



Physical Anthropology Section – 2008

H41 The Effect of Carcass Weight on the Decomposition of Pigs (*Sus scrofa*)

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Participants to this presentation will gain knowledge of the factors that influence decomposition, particularly the effect of carcass size on rate of decomposition. Participants will also come to understand the variability associated with rate decomposition and the difficulty of standardizing a method of postmortem interval estimation.

The results of this experiment will benefit forensic science in the fields of postmortem interval estimation and rate of decomposition research. The research demonstrates that carcasses weighing between 10-20kgs decompose at a rate that statistically is not significantly different. These results will further understanding of the effect of carcass weight on rate of decomposition when calculating postmortem interval.

Establishing postmortem interval (PMI) is a complex procedure, which is influenced by many factors including rate of decomposition. Research is necessary to understand the precise effect of each influencing factor in order to increase the accuracy of PMI estimations. The aim of this study, conducted at the University of Central Lancashire, UK, is to determine the effects of carcass size on the rate of decomposition for surface depositions using domestic pig carcasses (*Sus scrofa*). Three weight groups of three carcasses each were established within the total sample size of nine pigs: 10kgs, 15kgs, and 20kgs. Each pig was humanely dispatched with a captive bolt to the cranium, which was plugged with a pithing cane to minimize physical trauma to the carcass. Carcasses were laid out wrapped in chicken wire to prevent vertebrate scavenging while still allowing insect access.

Data collection was performed approximately every 45 ADD (accumulated degree days) between May 19 and July 15, 2007. Each pig's rate of decomposition was recorded using Megyesi et al (2005) body region and total body scoring (TBS) method. Several factors known to influence decomposition were also documented: soil pH, regional weather conditions, rainfall, body temperature, interface temperature, lux, and carcass weight loss. Additionally, as part of the data collection procedure, photographs were taken of the each carcass and maggots were collected from various bodily regions and reared for identification. According to Vass et al (2001) a total of 214 ADD is required for skeletonization of carcasses weighing between 0 and 49lbs (0-22kgs) based on a study with seven cadavers. However, after this study's conclusion at 734 ADD, complete skeletonization was still not observed. The author believes that this is due to record high rainfall experienced during the experiment, which deterred insect activity.

Using a Pearson's Correlation, a positive correlation was shown between ADD and carcass TBS, $r(151) = .97$, $p < .001$ and a negative correlation was shown between ADD and percentage of carcass weight loss, $r(151) = -.95$, $p < .001$. Statistical analysis, using SPSS 14.0, indicates that no significant difference exists between carcass size and decomposition score, $F(8, 144) = .202$, $p = .990$, carcass size and percentage of weight loss, $F(8, 144) = .280$, $p = .972$, or any of the other factors controlled for.

Carcass Weight, Decomposition, Accumulated Degree Days (ADD)