



D25 The Effects of Gunshot Trauma on the Rate of Colonization by Flesh Eating Insects Using Pig Carcasses

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After attending this presentation, attendees will have a better understanding of the effects that gunshot trauma have on the insect's role in the decomposition of swine carcasses.

This presentation will impact the forensic science community by helping to overcome the obstacle of PMI being compromised when gunshot trauma is involved and allow forensic entomologists more accurate assessments.

It was hypothesized that swine carcasses inflicted with gunshot trauma would significantly vary from carcasses with no gunshot trauma. There has been little research done on gunshot trauma and the effect it has on decomposition. The focus of this project is how gunshot wounds effect blow fly colonization. When gunshot wounds lead to death, the arrival of insect fauna is inevitable. There were different weapons used in this project as follows: 12ga. shotgun loaded with 2.75" shell containing 7.5" bird shot; .40 caliber pistol using 150 grain hard ball ammunition; 9MM parabellum pistol firing hard ball ammunition; and .22 caliber LR pistol firing hard ball ammunition. Throughout the course of this project 100 pig carcasses were used. Three research runs were conducted; summer 2009, fall 2009, and spring 2010. Each of the four calibers had five replicates as well as five controls for a total of 25 pigs per research trial run. The location of the research area was an enclosed compound measuring 50'X50'X5' high. The area also had a concrete footer that kept scavengers out as well as a random pulsating electrified fence along the top to keep scavengers out. Locations of pig carcasses were randomly assigned using a random number generator. The carcasses were monitored and photographed twice daily and notes were taken to document blow fly activity and beetle activity. Wound

diameter was measured daily to track wound decomposition. The major stages of blow fly activity were noted: adult flies, fly eggs, fly larvae, migrating fly larvae. The presence of beetles and the end of maggot migration (characterized by the absence of observable larvae on the body) was also noted. This can allow researchers to document differences in development time as well as the initial onset of blow fly life stages. Blow fly adults and larvae were collected in accordance to the standard operating procedures outlined in Haskell and Williams (2008). This was done each day to document any differences in species composition or development among the different treatments. Adult flies were collected and preserved in 70% EtOH and collected fly larvae were killed in KAA (composed of 95% ethanol (77%), acetic acid (15%) and kerosene (8%)) and transferred to 70% EtOH for preservation.

Forensic entomologists are often asked by law enforcement agencies to provide an estimation of the PMI using insects. If wounds such as gunshot trauma are present and this has an effect on the blow fly activity, then the estimation of the PMI is therefore compromised. The data obtained from this research will impact the forensic science community by helping to overcome this obstacle when gunshot trauma is involved and allow forensic entomologists more accurate assessments. **Forensic Entomology, PMI, Gunshot Trauma**