G73 Factors Affecting the Rate of Decomposition of Pig (*Sus scrofa*) Carcasses During a Period of Drought in Southern-Western Australia

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After attending this presentation, attendees will have an understanding of the factors which affect the rate of decomposition of pigs in southwestern Australia. These decompositional data can be used to better understand the factors which affect decomposition of a human body.

This presentation will impact the forensic sciences community by illustrating the factors which will affect the time since death estimations used by law enforcement agencies. These factors will significantly affect a body exposed to environmental variables for any amount of time in Western Australia. The experimental methodology can be utilized in other parts of the world to determine the impact of local environmental factors on the rate of decomposition.

Estimation of time since death is an important factor in forensic investigations and the state of decomposition of a body is a prime basis for such estimations. Environmental factors have been shown to have a significant influence on the rates of decomposition; these factors can include temperature, solar radiation, rainfall, humidity, physical placement, coverings, and scavenging activity. Many studies have documented and quantified the influence of such factors on the decomposition stages of human bodies and pig carcasses which serve as models of human bodies in North America. However the application of these types of investigations to an Australian environment is still rare. This study provides a quantitative analysis of the impact of environmental factors on the rate of decomposition of exposed pig carcasses in the southern region of Western Australia surrounding the capital city, Perth. Pig (*Sus scrofa*) carcasses of approximately 45 kg were placed in four different environments including native bushland and suburban agricultural land. The carcasses were not protected and had trauma from the headbolt or rifle shot to the skull. The decompositional process was monitored using time-lapse image capture from an infrared camera. Monitoring was conducted for 24 hr cycles until the carcasses reached the skeletonization stage of decomposition. The images were viewed to determine the stage of decomposition and to identify any animal necrophagic activity. Weather data were collected for each location which included temperature and rainfall. This research found that temperature was the most influential factor in determining rates of decomposition with summer having significantly faster rates than any other season. While winter had the slowest rates of decomposition it was also the season with significantly higher levels of rainfall. Scavenging by native and introduced animals significantly affected the rate of decomposition in the cooler months of the year but had no significant impact in the warmer months. The lack of rainfall in all seasons except winter made statistical analysis inconclusive as to the significance of rain on the rate of decomposition. During these experiments, southwestern Australia was experiencing one of the greatest periods of drought in recorded history. Therefore the research examines both the decompositional rates in Western Australia and these rates in periods of drought.

This presentation will include methodology which can be used in other locations throughout the world to replicate the experimentation as well as the results of the study illustrating the importance of such research.

Decomposition, Taphonomy, Western Australia

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