G70 Development of Standard Operating Procedures for Conducting Arthropod Succession Studies: Improving Postmortem Estimates Through Ecology

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The goal of this presentation is to provide attendees with a better understanding of experimental design as it relates to arthropod-based decomposition studies.

This presentation will impact the forensic science community by demonstrating the development of standard operating procedures for conducting arthropod succession studies in the field.

The period of insect activity (PIA) encompasses the time from discovery of human remains to when the remains were actually colonized. Therefore, the PIA in most cases represents the minimum postmortem interval (minimum-PMI). The amount of the PMI encompassed by the PIA can vary depending on a number of variables such as wind, rain, temperature, or if arthropods are excluded from the remains due to a physical barrier (i.e. wrapping, enclosed in a car or home). Consequently, understanding the variability the actual time of colonization as it relates to the actual time of death is of great importance.

Arthropod succession studies are conducted for a number of reasons. The majority of these studies are done to determine the species composition for a given location during a particular time of year to provide data that can be used to determine the "postmortem interval" of a decedent discovered in the same vicinity of the study site, and to determine the variation in time of initial colonization of remains.

A review of the forensic entomology literature indicates that a standard operating procedure is needed to in order to glean as much information from these decomposition studies as possible. Such information could lead to a better understanding of the succession and decomposition variability in different geographic regions and greater explanation of variables delaying arthropod colonization patterns on human remains. Furthermore, developing consistent practices could lead to data sets that can be combined in meta-analyses.

The following variables are suggested for inclusion in a SOP for arthropod succession studies:

1. Actual time of death of the remains used in the study
2. Storage of remains prior to use (i.e., frozen)
3. Method used for euthanasia
4. Actual time of initial colonization
5. Identification of species initiating colonization
6. Environmental conditions at the time of colonization (temperature, rain, shade, etc)
7. GPS coordinates of study site

Forensic Entomology, Ecology, Period of Insect Activity

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