



G23 Preliminary Analyses of Carrion Colonization of Necrophagous Flies (Diptera: Calliphoridae) in Central Oklahoma

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After attending this presentation, attendees will have a better understanding of the colonization of carrion by necrophagous flies in two suburban habitats in central Oklahoma. In addition, attendees will better understand factors that impact necrophagous fly colonization of carrion and their diversity suburban habitat.

From this presentation, the forensic community will attain a better appreciation for carrion insects in central Oklahoma and environmental conditions for postmortem interval (PMI) estimations of human remains based on associated arthropod fauna.

This presentation will impact the forensic community by demonstrating the potential influence of environmental factors on carrion colonization by necrophagous flies and vertebrate carcass recycling in non-vegetated habitats in central Oklahoma, and the importance of insular suburban woodlots as a refuge and species pool for dipteran decomposers. With the possible onset of global warming and the continuing expansion of human habitation, maintaining suburban woodlots and vegetated green zones may prove critical for the preservation of terrestrial decomposer populations and other wildlife .

Necrophagous flies are important ecologically and forensically. Ecologically, carrion frequenting flies (Diptera: Calliphoridae) are dominant members of the terrestrial decomposer community and, as such, play a significant role in the recycling of vertebrate remains, improving public health. Additionally, analyses of immature and adult flies colonizing remains can provide a broad spectrum of forensically meaningful information, including estimates of the minimum postmortem interval (PMI). Central to an understanding of the ecological and forensic significance of necrophagous Diptera is knowledge of the environmental factors potentially limiting carrion detection, access, and colonization. This study examined the impact of high temperatures and surface winds on the colonization of carrion (liver) by necrophagous Diptera in two suburban Oklahoma habitats. Standardized samples of beef liver (uniformed attractant) were placed in a suburban woodlot and turf grass field in Central Oklahoma. Wind speed, wind direction, and temperature were measured at each site and correlated with carrion fly colonization rates and species diversity. Over 100 replicates were conducted over the course of 8 weeks. Fly colonization patterns were compared with commercial flytrap (Pherotech ®) and rodent carcass trials.

Study results indicated a clear difference between habitats, with the turf field characterized by stronger winds, higher temperatures, more rapid carrion desiccation, reduced fly colonization rates, and lower species abundance and diversity. Additionally, the turf field habitat was characterized by a significantly greater number of days devoid of carcass colonization by carrion flies. Vegetative stratification, characteristic of the suburban woodlot habitat, provided mediation of wind and heat effects and facilitated increased carrion fly abundance, diversity, and activity.

The study demonstrates the potential influence of environmental factors on carrion colonization by necrophagous flies and vertebrate carcass recycling in non-vegetated habitats in central Oklahoma, and the importance of insular suburban woodlots as a refuge and species pool for dipteran decomposers. With the possible onset of global warming and the continuing expansion of human habitation, maintaining suburban woodlots and vegetated green zones may prove critical to the preservation of terrestrial decomposer populations and other wildlife .

Forensic Entomology, Carrion Colonization, Necrophagous Diptera