Age Classes-
During trapping season (November–February) a juvenile is 7–10 months old, a yearling is 19–22 months old and adults are anything beyond that. In this guide, we classify marten as either juvenile or adult (yearlings are grouped with adults) because those are the practical categories needed to keep tabs on the ideal harvest ratio.

Classifying age-
One method is to look at the development of the temporal muscles. Temporal muscles grow from the top of the skull along the temporal ridges. In young animals of both sexes, the temporal ridges and muscles are widely separated but grow together (coalesce) as they mature, starting from the base of the skull. The degree of temporal muscle coalescence can help classify most juvenile martens. Coalescence is less reliable in classifying yearlings and adults, especially females.

For females the better indicator for age class is the minimum width between the muscles (see **1** below). A space of 1 mm ($^1/_{16}''$) or greater separates most female juveniles from adults throughout Alaska.

For males it is best to measure from the crest at the rear of the skull forward to the point where the temporal muscles diverge (see **2** below). A coalescence length of 28 mm ($1^1/_8''$) or greater separates most adult males from juveniles in Southeast Alaska. A coalescence length of 10 mm ($^3/_8''$) or greater separates most adults from juveniles in the Interior.

Additional indicators-
other indicators of age that might be less consistent but still useful include:

Sagittal crest development
The sagittal crest is the sharp, bony ridge that runs along the top, rear of the skull to which the temporal muscles attach. A sagittal crest longer than 2 cm ($^3/_4''$) on males is likely not a juvenile. Females with any development of the sagittal crest (and no gap between the coalescence of the muscles) is likewise, not a juvenile.
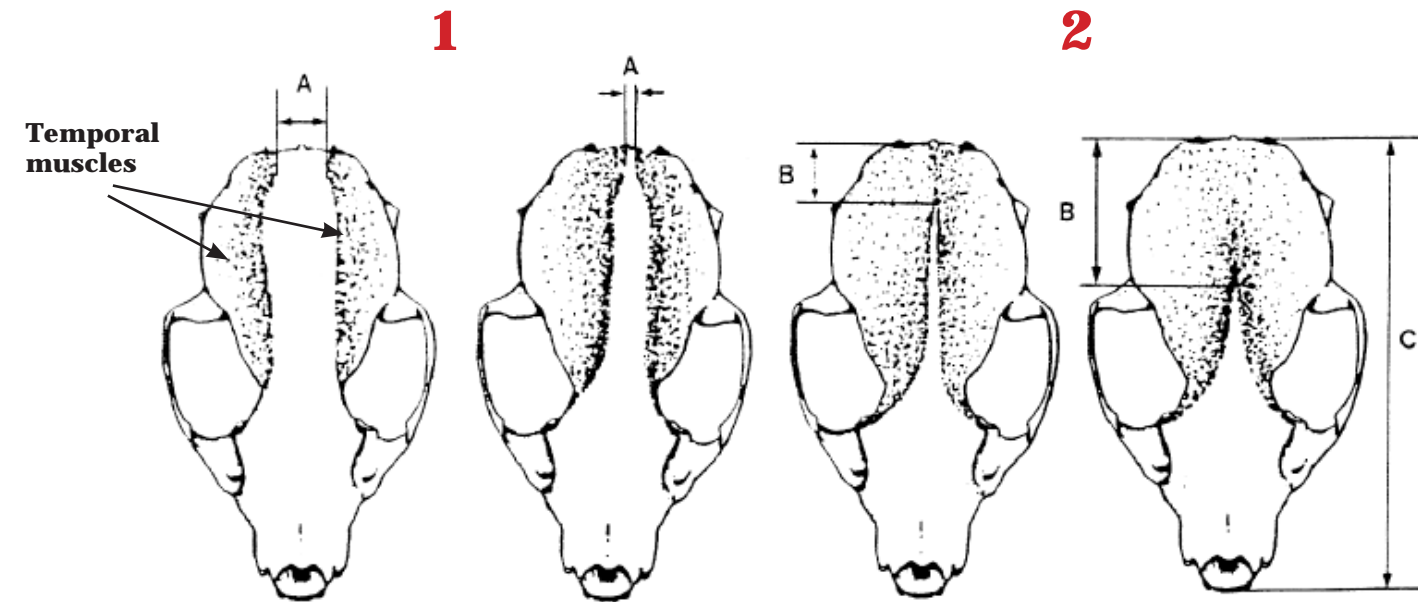
Sagittal crest

Tooth wear (see back page)

Reproductive tract of females (see back page)

Measurements of marten skulls used in analysis.
A = width between the temporal muscles;
B = length of temporal muscle coalescence; and
C = total skull length.

1   **2**

Temporal muscles

Drawing and terminology adapted from Poole et al. (1994).

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Flynn, R. W. and T. V. Schumacher. 2016. Determining sex and age of martens in the North Pacific Coast: using skull length and temporal muscle coalescence. Alaska Department of Fish and Game, Wildlife Research Report ADF&G/DWC/WRR-2016-5, Juneau.

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For more information about marten, marten trapping, research, and management go to the ADF&G website and look for marten under the Species tab.

http://www.adfg.alaska.gov/index.cfm?adfg=americanmarten.main

American marten
(*Martes americana*)

A field guide for age and sex determination

**Alaska Department of Fish and Game
Division of Wildlife Conservation, 2018**

Determining the age and sex of marten

The best method to determine the age of a marten is in a lab through cementum analysis—a process that counts the annual cementum layers of the tooth. For practical use in the field, this guide provides several alternative methods to determine age and sex classes. No single field method is 100% accurate, however, using multiple indicators will increase the accuracy of your classifications.

Why monitor your marten harvest?

Marten are sensitive to over-harvest because they are easy to catch. This makes managing marten challenging because there is no way to harvest marten specifically by sex or age. At the start of trapping season there are more juveniles than adults available for harvest. When the number of juveniles caught declines as total marten numbers dwindle, the resident breeding animals are being harvested from the population. This is when trappers should reduce their efforts.

What is the ideal harvest ratio?

Because many variables influence marten population dynamics there is no universal number of marten you should catch. However, the research available and recommendations from some marten experts indicate you should at least three or four juveniles for every adult female. Going below this ratio increases the potential of over-harvesting your breeding population.

If the catch ratio of juveniles to adult females declines, trappers should consider reducing the number of active traps or closing their lines. Marten populations show great ability to recover following below-average years of productivity, so protecting the resident populations can help sustain future trapping efforts.

Marten Age and Sex Determination Key

Is the skull at least 3¼" (82 mm) long?

No

Is there a gap between the two temporal muscles on top of the head that is more than ¹⁄₁₆" (1 mm) wide at the narrowest point?

Yes

No

More than 1 mm wide

Less than 1 mm wide

Juvenile female

Adult female

Yes

Do the two temporal muscles on top of the skull meet for a distance of at least ⅜" (10 mm)? —*use 1⅛" (28 mm) for Southeast, AK.*
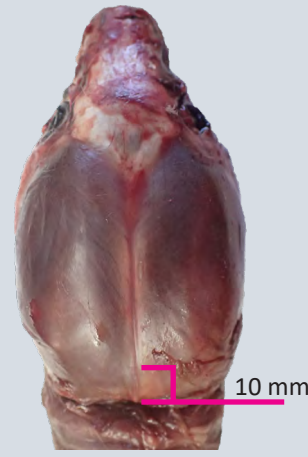
No

Yes

10 mm

10 mm

Juvenile male

Adult male

An example of the progression of temporal muscle coalescence from juvenile to yearling to adult (left to right). This growth occurs from birth in May, and continues into adulthood.

Note that dried or desiccated skulls can lead to inconsistencies. As the muscle tissues dry out, they can shrink and expand the gap between the muscles.
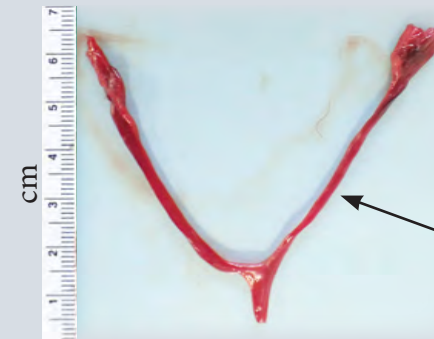

Uterine horns

Animals that have not reached reproductive age (less than 1 year old) possess small uteri. The uterine horns are narrow (less than 1 mm), almost translucent and short (less than 45 mm). Females who have been pregnant will have uterine horns that are stretched out of shape, opaque, and "thicker".
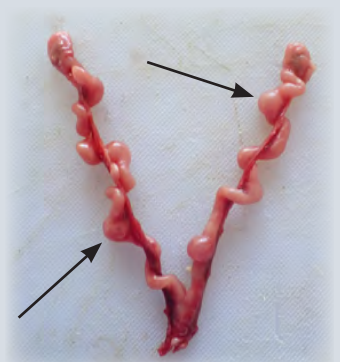
Immature
(or yearling that has not given birth)
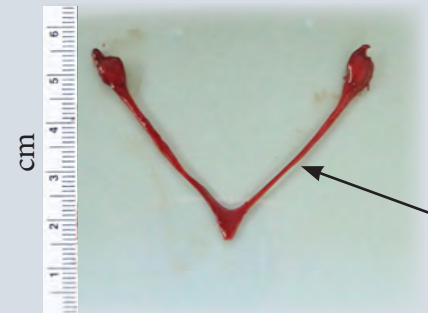
Mature

Pregnant

Early implanted females with developing fetuses (arrows) will have uterine horns that look like this.

Teeth

Juvenile

Adult

Tooth wear (especially canines) can provide a reasonable clue to the age class of a marten, but this must be used with caution. Differences in diet can create different wear patterns. Also, animals harvested with the use of foothold traps sometimes chew on the trap, causing premature tooth damage and atypical wear.

Tooth wear inconsistencies

Tooth wear alone is not a reliable method of aging marten. The adult (**A**) has teeth wear similar to a juvenile. We looked at temporal muscle coalescence and the uterine horns as evidence and then confirmed it as an adult by cementum analysis.

Conversely, the juvenile (**B**) has worn and damaged teeth that look more like what you would expect to find on an adult animal.

A

B