



### **E98 A Comparison of Insect Activity on Different Carrion Types at the Anthropological Research Facility (ARF) in Knoxville, Tennessee**

*Kristi Bugajski, PhD\**, 1610 Campus Drive, E, Valparaiso, IN 46383; *Angela M. Dautartas, MA\**, University of Tennessee, 250 S Stadium Hall, Knoxville, TN 37996; *Lee Meadows Jantz, PhD*, University of Tennessee, Dept of Anthropology, 1621 Cumberland Avenue, Knoxville, TN 37996-1525; and *Dawnie W. Steadman, PhD*, University of Tennessee, Dept of Anthropology, 1621 Cumberland Avenue, Ste 502A Strong Hall, Knoxville, TN 37996

After attending this presentation, attendees will better understand how entomologists and anthropologists can work together to obtain meaningful research results. Attendees will learn how the insect activity on human cadavers, rabbits, and pigs differ from one another. The hypothesis of this project was that the insect activity would differ in timing and pattern for different carrion types.

This presentation will impact the forensic science community by illustrating how entomologists and anthropologists can have a close working relationship with each other. This research is also important because having suitable substitutes for human cadavers is imperative for research projects.

If one looks into the forensic science literature, there is a wide range of human cadaver substitutes used across the world. Animals in a wide range of sizes and hair content, from rats to pigs and a variety of species in between are used.<sup>1,2</sup> Pigs have been studied at the ARF in Knoxville, TN, previously, but are the only animal to date that has been studied as an acceptable human cadaver substitute.<sup>2</sup> It is not possible for all research to be conducted on human cadavers, so projects such as this one that compare the decomposition of different animals are very important.

Five subjects of each species were placed in the same microenvironment at the ARF during three separate trials. The three trials spanned three seasons: spring, summer, and winter. Decomposition progression was measured using the Total Body Scoring (TBS) system developed by Megyesi and colleagues.<sup>3</sup> Additional data collected included hourly ambient temperature, daily photographs, and the presence of scavenging activity. When insects were active, adult fly and beetle specimens were caught and preserved, and fly larvae were collected and preserved.

From the daily observations and photographs, it was noted that larval activity did not maintain the same location pattern in each carrion species. While some areas of larval activity were similar (e.g., masses in the eyes and nose), the pigs had consistent large masses under the tail and the rabbits had masses internally that were not able to be observed until late stages of larval development. These location pattern differences had distinct impacts on the decomposition progression and corresponding TBS between the different subject species. This aspect of insect activity has previously not been discussed during comparative studies of various carrion species.

Insects that were collected during the experiment are being identified, and the results will be discussed during the presentation. Differences in species composition on different carrion types as well as the timing of the insect activity will also be discussed.

This project was supported by the National Institute of Justice, Office of Investigative and Forensic Sciences, United States Department of Justice. The opinions, findings and conclusions or recommendations expressed in this presentation are those of the researchers and do not necessarily reflect the views of the Department of Justice.

#### **Reference(s):**

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#### **Insect Activity, Forensic Anthropology, Forensic Entomology**