



Pathology/Biology Section - 2014

G62 Forensic Entomology at the Harris County Institute of Forensic Sciences

Michelle R. Sanford, PhD, 1885 Old Spanish Trail, Harris County Institute of Forensic Sciences, Houston, TX 77054*

After attending this presentation, attendees will have an appreciation for how useful forensic entomology can be in death investigations, from the routine to the unusual, and how it has been implemented in a busy medical examiner's office.

This presentation will impact the forensic science community by illustrating the utility of insects and of full-time forensic entomology staff in death investigations.

The Harris County Institute of Forensic Sciences has hired the first full-time forensic entomologist within a medical examiner's office in the United States. This position has created the opportunity to have unprecedented access to entomology during death investigations and the ability to make it a regular part of the investigation process. Forensic entomology has largely been a consultant/academic pursuit, but this position provides the opportunity to work closely with forensic death investigators, crime scene investigators, and forensic pathologists to bridge the academic and applied aspects of the science.

The implementation of forensic entomology services has opened up the application of entomological interpretation to any case where decomposition and/or insects are present. From January 14, 2013 through July 29, 2013, there were 37 entomology cases covering natural, accidental, and homicide classified deaths. Of these cases, 20 were scene investigations and 17 collections of insects were made during autopsy. In cases involving insects, 68.4% of the cases were from indoor scenes and 31.6% from outdoor scenes. This large number of indoor scenes has revealed new challenges to the way that entomological specimens are collected and how temperature data are evaluated and collected inside a structure.

As the database of insects associated with human deaths is being built in Harris County, Texas, several trends have become apparent. Flesh flies (*Sarcophagidae*) and scuttle flies (*Phoridae*) predominate in indoor scenes, with moderate decomposition. While outdoors, the blow flies (*Calliphoridae*) are the most numerous as are the predatory clown (*Histeridae*) and rove (*Staphylinidae*) beetles. Carpet beetles (*Dermestidae*) can be found both indoors and outdoors. The diversity of insects collected from these cases has revealed that there are many species that have the potential to be useful in applying forensic entomology to death investigations, but the tools are lacking for reliable species identification and/or temperature-based development data sets.

The close association between death investigations and forensic entomology has highlighted several areas that challenge current practices and opens the door to exploring new methods in the medical examiner setting. This information will be used to refine our methods and best practices for forensic entomology and enhance our understanding of the ecological processes underlying decomposition and insects.

Insects, Death Investigations, Forensic Entomology