



Pathology Biology Section - 2012

G14 Insect Timing and Succession on Buried Carrion

Emily C. Pastula, BS*, 3434 Schlee Street, Lansing, MI 48910

After attending this presentation, attendees will have a better understanding of how insect succession is used in forensic work, which insects are present on buried carrion as opposed to exposed, and how long it takes insects to arrive on buried carrion.

This presentation will impact the forensic science community by enabling forensic entomologists to better understand the interaction between insects, carrion, and the soil environment. The understanding of insect succession on buried carrion could lead to the development of a post-burial interval estimation. This estimation would be similar to the postmortem interval (PMI) used on surface carrion to determine time of colonization. With this development, it would be possible to date a buried body based on the insect evidence present.

Burial is a popular technique chosen by assailants when looking to dispose of a body. Rarely are bodies buried very deep since digging requires a great amount of time and effort. The longer the assailant is in contact with the body, the more likely they are to be found with the body or leave evidence linking them to the crime. Therefore, assailants usually dig shallow graves to dispose of their victims with depths ranging between zero and three feet, the most common depth being two and one-half feet. A difference in the insect fauna has correspondingly been found when comparing exposed and buried carcasses, yet very little is known about when exactly these insects arrive. The time it takes insects to travel to carcasses at different depths has not been readily studied. It is also unclear how far insects are able to travel through the soil to colonize a carcass because most experiments only looked at a depth of one foot.

By increasing the frequency of sampling and placing out a large number of replicate pig carcasses (42), it was hoped to narrow down the time range in which certain insects arrive at carcasses buried at one foot and two feet, with the bottom of the hole measuring the depth. A predetermined number of pig carcasses were exhumed after three, five, seven, fourteen, twenty-one, thirty, sixty, ninety, and one hundred twenty days. Insects were collected off of the carcass itself, as well as from the soil above the carcasses via excavating and sieving, and then placed in ethanol for later identification. It was postulated that insects would be able to colonize a carcass at two feet, that it would take one week for insects to reach a depth of one foot, that it would take two weeks for insects to reach a depth of two feet, and that insect succession would progress similarly to exposed remains with fly larvae from the family *Calliporidae* being the first to colonize.

The results indicate that insects are capable of colonizing a carcass at both one and two feet and arrive after five days and seven days, respectively. The insects present do not correspond with those normally found on exposed remains. Instead, fly larvae from the families *Sarcophagidae* and *Muscidae* are the first to colonize buried remains. From these results we hope to aid in the possibility of dating buried bodies based on the insect evidence present.

Forensic Entomology, Insect Succession, Buried Carrion