CEMENTUM AGE REPORT

By: Gary Matson
Matson's Laboratory, LLC
Box 308, Milltown MT 59851
Phone/Fax (406) 258-6286
E-mail: gjmatson@montana.com
www.MatsonsLab.com

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Prepared for:	Marrett Grund	Process code:	u plus
Agency:	Minnesota DNR	Filename:	AU053106-602
Address:	35365 800th Ave	Date:	May 31 2006
City, State Zip:	Madelia MN 56062	Season of collection:	fall
Email:	marrett.grund@dnr.state.mn.us	Species & Tooth Type:	White-tailed Deer I1
Phone:	507-642-8478 x27	Number of teeth:	2448

INFORMATION SPECIFIC TO THIS SAMPLE:

Matson's used an assumed annual birthday of 1 June for the purpose of cementum age analysis. Animals killed after the birthday (or animals from which teeth extracted while alive) were/are older than the reported age.

The histological condition of the teeth was **excellent**. The periodontal membrane is intact in the tooth sections, confirming that no cementum is missing from the periphery of the root. Differential staining between dark cementum annuli and light cementum is **excellent**. Factors that cause poor histological condition, cementum damage, or poor differential staining include physical abrasion, prolonged exposure to high temperatures (at or above boiling), and exposure to chemical agents such as bleach.

STANDARD INFORMATION, INCLUDED ON ALL AGE REPORTS:

The **"CC" (Certainty Code) field** in the data, below, is a reliability index. The highest **"A" reliability** ages indicate that the cementum characteristics of the tooth section very nearly match those of the standardized cementum aging model for the species and tooth type. For **"B" reliability** ages there is histological evidence to support the result, and the correct age is expected to be within the range given in the "Notes" field. **"C" reliability** ages are those for which the match between histological evidence and the standardized model is poor. Error is likely, and may occur within the range given.

Explanation of abbreviations used in "Notes" column of age report (when underlined, the property may reduce age analysis accuracy): AH - abnormal histology, usually removal of tooth tissue; BR – broken, with missing cementum; BL - bleached or boiled; CD - cementum damaged; **IN** - aged by inspection, without sectioning; LI - lateral incisor (not standard I1); M - molar (number indicates specific tooth; e.g. M1 - Molar No. 1); **NA** (not applicable) - evidence in the cementum is not adequate, even for a reasonable age estimate; **NE** - the sample contained no envelope with this I.D. number; **NG** – the tooth is present in the sample but is not given on biologist's master inventory list; **NP** - not processed; NS - not a standard tooth type for cementum aging (see below); **NTR** - no tooth received, container was empty; P or PM - premolar; **PF** – Matson's Lab process failure; **PR** - processed.

Matson's Lab recommended method for extracting or cleaning teeth: Use a hot water bath, at temperatures not exceeding 80 degrees Centigrade, only for as long as needed to soften the periodontal membrane. Usually, a period of 2-4 hours will be adequate. After the membrane is softened, cleaning can be done by firm and thorough wiping of the tooth with a nylon mesh material. Teeth can be extracted from skulls and mandibles with the aid of a dental extractor and dental elevator. During extraction, care should be used to avoid breaking off the root tip.

Biologists need to provide the identification of non-standard tooth types. Matson's uses a species-specific standardized tooth type of the adult dentition for cementum aging, because cementum annulus interpretation differs not only among species but also among different tooth types in the same individual. For example, the mountain sheep canine tooth erupts at about the age of 4 years, and will have 3 fewer annuli than will the same animal's primary incisor that erupts at about the age of 1 year. When a non-standard tooth type is identified, Matson's can adjust the cementum age to compensate for differences in eruption time. Matson's technicians may be able to identify some non-standard teeth, but not all. When aging error is suspected, the possibility should be considered that the tooth was non-standard. The standardized tooth types are as follows: Ungulates - I1, bears - upper PM1, mountain lion - PM2, martens and fishers - PM4, other carnivores - lower canine.

Level K

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Consultant's Report