



H76 Vertebrate Scavenging Behavior and the Decay Rate of Buried Carcasses

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Learning Overview: After attending this presentation, attendees will better understand the role of animal scavenging during decomposition and its implications for forensic investigation and determination of postmortem interval.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing an understanding of the impact of wildlife on carcasses in protected (burial) and unprotected (surface) outdoor environments and the timing of decay.

A 46-year-old woman was last seen alive in May of 2011. Eight months after her disappearance, her remains were found partially buried in a forested area in the inner middle region of Italy. The right femur, still attached to the body, was found above the ground surface. The remainder of the right lower limb was disarticulated and missing, while the remainder of the body was buried in a shallow grave a few centimeters deep. No other relevant disarticulation was observed. The head and the limbs were skeletonized while the rest of the body was well preserved and mummified. Insects on the body were identified as larvae of Syrphidae and Stratiomyidae. No Diptera of the first wave of colonization were recovered. According to these findings, the time of death was undetermined but consistent with a Postmortem Interval (PMI) of several months of burial. At autopsy, the cause of death was determined to be asphyxia due to strangulation. The victim's boyfriend was indicted for the crime. He provided an alibi for the time of death and claimed to be innocent. He recruited an expert who determined the PMI to be only a couple of months; the basis for this assertion was that a body buried in a forest area for longer would presumably have been scavenged by carnivores (e.g., boars, wolves, vultures), and thus the well-preserved state of the body would not be consistent with a longer PMI, such as eight months.

Can animal scavenging assist in estimation of the PMI? This is one of the most common questions asked of forensic experts since previous published studies have revealed a correspondence between stages of disarticulation and the PMI. A multidisciplinary team with forensic veterinary expertise was requested to provide a reliable answer. A field experiment using animal models was set up and performed in winter in a forested area. The goal was to determine the habits of scavengers when decomposing tissues are available in shallow graves or when exposed on the surface. Five carcasses were buried (two boars, one fox, one rabbit, and one hare). One fox carcass was exposed on the ground surface. Motion-sensitive cameras were placed in close proximity to the burial sites in order to check daily animal activity. Site visits were conducted every three days. The results showed that only the rabbit and the hare were scavenged: the first one a few hours after burial and the second one within seven days. The other four carcasses, including the fox on the surface, were not scavenged by wildlife. According to videotape recording, boars and wolves visited the experimental sites just around the carcasses, but without scavenging the remains.

These results confirm that: (1) burial can slow decomposition and influence the time required for insects to reach the remains; and (2) the scavenging of remains is not an event that necessarily occurs, even when there are decaying tissues exposed on the surface. Scavenging can be affected by several factors depending on hunger of the scavenger itself, intra- and inter-species competition, availability of other and more favorite food supplies, and the repellent effect of decompositional odors or invertebrate activity. Carnivores are unlikely to scavenge a corpse if there is a high concentration of insects until arthropod activity is over or decreased significantly. Vertebrate scavenging behavior is more common on fresh bodies, within the first hours after death, or in skeletonized corpses. The reasons for the low interest in putrefied carcasses can depend on: (1) access to the body; (2) the effort required by the scavenging; (3) freshness of soft tissue; and (4) the scavenger's food habits and diffidence toward new or different resources.

Finally, the absence of insect activity was the most important factor delaying decomposition, with only a very few signs of animal scavenging at the disarticulated lower limb. Overall, this field experiment highlights the importance of having knowledge of the type and behavior of local fauna as shallow graves can sometimes prevent not only insect activity but also scavenging by wildlife, thus explaining a slower rate of decomposition.

Forensic Taphonomy, Animal Scavenging, Buried Bodies