



A142 The Effects of Scavenging on a Donor From the Western Carolina University Forensic Osteology Research Station (FOREST)

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Learning Overview: After attending this presentation, attendees will better understand scavenging patterns at the Western Carolina University FOREST.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating that scavenging of soft tissues can impact the rate of human decomposition, as well as the position/location of the remains.

This project presents a case study that complements the mounting research relating to the effects of scavenging on human decomposition. It is pertinent for medicolegal investigators to understand their local scavenger guilds as well as recognize the patterns and results of scavenging. Scavenging affects the ability to accurately estimate the postmortem interval as well as determine peri-mortem trauma from postmortem damage. This study also supports the need for further longitudinal studies relating to geographically specific scavengers.

The purpose of this project was to see if scavenging activity impacts the estimated Accumulated Degree Days (ADD), which is used by anthropologists to estimate the postmortem interval. The method developed by Megyesi and colleagues was used to produce an estimated ADD, which was then compared to the actual ADD.¹ A motion-activated game camera recorded the scavenging activity affecting a 67-year-old female donor over a ten-day period during the summer of 2019. The donor died of natural causes and presented no trauma at the time of placement. The cameras recorded the dates, times, and temperatures during scavenging events.

Over the ten-day period, the game camera was activated ~5,340 times by four different local scavengers: American crows (*Corvus brachyrhynchos*), black vultures (*Coragyps atratus*), turkey vultures (*Cathartes aura*), and North American opossums (*Didelphis virginiana*). The game photos were stitched together into a time-lapse video and reviewed to observe any trends in scavenging activity, as well as the overall impact that the activity had on the remains.

Initial scavenging by American crows occurred within two hours of donor placement. Early on, a pattern of scavenging was consistent over the observation period, with crows and vultures scavenging during the day and opossums at night. By the second day, the cranium and sections of the limbs showed signs of partial skeletonization. This resulted in a high estimated ADD (737.9 ± 388.16) when compared to the actual ADD (36.41), demonstrating the influence that scavenging had on the decomposition process of this individual. Not only were scavengers removing soft tissue directly from the skeletal remains, they were creating openings in the soft tissues that allowed for greater insect access and activity. By the end of ten days, the donor was mostly skeletonized and had been rotated (~45 degrees) and moved approximately one meter from its original location. Again, the estimated ADD ($4,073.8 \pm 388.16$) was much higher than the actual ADD (187). None of this scavenging activity left any evidence on the skeletal remains.

Overall, two important findings were clearly documented in this footage, that: (1) scavenging increased the rate of decomposition, and (2) scavengers altered the placement of the body from its original depositional orientation and location. This project demonstrates the necessity of long-term studies documenting the effects of scavenging on human decomposition as well as revised ADD methods that account for scavenging activity.

Reference(s):

- ¹. M.S. Megyesi, S.P. Nawrocki, N.H. Haskell. Using accumulated degree days to estimate the postmortem interval from decomposed human remains. *J. Forensic Sci.* 50 (2005) 618–626.

Forensic Anthropology, Scavenging, Postmortem Interval