## A60 White-Tailed Deer as a Taphonomic Agent: Photographic Documentation of White-Tailed Deer Gnawing on Human Bone

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After attending this presentation, attendees will better understand the damage caused to bone by white-tailed deer gnawing.

This presentation will impact the forensic science community by providing photographic documentation of white-tailed deer gnawing on human bone and therefore acting as a taphonomic agent.

While most forensic anthropologists and taphonomists are aware that carnivores and rodents gnaw on and consume human bones, the fact that cervids and other ruminant species also chew on bone is not as widely recognized. Cervids (e.g., deer, elk, moose) gnawing on bone has been reported in the taphonomic and zooarchaeological literature, but there is no known report of cervids altering human remains.[1-4] This study reports on the first known documented case of white-tailed deer gnawing on human skeletal remains and discusses distinguishing features of ungulate gnawing and the reasons for this behavior.

The Forensic Anthropology Center at Texas State University (FACTS) accepts human donations for taphonomic research. As part of an ongoing research project to document scavenging activities on naturally decomposing human remains, a motion-sensitive camera was place approximately 4.5 meters from an uncaged human body.[5] The donated body was placed in a small wooded area at the Forensic Anthropology Research Facility (FARF) in July 2014. The body was initially scavenged by vultures that removed much of the soft tissue, leaving a mostly articulated skeleton and large pieces of desiccated skin. At approximately 190 days postmortem, a motion-sensitive cameras captured multiple images of a young deer with a human rib bone in its mouth on two different occasions.

Upon discovery of the photographs, the skeletal remains were investigated more closely. The two ribs gnawed by the deer had been disarticulated from the vertebral column and moved less than one meter from the articulated trunk. The ribs exhibited splintering of the sternal ends that has been characterized as "forking," but no obvious signs of tooth depressions, punctures, or grooves. The forking is characteristic of ungulate damage and was caused by the deer holding the sternal end in its mouth parallel to the tooth row and rubbing its teeth against the bone.[1]

Deer and other cervids most likely gnaw on or consume bone to obtain phosphorus, calcium, and other minerals absent from their vegetarian diet, especially in the winter, and prefer relatively fresh bone. In addition to forking, cervid damage to bone can include tooth impressions, grooves, and punctures, which are also common in bone gnawed on by carnivores and rodents; however, the damage caused by deer and other ruminant species can be distinguished from modifications caused carnivores and rodents.

While cervids do not greatly contribute to the scavenging guild, they should not be overlooked as a possible taphonomic agent in the modification of human remains in medicolegal death investigations. In regions with large cervid populations, forensic scientists should be aware of the potential damage that can be caused to bone by cervid species.

**Reference(s):**

1. Hutson J.M., Burke C.C., Haynes G. Ostophagia and bone modification by giraffe and other large ungulates. *J Archaeol Sci* 2013;40:4139-49.
2. Browthwell D. Further evidence of bone chewing by ungulates: the sheep of North Ronaldsay, Orkney. *J Archaeol Sci* 1976;3:179-82.
3. Johnson D.L., Haynes C.V. Camels as taphonomic agents. *Qaut Res* 1985;24:365-6.
4. Keating K.A. Bone chewing by Rocky Mountain bighorn sheep. *Great Basin Nat* 1990;50:89.
5. Spradley M.K., Hamilton M.D., Giordano A. Spatial patterning of vulture scavenged human remains. *Forensic Sci Int* 2012;219:57-63.

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