



## Physical Anthropology Section – 2011

### H94 The Effects of Avian and Terrestrial Scavenger Activity on Human Remains in the Piney Woods of Southeast Texas

Kathryn E. Moss, BS\*, 4800 Calhoun Street, Houston, TX 77004; and Angela D. Rippley, BS, and Joan A. Bytheway, PhD, Sam Houston State University, Box 2296, Huntsville, TX 77341-2296

After attending this presentation, attendees will understand the impact scavenger activity has on human decomposition rates in the Southeast region of Texas. By recognizing soft tissue and skeletal trauma caused by scavengers, as opposed to those caused by humans, investigators will be able to interpret taphonomic events more accurately.

This presentation will impact the forensic science community by presenting research which illustrates the impact several species of scavenging animals, native to the Southeast area of Texas, has on human decomposition. Investigators, such as pathologists, law-enforcement officers, and forensic anthropologists must understand all of the factors which influence decomposition, including wildlife, in order to correctly interpret taphonomic events for the establishment of accurate postmortem interval (PMI) estimates.

There have been many studies conducted which examine the effects scavenger activity has on human and nonhuman decomposition. However, to date, no such research has ever been conducted which

examines these effects in the subtropical humid climate of Southeast Texas. This research project will, for the first time, examine the effects terrestrial and avian scavenger activity has on human decomposition. Data collected during this study will not only help investigators understand the agents involved in scavenger modified scenes, but also help to establish the time standards of decomposition as they relate specifically to the Piney Woods of Southeast Texas. This information is crucial to investigators such as medical examiners, law-enforcement personnel, and forensic anthropologists who need to determine the postmortem interval (PMI) for recovered human remains.

During the time period of August 2009 to January 2010, ten cadavers were placed outdoors at the Southeast Texas Applied Forensic Science facility for observation. The research subjects were photographed with a camera for decomposition stage assessment while scavenger activity was monitored via motion-sensing stealth cameras. These stealth cameras recorded a sequence of still photos each time an object moved into the camera's field of vision throughout the day and night. Scattered skeletal elements were observed and distance from primary placement was recorded utilizing photographs, linear measurements, and mapping software taken in the field. By recording activity with a stealth camera, the authors were able to unobtrusively observe several different scavenging animals in the field including the American black vulture (*Coragyps atratus*), turkey vulture (*Cathartes aura*), bobcat (*Lynx rufus*), and opossum (*Didelphis virginiana*). The results showed that patterns in scavenger activity leading to complete disarticulation seem to have been influenced by environmental conditions such as temperature, lunar phases, vegetation, and levels of sun exposure. Those placed outdoors during the fall season achieved disarticulation much faster than those placed during the winter. For example, one cadaver placed during the fall reached skeletonization and complete disarticulation in approximately two months whereas those placed during the winter required over six months. Among those cadavers included in winter placement, scavenging activity and decomposition noticeably slowed during the colder months until warmer temperatures returned in the spring. By this time, vegetation in two of the placement units had grown tall enough to obscure the location of the cadaver. This growth in vegetation seems to have camouflaged the area and negatively impacted scavenger activity.

Findings regarding scavenger behavior showed that turkey vultures were among the first to arrive but would observe the area of cadaver placement from a tree nearby before their descent. Once their interaction with the cadaver began, they would visit throughout the day along with the American black vultures. These two species of vultures would often scavenge together however it was usually the American black vulture who took the initiative to disarticulate the skeletal elements. Their forceful behavior often led to turkey vultures leaving the scene while American black vultures flocked in and dominated the area. One fall-placed cadaver was photographed with as many as eighteen vultures during one such scavenging scene. Over the course of one weekend, this same cadaver was almost completely disarticulated through vulture activity alone. At the completion of this research subject's participation in the field, the skeletal elements were recovered and processed in the lab. By observing the photographic evidence along with the skeletal analysis, the trauma was able to be associated with the animal that caused it and at the specific stage of decomposition it occurred.

This study shows the effects environmental conditions and scavenger activity has on human decomposition. As more data is compiled with the completion of future studies, a time-line of activity along with a decomposition stage assessment specific to this region of Texas will be established. By understanding and correctly interpreting the trauma on modified remains and the scene of activity, investigators will be able to establish a more accurate PMI based on the taphonomic evidence documented from research such as this.



## Physical Anthropology Section – 2011

---

Scavengers, Taphonomy, Postmortem Interval