

## FORENSIC ENTOMOLOGY: INSECTS IN LEGAL INVESTIGATIONS

By

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Although the use of insects in legal investigations has been documented in China since the 13<sup>th</sup> century, the field of science commonly called 'forensic entomology' has been largely ignored in the United States. However, qualified entomologists are now being called upon with increasing frequency as part of medical/legal investigation teams. Insect evidence can provide an estimate of the postmortem interval as well as yield information concerning the possible treatment (i.e. movement) of a body after death. Insect growth, behavioral patterns, and location on human remains can indicate trauma sites. Both bone and soft tissue around areas of insect infestation should be examined thoroughly for more definitive evidence of trauma. Additional information can be gained from toxicological analyses performed on carrion-feeding insects which can yield evidence as to the presence of drugs or toxins with the body in cases where human tissue is no longer suitable for analysis.

The experienced forensic entomologist can also determine if insects present on the body are consistent with the natural fauna expected to inhabit the death scene. Insect evidence can provide information as to possible movement of the body between geographic areas. Different insect species can occur between open sunlit fields, woodlands, and indoor environments. Insect activity can even yield clues as to the possible wrapping of bodies in materials (such as rugs and carpets) for concealment or transport to the site of body recovery. In some cases, insect succession patterns can also indicate if the body was frozen or refrigerated prior to disposal in another location.

Although some investigators assume that insects only colonize remains found in outdoor situations, many insect species prefer to colonize remains found indoors. Under the proper conditions, adult insects readily gain access to the interiors of houses and automobiles despite the fact that doors and windows may appear to be tightly sealed. In Florida, with our high temperatures and humidity, weather conditions are usually very favorable for insect activity throughout the year. During our summer months adult insects have been recorded to arrive and colonize remains in as little as ten minutes after death. Once adult insects arrive at a carcass, they immediately begin to deposit their eggs or young. Entomologists can utilize the succession of insect species and the growth rate of developing larvae to estimate the postmortem interval in criminal investigations.

The ability of an entomologist to interpret this information depends largely (in most cases entirely) on the quality and thoroughness of the information gathered when investigators arrive at the death scene. Upon arrival at the scene, adult and larval insects must be collected and properly preserved. Ambient air temperature, the temperature of the developing maggots, and the surface temperature of the body should be recorded. Additionally, a representative sample of the various insect larvae found on the body and its surroundings must be collected and maintained alive for immediate shipment to an entomologist.

Most crime scene investigators have no specialized entomological training and the result is that valuable evidence may be overlooked, ignored, or mishandled. As a step towards the education and training of investigators in the recovery of entomological evidence, the Forensic Sciences Foundation has recently funded a grant for the development of a field reference tool and visual identification aid. The recipients of this grant, James L. Castner, Jason H. Byrd, and Jerry F. Butler of the University of Florida's Department of Entomology

and Nematology, have combined their expertise to develop the *Forensic Insect Field Identification Cards*. This work will help investigators to determine which insects are of forensic importance, while also providing basic collection and preservation information.

Each card set consists of fifty 3"x4" plastic coated cards with a color photograph of a forensically important insect on the front, and a brief statement about the biology of the insect on the back. Both scientific and accepted common names are provided whenever possible to improve communication between investigators and the cooperating entomologist. A life-sized silhouette of each insect located in the lower margin tells users at a glance the actual size of the insect.

Although the cards are not a comprehensive record of all insects that may be found associated with human remains, they will familiarize the user with the most common species found throughout the US and Canada. The result of this project is that a more informed selection and preservation of insect specimens from the death scene will be obtained, and a more accurate interpretation of insect evidence can be made for use in civil and criminal legal proceedings.

Questions concerning the use of insects in criminal and civil investigations may be directed to J. H. Byrd, Department of Entomology and Nematology, University of Florida. (352) 392-1901 ext. 205, or by e-mail: [jhby@gnv.ifas.ufl.edu](mailto:jhby@gnv.ifas.ufl.edu)

The Forensic Insect Filed Identification Cards may be ordered by contacting:

The Forensic Sciences Foundation

Phone: 719-636-1100

Fax: 719-636-1993

## T-SHIRTS.....GOLF SHIRTS.....BALL CAPS

Many of our members have expressed a desire for T-shirts in various colors and some have requested golf shirts and ball caps, all with our new logo on them. Also, with the upcoming joint conference with the Georgia Division, we have designed a logo to mark the occasion on a special edition T-shirt.

These items will be displayed and sold in Greensboro, NC at the upcoming IAI Conference in July as well as at our own 37th Annual Florida/Georgia Training Seminar in Panama City Beach, FL in October.

The choices are as follows:

### **FDIAI T-SHIRTS (\$10)**

Natural, stone green and blue teal  
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### **FDIAI BALL CAPS (\$8)**

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If anyone would like to make a purchase before these events, you may contact Debi Fertgus at (work) 904-359-6782, (home) 904-292-2115, (fax) 904-359-6774, (E-mail) [Debi4470@aol.com](mailto:Debi4470@aol.com) or write to :

Debi Fertgus  
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Jacksonville, FL 32258-1305

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