedicles or antler bases.



Figure 3. A doe's head normally is more rounded on top between the ears (left). A buck fawn's head is flattened by the presence of the pedicles (right). Photos by Ken Hammond, U.S. Department of Agriculture (left) and David Cappaert, Michigan State University, Bugwood.org (right)

- **Behavior.** Fawns are more playful, naïve and inquisitive than adults. Buck fawns tend to be more aggressive than doe fawns. A buck fawn may be the first antlerless deer in a group to move into an opening.
- **Body shape.** The body of an adult doe is rectangular-shaped; a fawn's body is shorter or even square-shaped. When side by side, the doe will be larger than the fawn (Figure 4).



Figure 4. A rectangular shape and larger body size help distinguish an adult doe from a fawn. Photo by Karan A. Rawlins, University of Georgia, Bugwood.org

- **Wear and tear.** Older bucks and does will have signs of aging, such as ears that appear too short for the head, a swayed back and a sagging belly.

Harvesting Tips

Harvesting does is an important management tool for keeping deer populations in balance with available habitat. Most hunters would prefer to avoid harvesting buck fawns and let them grow to maturity. Buck fawns lack visible antlers and may be misidentified as does. Fortunately, there are several clues that distinguish 6-month-old buck fawns from does.

- **Watch behavior.** Does and fawns are social animals that travel together in groups. Fawns are playful, curious and not as cautious as adult does. Buck fawns often enter an opening first. **Do not harvest solitary antlerless deer.** When several antlerless deer are together, adult does will be obviously larger than others in the group.
- **Head and body shape.** Do not harvest antlerless deer with short snouts (fawns) (Figure 5). Check for a rounded (doe) or flat (buck) head shape between the ears. Look for pedicles on buck fawns. Wait until you can see deer in a group. The doe is typically larger in size. She will also have a longer snout and rectangular-shaped body (Figure 6).



Figure 5. A fawn has a shorter snout than an adult deer. Photo by Craig Lewis, U.S. Fish and Wildlife Service



Figure 6. A doe has a longer snout and rectangular body compared to a fawn. Photo by Karan A. Rawlins, University of Georgia, Bugwood.org

- **Two deer in a group.** If two fawns are together, it is easy to mistake the buck fawn for an adult doe. The buck fawn typically will be larger than the doe fawn but will retain the body and head shape of a fawn. If you are unable to determine whether it is a buck fawn or an adult doe, wait to shoot until you can make a positive identification.

Physical Characteristics

A whitetail's physical appearance changes with maturity and can be used to estimate age. Does attain maximum body growth in 3½ years, whereas a buck becomes full-grown in 5½ to 6½ years. The following descriptions serve as guides for identifying the age of live bucks in the field.

Immature Buck (1½ to 3½ Years). Yearling bucks (Figure 7) resemble a “doe with antlers.”

These 1½-year bucks tend to have thin hindquarters and long, thin legs. They are like a teenage boy who has not reached full height or “filled in.” Yearlings are not as secretive as adults. Yearlings are often the first to enter food plots and tend to be in the vicinity of doe family groups. Their antlers are variable – anything from a spike to eight points. Regardless of the size and number of points, the antlers will be thin and spindly with a relatively narrow spread between antlers.



Figure 7. Yearling bucks have thin hindquarters and long, thin legs.
Photo by Charles H. Warren, NBII.gov

The average size of a buck's antlers doubles between 1½ and 2½ years of age. The 2½-year-olds appear similar to yearlings. Their racks are only about 60 percent of the size they will be at 5½ to 6½ years of age.

A 3½-year buck can be mistaken for a mature deer. The buck's neck is thickly muscled during the rut, but the neck and shoulders are distinct from each other. They lack the body mass of an older buck. Their rack may look impressive, but the inside spread

barely reaches outside the ears (Figure 8). Their antlers are still only about 75 percent of their maximum growth.



Figure 8. The inside antler spread of this buck barely reaches outside the ears.

Middle-Aged Buck (4½ to 6½ Years). A 4½-year buck has attained skeletal maturity. They display almost all the adult body mass expected to be seen in a fully mature deer. Their rumps appear full and rounded. During the rut, their neck is fully muscled and blends into the shoulders. Their waistline is as deep as the chest. Their stomach and back do not sag, and their jaw skin is tight. A 4½-year-old buck has achieved about 90 percent of his antler size in terms of number of points and inside spread (Figure 9).



Figure 9. A 4½-year buck has achieved about 90 percent of his antler size. *Photo by N. and M.J. Mishler, U.S. Fish and Wildlife Service*

A buck that is 5½ to 6½ years has achieved maximum antler growth. The beam circumference of the antlers continues to increase until the buck's teeth wear down at > 7½ years. During the rut, their neck blends completely into the shoulders. Their front half appears as one large mass. Their chest and body are thick, giving the illusion of shorter legs.

Most exhibit squinty eyes and a sagging belly and back. These bucks may exhibit battle scars – torn ears, broken antler tines and scratched necks.

Mature Buck (> 7½ Years). Bucks older than 7½ years often display a loss in muscle mass in the neck, a swayed back and a potbelly. Skin is loose on the neck and head areas. Some battle scars may be visible. Older bucks can be mistaken for younger animals because of their physical appearance. Their antlers degrade with advancing age. In hunted populations, the mean age of bucks typically is less than 3 years. Very few live 8 years, whereas captive-raised deer can live 20 years.

Antler Size Characteristics

Antler size characteristics used in combination with body characteristics provide a good field estimate of a buck's age. In general, antler growth increases with age until a buck approaches 6 or 7 years. Yearlings tend to have smaller antlers than mature deer. Antler characteristics, such as inside spread or number of points (Figure 10), can help identify yearling bucks, but antler growth can be highly variable among individual deer. Research in South Texas indicates antler growth at 1½ years of age does not predict antler development at maturity. A 1½-year-old spike buck may exhibit eight or more points at maturity. In some populations, a mature buck's antlers may never exceed eight points and a 15-inch inside spread. A combination of antler and body characteristics offers the best indications for estimating a buck's age in the field.

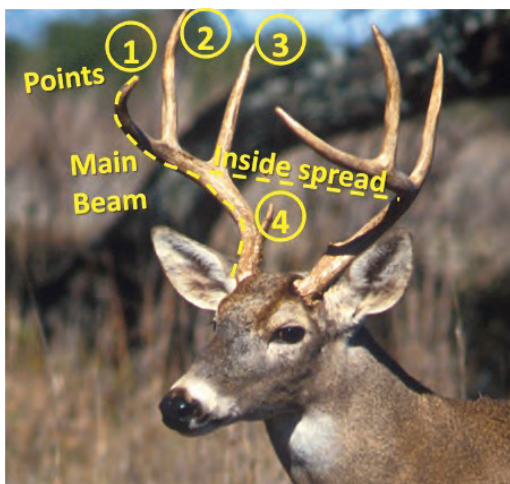


Figure 10. More points, wider spread and longer main beam are indications of a mature buck. Photo by Scott Bauer, USDA Agricultural Research Service, Bugwood.org

For most of Arkansas, a legal buck must have both antlers shorter than two inches (button buck) or have three or more points on one side of his rack. Some hunting clubs and wildlife management areas apply additional antler regulations, such as a minimum inside spread or beam length. Few yearling bucks exceed a 12- to 13-inch inside spread. Applying such restrictions is intended to give deer more time to mature and achieve a larger antler size. Check with the Arkansas Game and Fish Commission (www.agfc.com) for current rules and regulations.

In the field, antler size can be tricky to judge. Using a buck's ears can provide rough estimates of antler dimensions to make better age estimates (Figure 11).

- **Width between ears.** The width between a buck's ears can be used to estimate the inside spread of antlers. When relaxed, the normal tip-to-tip distance between ears on a buck is about 15 inches. When the ears are pointed forward in an alarmed position, the tip-to-tip ear width is about 12 inches.
- **Ear length.** A mature buck's ear is 6 to 7 inches from base to tip. Ear length can help estimate the length of an antler tine. Estimating beam length is difficult and requires both front and side views. If the inside spread of the antler is > 15 inches and, from the side, the antler projects forward beyond the midpoint between the eyes and the tip of the nose, then the beam length likely exceeds 20 inches.



Figure 11. Using a buck's ears provides a rough estimate of antler dimensions and age. Photo by the U.S. Fish and Wildlife Service

- **Number of antler points.** Antler points need to be viewed from various vantage points to be fully seen. Brow tines are easiest to see from the frontal position. When viewing from the side, count the number of antler points. It is likely that the brow tines will not be visible from this position.

Tooth Replacement and Wear

The age of a harvested buck or doe can be estimated from its teeth. These findings can be cross-checked with age estimates made before harvest while in the field. Age estimation is more accurate for younger age classes where tooth replacement is less subjective and more visible. Once deer attain permanent teeth, tooth wear is used to estimate age. A quick way to separate yearlings from adult deer is counting the peaks on the third premolar (Figure 12). Yearlings have three peaks on the third premolar while adult deer only have two. Tooth wear varies between individuals and can be difficult to interpret, particularly for deer older than 3½ years.

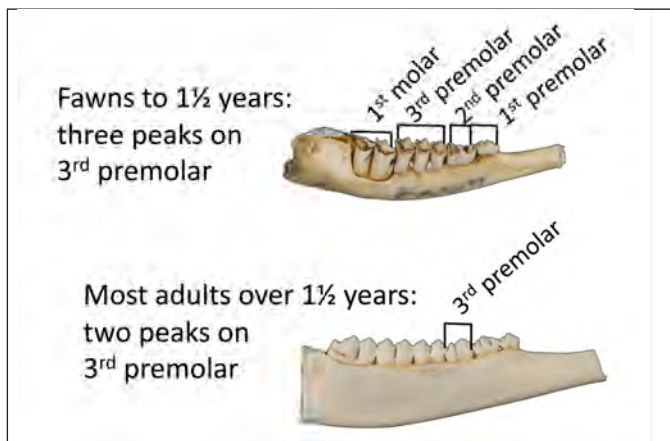


Figure 12. Teeth structure comparing fawns and adult deer.

Following is a brief description of aging deer using tooth eruption and wear patterns. These photos show the condition of deer teeth during the hunting season. Jawbones were collected from deer harvested in southern Arkansas.

- **Fawn (< 1 year).** Only four or five cheek teeth are showing. The third premolar has three cusps (Figure 13).
- **1½ years.** Six teeth are present on the lower jawbone. The third permanent molar may be (1) worn with a new tooth erupting underneath the gum, or (2) the new tooth has

already erupted with two cusps (Figure 14). The last cusp of the third molar sits close to the gum line. The first three teeth (premolars) may look dull, but check the remaining three molars (fourth through sixth teeth) for sharp points. This is the sign of a young deer. (Sometimes worn premolars fool people into thinking the deer is older than it actually is.)

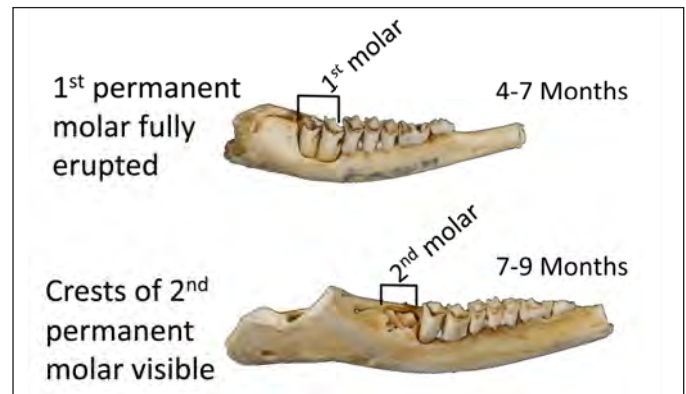


Figure 13. Teeth structure for identifying fawns.

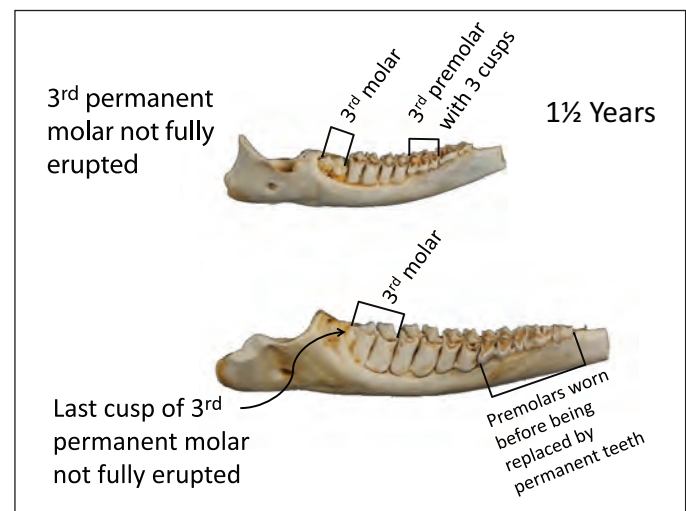


Figure 14. Teeth structure for identifying 1½-year deer.

- **2½ years.** Because all permanent teeth have erupted by this age, aging older deer relies on comparing wear patterns observed for the lingual crest, enamel and dentine (Figure 15).

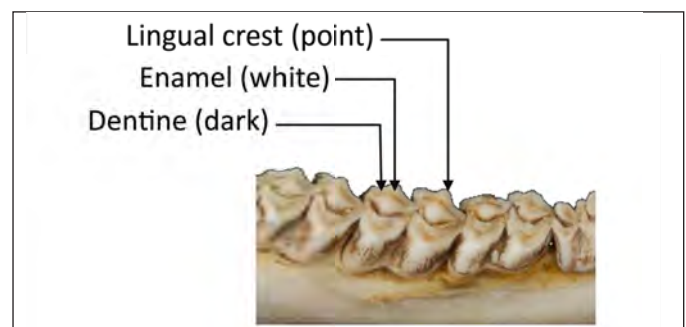


Figure 15. Terms for aging teeth in deer > 1½ years to detect wear patterns.

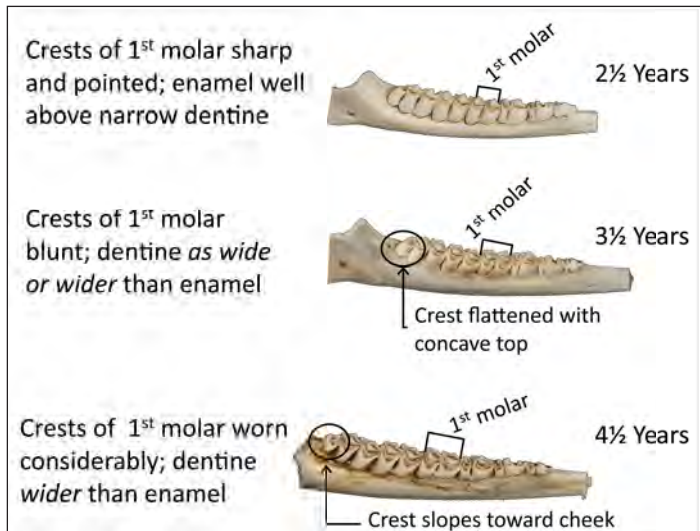


Figure 16. Aging 2½-, 3½- and 4½-year deer based on teeth wear.

For 2½-year deer (Figure 16), the first, second and third premolars all have two cusps. The first molar is sharp and shows little or no wear. The last cusp of the third molar sits well above the gum line. Some wear may be visible on the last cusp.

- **3½ years.** On the first, second and third molars, the lingual crests closest to the tongue show signs of wear (Figure 16). The last cusp of the third molar is flattened.
- **4½ years.** Teeth continue to wear for these older deer. The lingual crests closest to the tongue wear down with each passing year. The dentine (darker portions of the tooth) becomes thicker than the enamel (whiter portions of the tooth) (Figure 16).
- **5½ years and older.** It becomes difficult to age deer as molars wear closer to the gum. Teeth become more cupped with age (Figure 17).



Figure 17. Teeth from deer $\geq 5\frac{1}{2}$ years can be worn flat nearly to the gums and difficult to age.

Hunter as Manager

Ultimately, it is the deer hunter who is the deer manager of the local herd. Selective harvest is the responsibility of all hunters who must consider that

with each pull of the trigger, they contribute to the future deer population in Arkansas. Shooting does where deer are overabundant and allowing a young buck a couple years to mature (Figure 18) will result in improved deer health and antler growth for the deer population.

Developing a harvest strategy can improve herd health and antler size on large acreages (e.g., > 2,000 acres). Managing deer on smaller acreages is challenging. A passed 2½-year buck with antler growth potential may be harvested on an adjoining property. In these instances, adjoining property owners would benefit from working together as in a cooperative and agreeing upon selective harvest parameters for improving the deer herd in their area.



Figure 18. This buck could be harvested legally in most of Arkansas, but letting it grow a few years will result in bigger antlers. Photo by Alfred Viola, Northeastern University, Bugwood.org

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