



Physical Anthropology Section - 2014

H129 Raccoon Scavenging at the Anthropological Research Facility at the University of Tennessee, Knoxville

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After attending this presentation, attendees will appreciate raccoon scavenging as documented by occurrences within the Anthropological Research Facility (ARF) at the University of Tennessee, Knoxville (UTK) and, therefore, better understand their impact on the decomposition of human remains.

This presentation will impact the forensic science community by demonstrating seasonal and annual effects of raccoon scavenging on human cadavers. In addition, this research demonstrates that scavenging by raccoons is more likely to cause mummification in human remains, thus leading to increased confusion in some forensic anthropological issues such as estimation of a postmortem interval.

Although raccoons (*Procyon lotor*) are one of the most common scavengers found across the United States, studies regarding their scavenging patterns on human remains have been limited. Moreover, their forensic anthropological significance has not been well appreciated. The goal of this research is to explore temporal patterns of raccoon scavenging on human cadavers, while emphasizing its implications in forensic investigations.

Daily taphonomic changes of donated human cadavers at the ARF were observed through the daily photo database of the Forensic Anthropology Center at UTK. A total of 118 cadavers, which were placed at the ARF between February 2011 and December 2012, were examined to see if raccoon scavenging occurred during decomposition. Damage due to raccoon scavenging was determined using demonstrations by Synstelien as well as empirical knowledge of raccoon scavenging patterns the presenter (Jeong) achieved while working at the ARF for years.¹

Of the 118 cadavers, 57 (48.3%) were scavenged. Although the annual difference in scavenging frequency between 2011 and 2012 was marginal (49% and 47.8%, respectively), seasonal differences were obvious. Overall scavenging frequency during "hot" months (i.e., May to September), when monthly temperatures were above 20°C, was much higher (62.5%) than that of cooler months (35.5%). For cadavers that were placed during the hottest month of July, scavenging frequency was at its highest (83.8%).

Initially, raccoon scavenging began while cadavers still retained muscle tissue in their limbs. More than half (63.2%) were scavenged when they were in the fresh or skin slippage stage, while only 3.5% were scavenged in the advanced decay stage. Calculation of the days between the cadavers' placement at the ARF and the time of initial scavenging showed an obvious seasonal pattern. After placement during the "hot" months, raccoons began to scavenge an average of 5.9 days later whereas during the cooler months, initial scavenging averaged 16.3 days after placement.

A similar seasonal pattern was observed with regard to the duration of scavenging. The length of time raccoons continued to scavenge was significantly shorter during "hot" months, averaging 7.6 days yet continued in cooler months on average for 28 days. In terms of annual differences, scavenging on cadavers occurred longer in 2012 than in 2011.

It was also observed that scavenged cadavers resulted in mummification, while unscavenged cadavers tended to be skeletonized. This demonstrates that a significant difference in the rate of mummification exists between scavenged (82.5%) and unscavenged (34.4%) remains ($\chi^2=28.40$, $p<0.001$).

This research describes and quantifies scavenging patterns of raccoons. Although some issues such as the cause of annual differences in initial scavenging, scavenging duration, and the mechanism for mummification by scavenging, could not be clearly demonstrated, raccoons can be said to be associated to and impact the final stage of decomposition (i.e., mummification or skeletonization). The significance of raccoon activity in terms of forensic investigation should be considered with more research in the field of forensic anthropology.

Reference:

1. Synstelien JA. Raccoon modification of human skeletal remains. P Am Assoc Phys Anthropol 2013.

Raccoon, Scavenging, Human Cadavers