An Objective Cementum Aging Model for Brown/Grizzly Bear Teeth

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Alaska Department of Fish and Game biologists have used modified cementum aging techniques to analyze teeth collected from virtually all brown/grizzly bears (*Ursus arctos*) harvested in the state since 1969. Age data, in conjunction with information on sex and skull size, have been used to evaluate harvest levels and population trends. However, bear age data derived from cementum aging have been questioned since the inception of the technique. To objectively evaluate the accuracy and precision of bear aging techniques, we compared the results of various individual tooth agers using different methods.

Four agers, with experience ranging from 1 to 20 years, participated in a blind test that included 75 tooth sections prepared from first premolar (PM1) teeth from known aged brown/grizzly bears. Each participant aged each slide 3 separate times. All participants were consistent in their age determinations (high precision), but there was a significant difference in the accuracy of individual agers. This suggested that agers were using different cementum aging models.

We used information from this evaluation to develop an instructional laboratory manual that will facilitate repeatability of both laboratory techniques and cementum aging models. This manual provides a standardized criteria for tooth section interpretation that allows technicians to consistently interpret the same histological characteristics. These criteria are also applicable for aging black bear (*Ursus americanus*) PM1 teeth.

Our poster summarizes the cementum aging model that is detailed in the laboratory manual. It describes a consistent method of determining cementum ages in brown/grizzly bears by:
1) Describing characteristics of the PM1 tooth section;
2) Standardizing the criteria for PM1 aging;
3) Using photographs of known age tooth sections as training tools; and,
4) Describing the steps in tooth processing and section preparation that require standardization.

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ABSTRACTS

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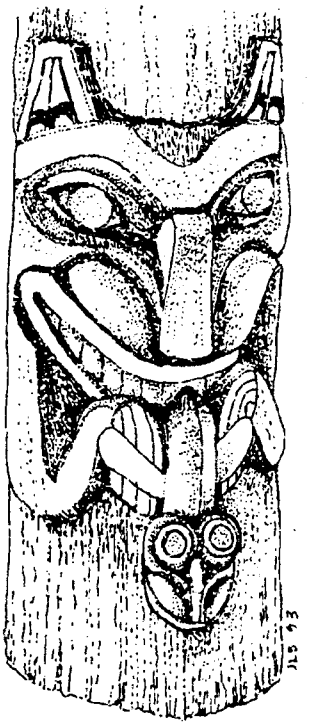

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