



MT200107 AG 10/2001

Determining the Age of a Deer

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Many indicators of deer quality and welfare are related to age. Scrutiny of a deer's teeth—particularly tooth replacement and wear—is one way for landowners and sportsmen to estimate the age of a deer.

THE age of a deer is of interest to both landowners and hunters. By noting the age of deer harvested on their land and comparing that to antler development and other deer condition characteristics, land managers become aware of when they need to improve forage conditions or change harvest strategies. The purpose of this guide is to assist those interested in aging deer using replacement and wear techniques.

Tooth eruption and wear in deer are closely related to the age of the animal. Deer shed and replace milk teeth with permanent teeth at consistent ages. A deer's age, unlike the age of sheep, goats and cattle, cannot be determined by examining front teeth replacement.

As a deer grows older, certain portions of its permanent teeth, particularly crests of its jaw teeth, wear and expose increasing amounts of dark dentine. Biologists observed this phenomenon and, working with deer of known ages, developed criteria for characterizing age classes based on tooth replacement and wear. They identified most age classes on the basis of the relative amount of exposed dentine on the lingual crests (next to the tongue) of molar teeth.

Recent work in Montana has shown that the tooth eruption and wear method is not as reliable as once thought. The study found accuracy to the exact year was low after 2 years of

age, but that accuracy within ± 1 year was achieved at least 90% of the time with mule deer. This method still provides the best aging technique for most landowners and sportsmen.

A more accurate method involves using a cross section of the root of an incisor tooth. This procedure is done for a fee in laboratories with expertise in the methodology.

This guide is meant to give a general idea of the age of a deer. Mule deer are about two to six months slower-developing than white-tailed deer. Also, males will show more wear for the same age compared to females.

Interest in deer age is more than simple curiosity because many indicators of deer quality and welfare are related to age. If the largest antlered deer are only $3\frac{1}{2}$ or $4\frac{1}{2}$ years old, they are not living long enough to reach their maximum antler development, which occurs at $6\frac{1}{2}$ to $8\frac{1}{2}$ years. If older bucks ($6\frac{1}{2}$ to $8\frac{1}{2}$ years) are small-antlered, we know there is a problem with nutrition or genetics. Large antlers are dependent on good nutrition, older age and genes for large antlers. Rarely are genetics the factor that results in smaller-antlered bucks in a given deer herd.

On nearly all deer ranges in Montana, food supply is the most critical element in antler development. When deer numbers are not in balance with available food, inadequate nutrition causes poor body conditions,

reduced reproductive efficiency and undesirable antler characteristics. Drought can cause the same results regardless of the number of deer. The severity of the impact is greatest on growing animals.

Body growth needs take priority over antler growth or reproduction in deer of all ages. This means that food shortages affect antler size in males and fawn production and lactation in females before body weights decrease significantly.

The massiveness of antlers generally increases with age but is strongly influenced by nutrition. The number of antler points may increase with age, but varies considerably with nutritional conditions. A well-fed yearling could be a 4 x 4 buck, but a poorly fed 7-year-old could be a 2 x 2. Large antlers at an early age reflect good food conditions.

Fawns have the highest nutritional needs and are more sensitive to nutritional deficiencies than any other age class. Body weight as a measure of growth of fawns generally reflects food availability because fawn weight is influenced by both the doe's lactation and fawn's feeding.

Of the deer harvested each year, yearlings ($1\frac{1}{2}$ years) are the most important indicators of herd nutrition and welfare. Adequate numbers are usually harvested and since they are rapidly growing animals, inadequacies

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Key Words

Terms used when determining a deer's age by tooth replacement and wear.

Premolars	The rather narrow jaw teeth in front of the molars adapted to cutting food—Teeth 1, 2 and 3.
Molars	The large jaw teeth adapted for grinding food—Teeth 4, 5 and 6.
Milk teeth	Temporary teeth in young animals that are shed by 2 years of age.
Permanent teeth	Teeth that replace milk teeth and remain throughout an animal's life.
Gum line	Point to which flesh of the gum covers a tooth. Food stains are deposited above the gum.
Lingual crests	Tooth ridges running from front to back adjacent to the tongue.
Cusps	The points or projections on the surface of a tooth.
Infundibulum	The funnel-shaped depression in the central crown of a tooth between crests. Exterior surfaces will be stained dark.
Enamel	The hard white outer coat of a tooth.
Dentine	The softer inner core of a tooth, much darker in color than the enamel.

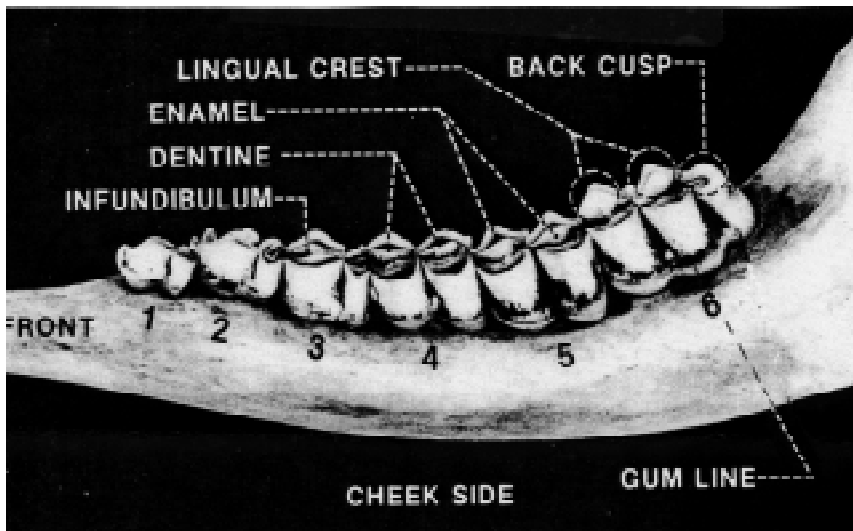
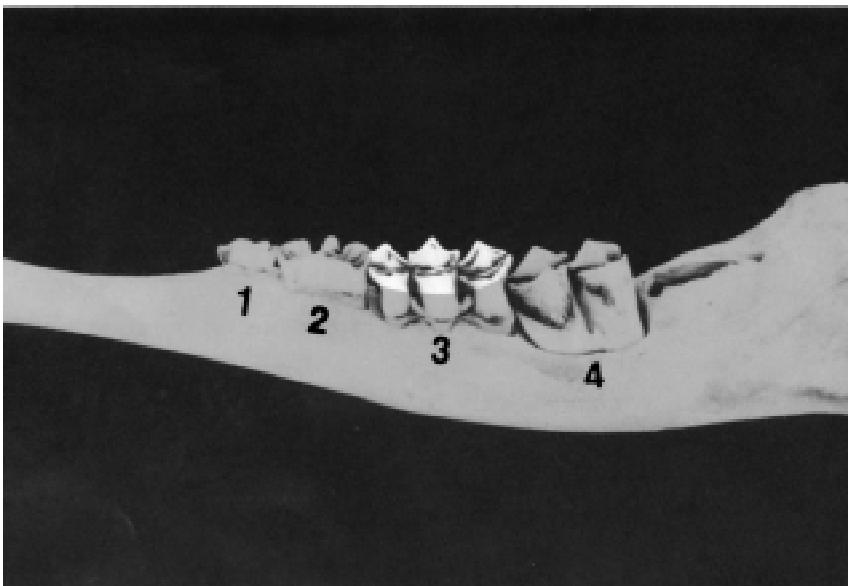


Fig. 1.

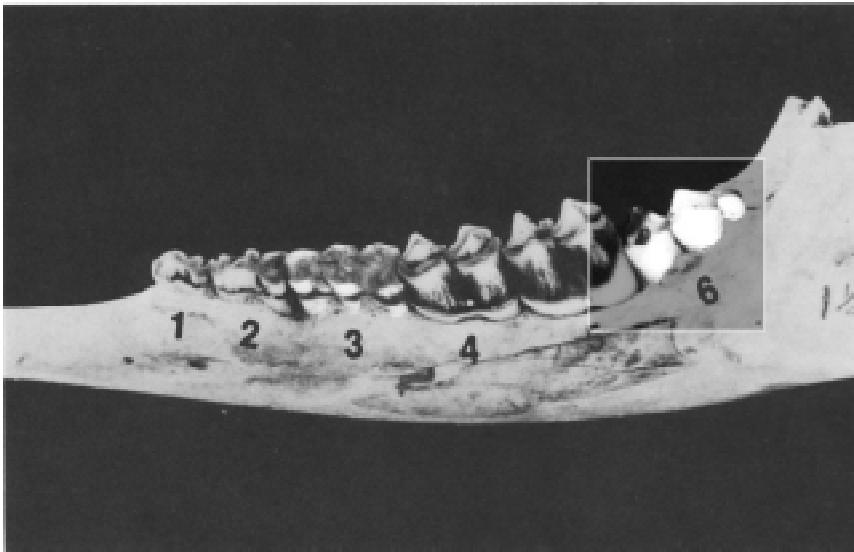
The major tooth parts used in determining a deer's age are shown in this three-quarters top view of a deer's jaw.



1/2 Year

Fig. 2.

Fewer than six teeth are present in the jaw. Teeth 1, 2 and 3 are temporary (milk) teeth. Tooth 3 has three cusps. Tooth 4 is the first permanent tooth to erupt.

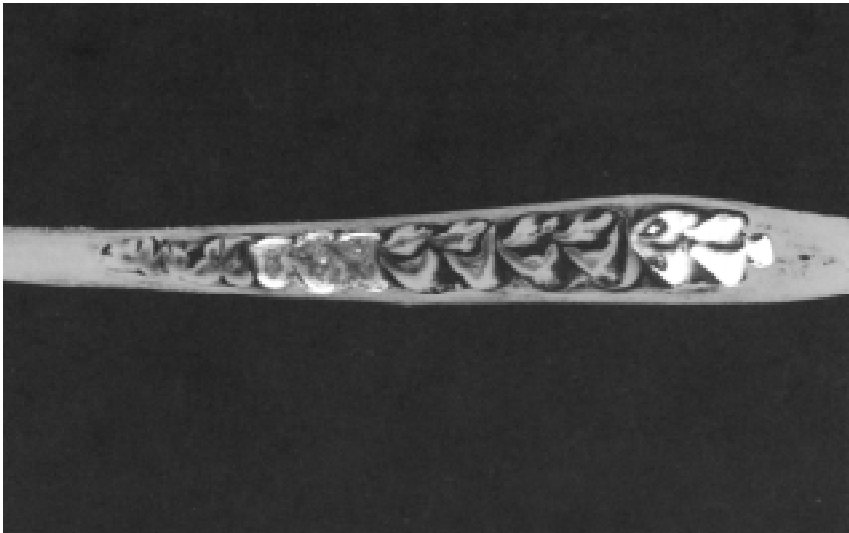


1-1/2 Years

Fig. 3.

Six teeth are present in the jaw.

Tooth 6: Not fully erupted through the gum (gum line high on back cusp).



Caution As shown in Figs. 4 and 5, there may be either of two conditions for the premolars—

Fig. 4.

Tooth 3: A milk tooth with three cusps may be heavily worn (less than 1 year, 6 months of age). This is the most common condition in white-tailed deer. Mule deer lose Tooth 3 at about 24 months.

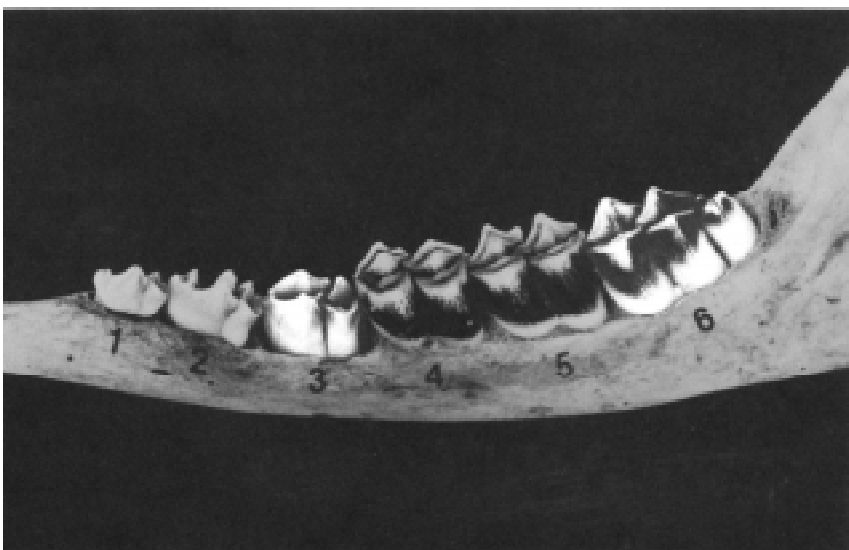
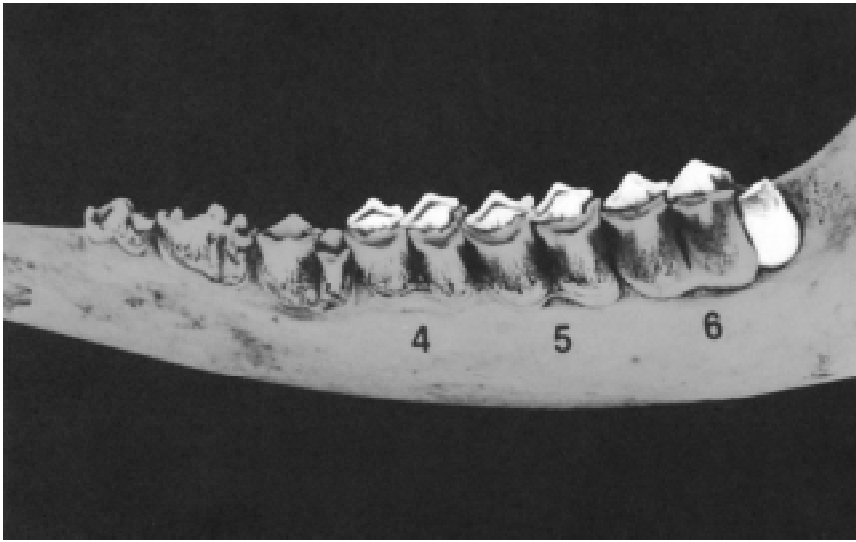


Fig. 5.

Tooth 3: A permanent tooth with two cusps may have replaced its milk tooth. This two-part tooth is white or much less stained than adjacent Tooth 4 (1 year, 6 months of age or older in white-tailed deer; mule deer have a permanent Tooth 3 at about 24 months).



2-1/2 Years

Fig. 6.

Lingual crests on all molars are sharp.

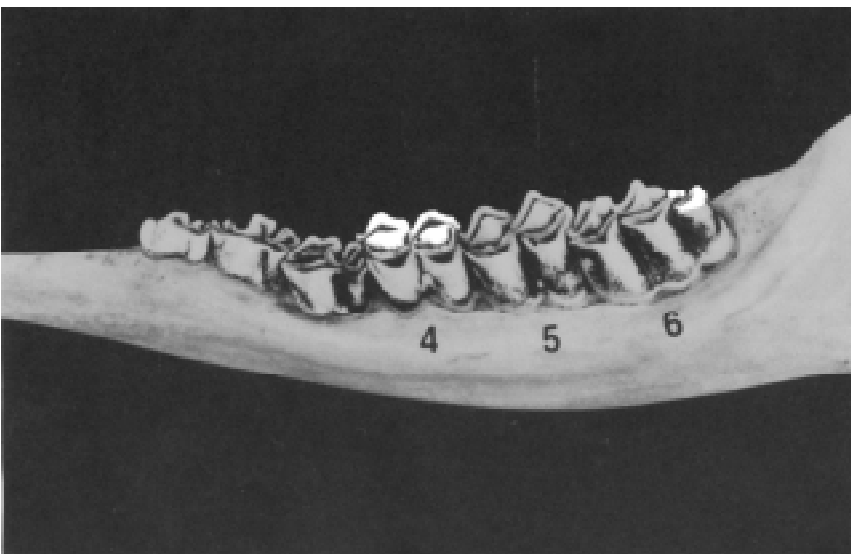
Tooth 6: Gum line is high on back cusp. No wear on back cusp.



Fig. 7.

Tooth 4: Lingual crest has enamel well above narrow dentine of crest.

Tooth 6: Wear on back cusp is very slight (dentine, if showing, in narrow line).



3-1/2 Years

Fig. 8.

Tooth 4: Lingual crests are blunt.

Tooth 6: Back cusp is worn to a definite concavity.

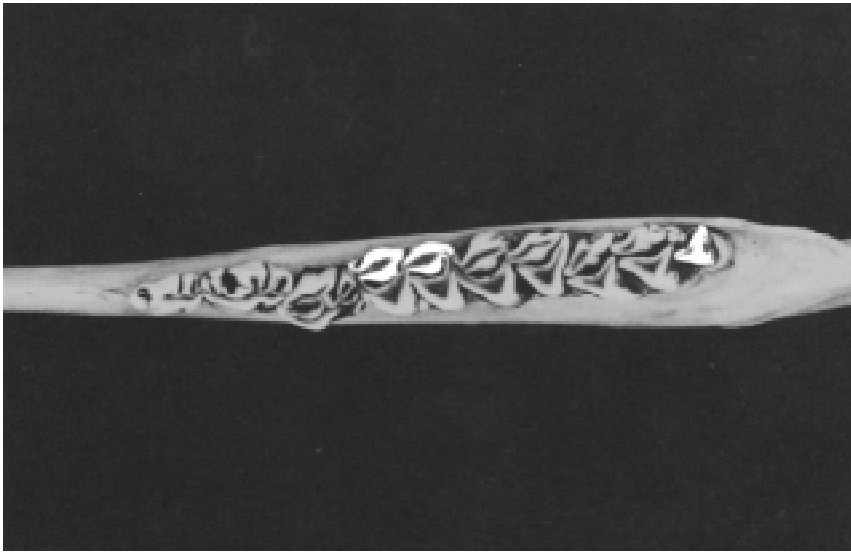
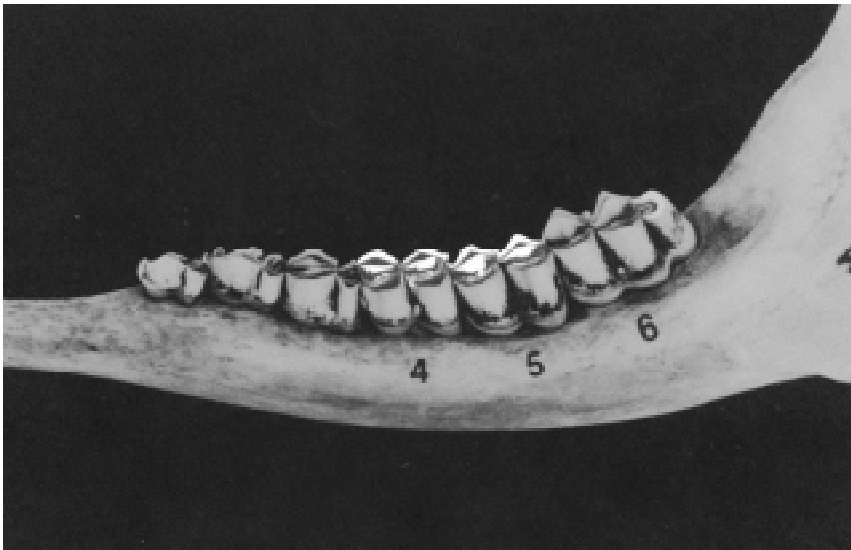


Fig. 9.

Tooth 4: Dark dentine line in lingual crests is wider than the enamel bordering it, but not in Tooth 5 or Tooth 6.



4-1/2 Years

Fig. 10.

Tooth 4: Lingual crests are almost worn away.

Tooth 5: Lingual crests are blunt.

Tooth 6: Back cusp is worn so badly that the outward surface slopes downward.

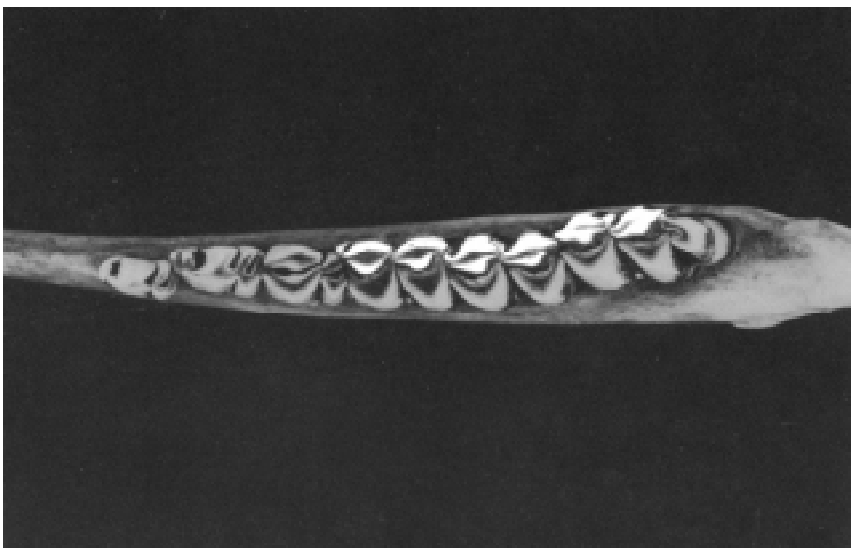
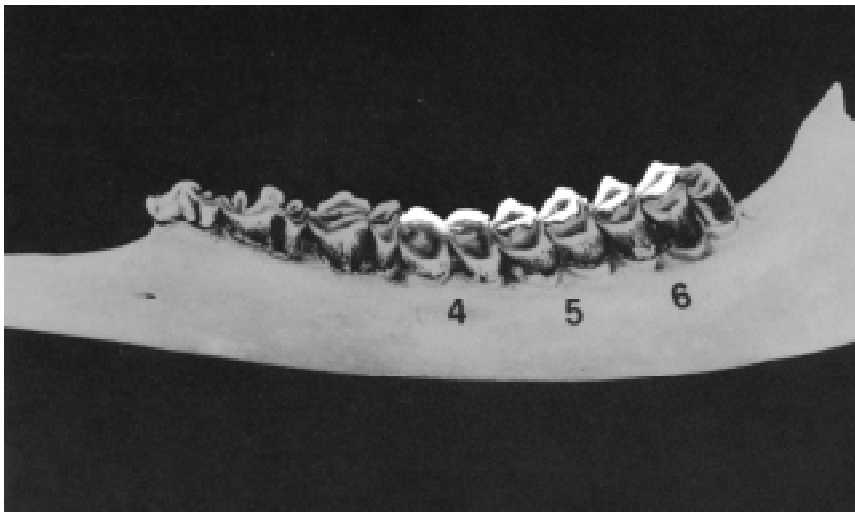


Fig. 11.

Tooth 4: Dark dentine line in lingual crest is almost twice as wide as the enamel bordering it.

Tooth 5: Dentine in lingual crest is wider than enamel.

Tooth 6: Dentine in lingual crest is about as wide as enamel.



5-1/2 Years

Fig. 12.

Tooth 4 and Tooth 5: Lingual crests are worn away to rounded ridges.

Tooth 6: Lingual crests are blunt.

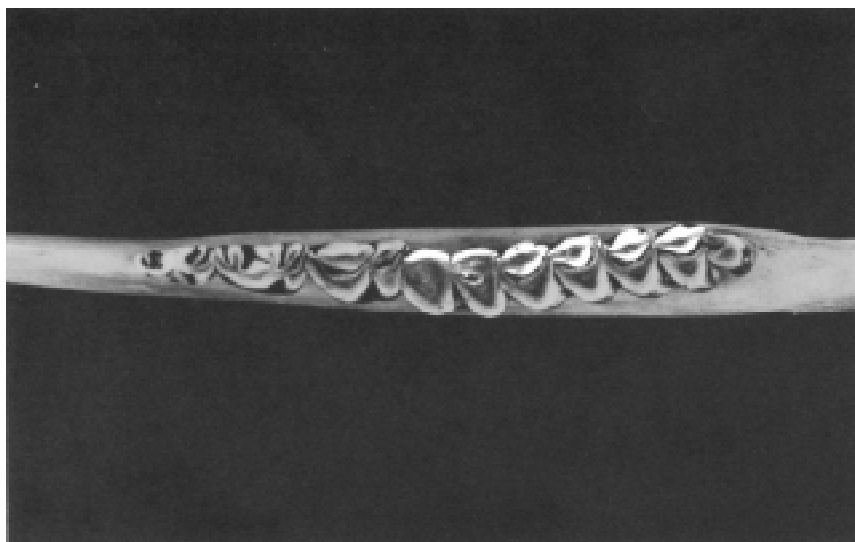


Fig. 13.

Tooth 4, Tooth 5 and Tooth 6: Dark dentine line is wider than the enamel bordering it.



6-1/2 Years

Fig. 14.

Tooth 4: Crown is worn smooth.

Tooth 2 and Tooth 3: Crown is heavily worn. This is first time for heavy wear on permanent premolars.

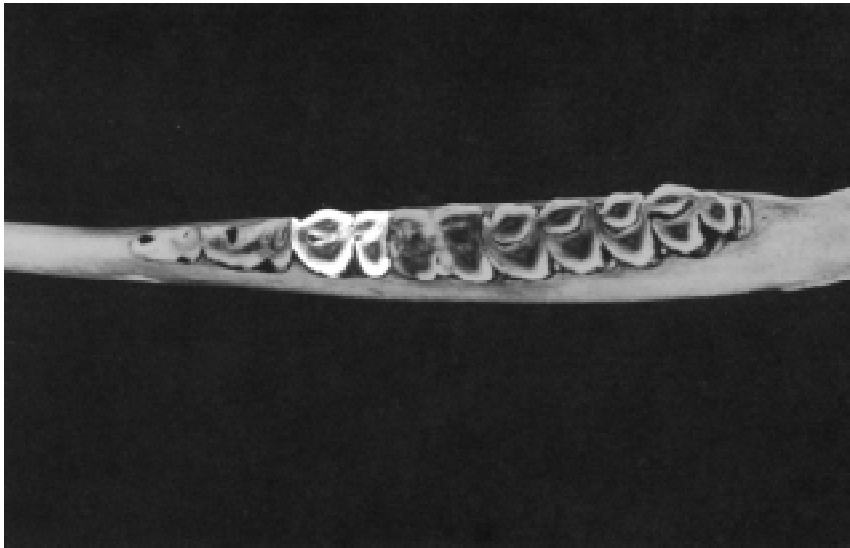
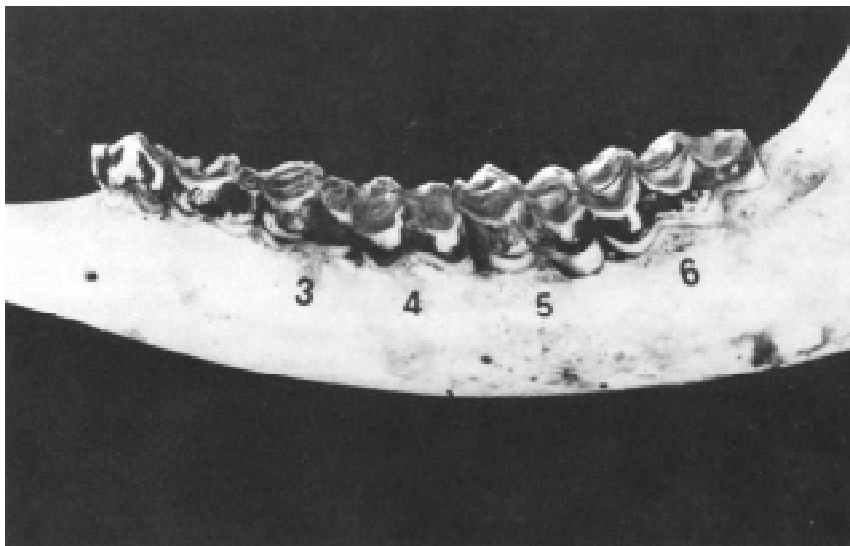


Fig. 15.
Tooth 3: Infundibulum is a small triangular hole.

Caution Heavily worn two-cusped permanent Tooth 3 should not be confused with similar conditions on three-cusped temporary Tooth 3 in 1-1/2-year-old deer. (Compare Fig. 15 with Figs. 4 and 5.)



7-1/2 Years

Fig. 16.
Tooth 4: Crown is worn smooth.
Tooth 5: Crown is almost worn smooth.
Tooth 6: Lingual crests are gone.



Fig. 17.
Tooth 3 and Tooth 5: Infundibulum is almost gone.
Tooth 6: Infundibulum is a narrow, crescent-shaped line with some depth.

[Continued; see
Wear and Replacement, p. 8]

[The Age of a Deer, *continued*]

are magnified in this age class.

In yearlings, the percentage or relative number of spikes (unbranched antlers) taken is an indicator of nutritional conditions if harvesting spikes is not a major hunting objective. A large percentage of spikes indicates a food shortage from year to year, although it might be a short-term effect of drought. Repetitive high spike numbers indicate long-term habitat deficiencies or severe animal-to-animal competition. A disproportionate number of yearling males compared to mature bucks (4 years and older) taken during the hunting

season indicates a deer herd with heavy buck harvest and/or recent high production of young.

Similar proportions of yearlings to mature does would have similar implications. Most commonly the harvest records show a high proportion of old-age does, indicating light hunting pressure on antlerless animals.

Deer managers should keep accurate records of ages for all deer harvested to determine the nutritional effects of practices such as brush control and livestock management or levels of deer harvest. Without such records, management cannot be evaluated accurately.

[Wear and replacement, *continued*]

8-1/2 – 12-1/2 Years

[*Not pictured*] Wear on Teeth 4, 5 and 6 is greater than above, but in no instance are all teeth flat. Usually there is evidence of lingual crests remaining, at least on Tooth 6. Extreme variation in wear may occur, especially in Teeth 3 and 4. Presence or absence of incisors is not a valid criterion of this age group.

Old Age

[*Not pictured*] No lingual crests present. Teeth 4, 5 and 6 frequently hollowed out or entirely flat. Teeth may be missing or show extremely uneven wear, and some shrinking away of bone around roots of teeth may have occurred.

ACKNOWLEDGMENTS

Much of the information in this MontGuide was taken from a Texas Agricultural Extension Service publication, "The Age of a Deer," by Charles W. Ramsey and Milo J. Shult.

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File under Wildlife
A-4 (Big Game Animals)
Issued October 2001
(10110001001SF)