

Ageing Deer

Other than the hum of wasps concentrated in a corner of the blind attempting to escape the brisk December air, the hunter sat silently awaiting the arrival of daylight and a chance to take a nice buck.

As the predawn horizon erupted into a pastel orange-colored skyline, images began to take shape. As the sun peaked above the horizon, the area came alive with a cacophony of bird songs. Collared peccary attracted his attention as they grappled for superiority until out of nowhere a heavy-beamed ten-point appeared.

With a drooping belly, swayed back, and brisket low on its chest, it appeared to be a mature buck. Meticulously placing his ought six onto the window sill; he placed the crosshairs on the animal's shoulder and gently squeezed the trigger. The brisance of the shot temporarily interrupted the placid morning as the buck plummeted to the red sandy soil.

Upon arriving at camp the sportsman was congratulated by the manager, but not before he examined its lower mandible, verifying that the animal was at least six years old and a fine specimen to shoot.

Collecting the age of harvested deer allows managers the opportunity to consolidate morphological characteristics such as weight, reproductive data and antler size, into particular age groups in order to obtain information upon which management decisions can be made.

For example, when a manager recommends to a landowner that the number of protein feeding stations should be doubled, he is requesting a substantial increase in overhead cost that

must be justified. The outcome of this activity can be measured by comparing antler size and body weight of deer by age class collected prior to and after the project is completed.

The ability to age deer correctly is important, but the conventional method of aging deer based on tooth wear and replacement is not as accurate as we would like it to be. The initial concept of aging deer based on the lower mandible originated in New York state where after examining 18,000 lower jaw bones of deer, Bill Severinghaus and fellow researcher Jack Tanck developed a system based on tooth eruption, wear, and age that remains the standard for aging deer and is one technique that can be employed by sportsmen in the field with a fair degree of accuracy.

Although the Severinghaus and Tanck aging technique remains part of virtually every present day deer management program, it like all wildlife management tools, has been critiqued and in some cases improved.

In order to understand the most widely used aging technique, a little bit of biology must be reviewed.

First of all, adult deer have 32 teeth. Eight of the teeth are referred to as incisors or front teeth. Deer have no upper incisors, thus when they browse, they virtually shred the branch they are feeding upon, unlike the cottontail rabbit that is equipped with upper and lower incisors and make a clean cut on the plants they consume. Twenty-four molars are located six per side on top and bottom of the jaw. For aging deer, the bottom jaw is used.

Beginning with the molar closest to the incisors, they are numbered one through six. All molars erupt sequentially beginning with molar number one. More importantly, molar number

three initially exhibits three visible lingual crests or mountain ridge-like structures located on the side closest to the tongue.

Molars one through three, referred to as milk teeth, are replaced at 18 to 20 months.

Assuming we are looking at a jaw that was obtained from a deer during the fall-winter period, the first step in aging a jaw is to count molars in the lower jaw. If five molars or less are present, the deer is six months of age; if, however, six molars are present, and molar number three has three lingual crests it is 1.5-years-old.

The determination of fawn and yearling age classes, based on tooth replacement, is precise. However, many folks will mistake a yearling jaw for a six-year-old because of the excessive wear on the premolars, particularly the third one which can virtually be cupped out just prior to being replaced at 18 to 20 months.

When estimating the age of deer at two years old or older, precision declines, even amongst professionals, as tooth wear varies amongst individuals for a variety of reasons.

When aging deer that are two years of age or older, one must focus on the fourth molar, which is the oldest molar in the animal's jaw. It develops in fawns and remains for the duration of the animal's life. Molars four through six are permanent and never replaced.

More specifically, wear or erosion of the lingual crest, which is composed of white-colored enamel compared to the visible width of the coffee-colored dentine, becomes important to determining the age of older animals. For example, the fourth molar of a 2.5-year-old deer is characterized by sharp and distinct lingual crests with enamel wider than the dentine on molars

four through six. It is also important to note that molar number three has only two crests. And, molar number six has a sharp, semi-pointed back cusp.

A 3.5-year-old deer is characterized by blunt lingual crest and dentine as wide as or wider than the enamel on molar number four. And, the back cusp of molar number six is starting to slant down somewhat from wear.

A 4.5-year-old deer is characterized by rounded lingual crest and dentine twice as wide as the enamel on molar number four. The lingual crest of molar five is somewhat rounded similar to molar four at 3.5 years. The back cusp of molar six slopes at an obvious angle downward on the cheek side.

The lingual crest on molar number four of a 5.5-year-old deer is almost worn away and rounded on the fifth molar, and the dentine is wider than the enamel on molar number six.

At six years, the infundibulum or enamel crest located in the middle of molar number four is absent and the entire tooth is cupped out and appears as two coffee-colored circles. The infundibulum of molar number five is present but worn down much like molar four one year earlier.

Criteria to age older jaws are available but for management purposes anything at six or older can be classified simply as 6.5+.

The concern about aging deer based on tooth wear and replacement remains to be accuracy. When it comes to aging deer up to 1.5 years of age, the technique is spot on, but accuracy drops in deer two years old or older. John Lewis and his associated at the Caesar Kleberg Wildlife Research Institute investigated the accuracy of the Severinghaus Technique by

inviting six experienced professional biologists to age 134 known age jaws that were two years old or older. Based on their findings, the biologist aged only 49% of the jaws correctly. Although the biologist tended to under age deer that were over three years old, they collectively aged all deer to within plus or minus one year.

Another technique employed to age deer teeth developed by John Matson is referred to as the cementum annuli method. This is accomplished by removing one of the incisors and preparing a very thin stained slice of the root of the tooth, and counting the rings of cementum under a microscope – just like counting the rings on a tree. Long thought to be the most accurate aging technique Lewis and his colleagues submitted 232 known age incisors to a lab for analysis and discovered a 61% accuracy with 92% of the teeth aged correctly to within plus or minus one year.

More recently, Dr Susan Cooper presented the AgriLife Dentine Method of aging deer she helped develop at the AgriLife and Research Center in Uvalde Texas.

By obtaining a digital measurement of the width of the dentine on the fourth molar from a sample of 141 known age buck jaws, the technique predicted the correct age for 61 percent of young bucks aged 2.5 to 3.5 years; 53 percent of mature bucks aged 4.5 to 6.5 years, and 25 percent of old bucks aged 7.5 to 8.5 years. All animals were correctly aged within one year of their actual known age.

Regardless the technique employed, determining the exact age of a deer remains challenging. For this reason I feel it is extremely beneficial to continue the use of the Severinghaus technique which has been employed for over 30 years. By doing so, we can analyze deer harvest data with some consistency by simply lumping the animals into wear categories that we refer to as age classes.

In other words, if every one ages deer jaws based on the collectively agreed upon pattern of wear, the data can be compared between operations, making it useful in the management decision process. It is also important to note that the animal itself if available can be employed to justify the age of that particular animal.

We have come a long way in deer management, but we must realize that it remains as much an art as it is a science, and it's only when the two are combined that we come at least closer to fitting all the pieces of the deer management puzzle together.

Fig. 1. In order to estimate a deer's age based on tooth wear, one must be knowledgeable of the physical attributes of a whitetails teeth.

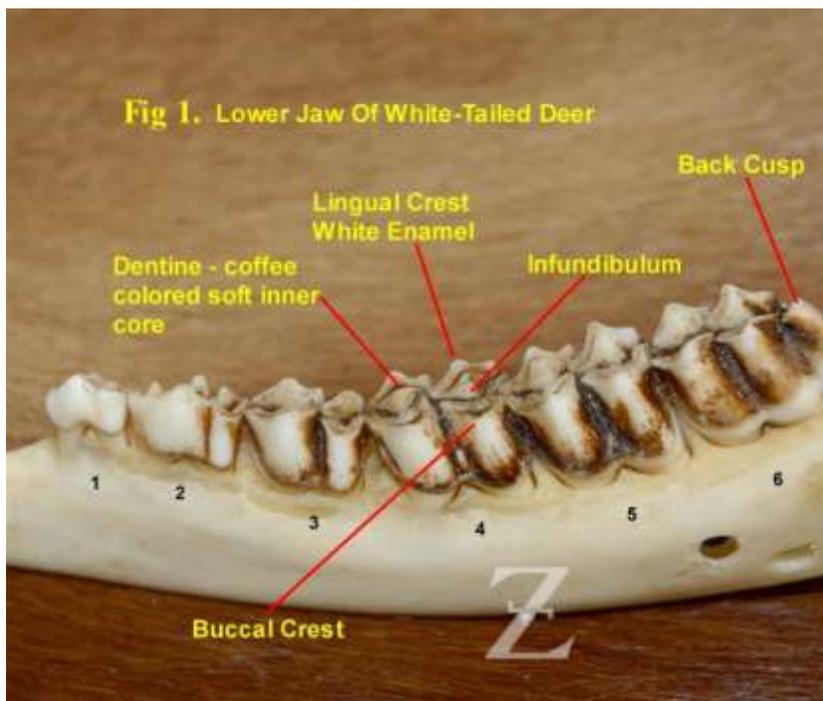


Fig. 2. On the lower jaw of a fawn five teeth or less are present.

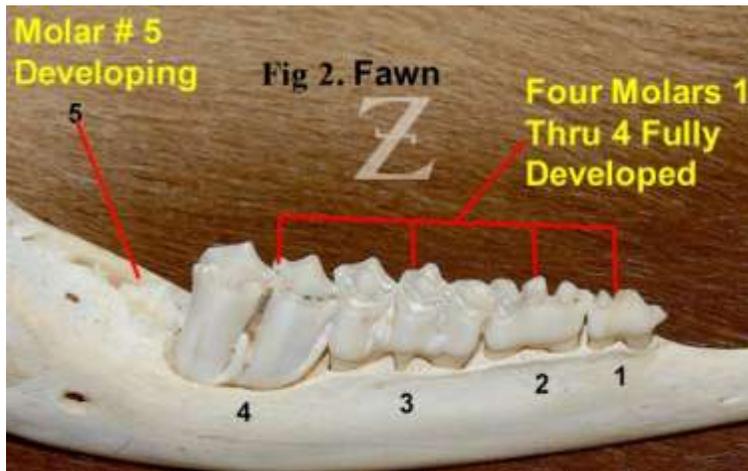


Fig. 3. At 1.2 years six molars are present but the third molar has three obvious lingual crests.

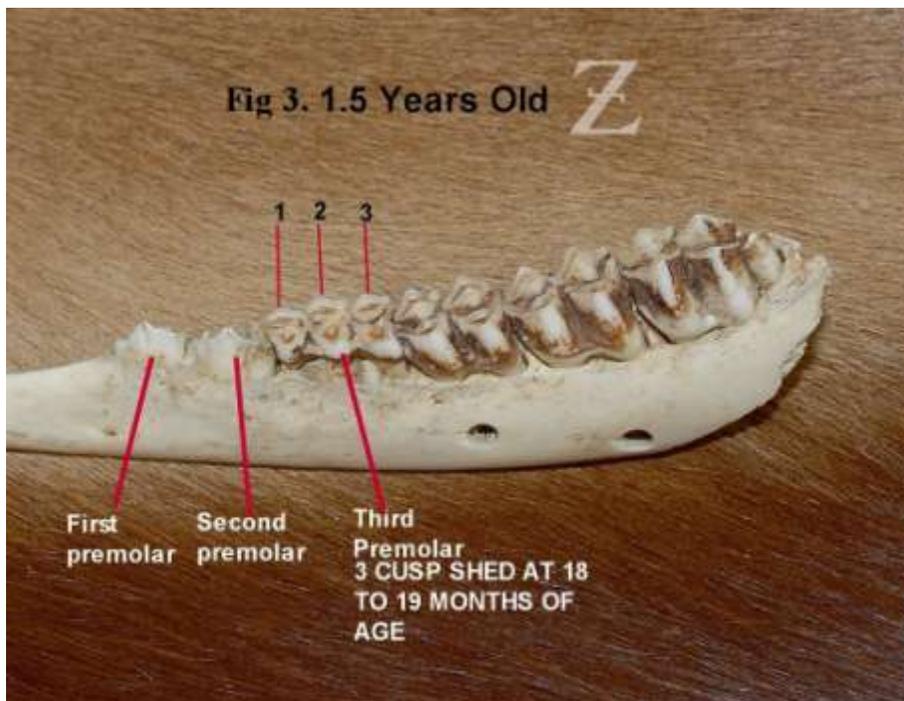


Fig. 4. At 2.5, the third premolar exhibits only two crests and the lingual crests of the fourth molar remain distinctly sharp.



Fig. 5. At 3.5, the lingual crest of molar four begins to erode exposing more chocolate colored dentine.

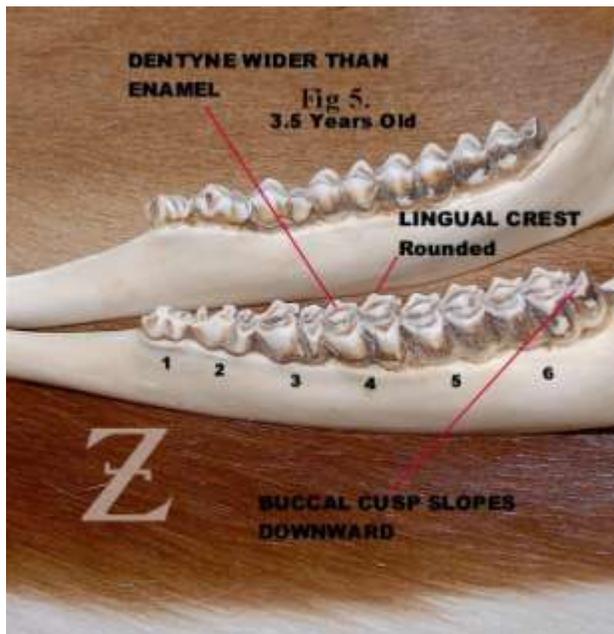


Fig. 6. At 4.5, the lingual crest of molar four is rounded, exposing twice as much dentine as enamel.

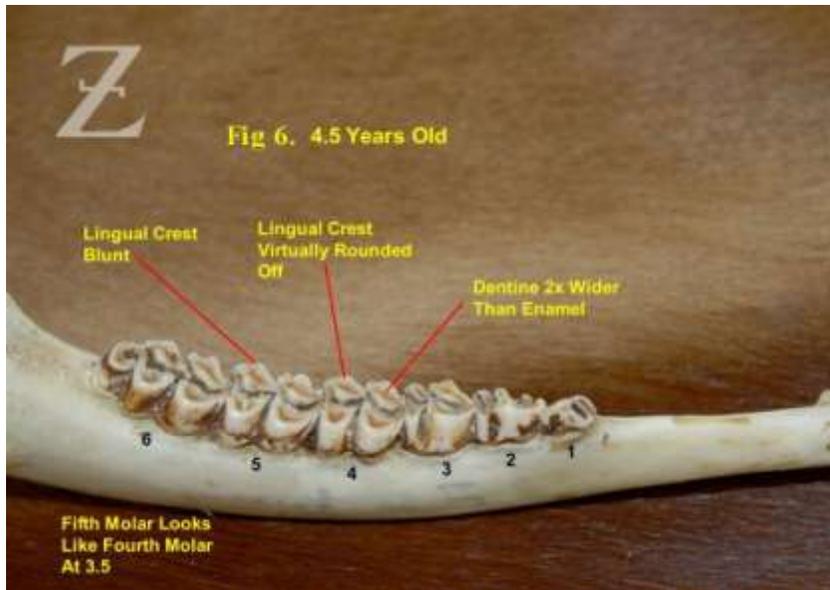


Fig. 7. At 5.5 years, the lingual crest of molar number four is virtually gone, with the extremely worn infundibulum remaining in the center of the molar.

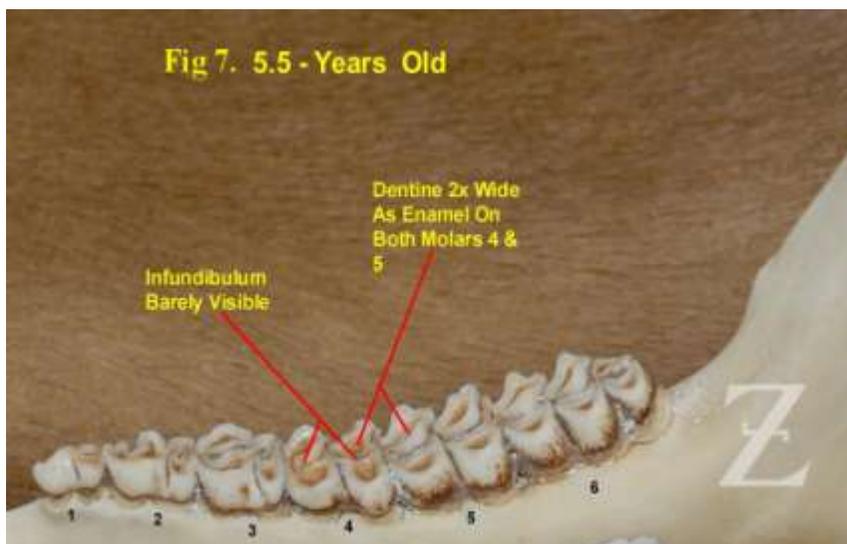


Fig. 8. At 6.5 years, molar number four is completely cupped out, exposing only dentine.

