



## Collection of Entomological Evidence at the Crime Scene

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### Collect Live and Preserved Samples:

- ❖ Be sure to collect representative samples of insect evidence as BOTH live and preserved samples
  - **Preserved samples** include specimens placed directly into 80% (or greater) ethyl alcohol
    - Fly eggs, larvae (maggots), pupae, newly emerged adults, etc.
    - Adult beetles, beetle larvae, ants, etc.
  - Adult flies collected using a sweep net can be: 1) placed directly into 80% ethyl alcohol; 2) anesthetized using an insect kill jar and then placed into 80% ethyl alcohol; or 3) placed into labeled sandwich bags and kept frozen until delivery of evidence to Dr. Watson.
  - Collect **live specimens** of fly eggs, larvae, and pupae from the same areas as the preserved samples
    - Place approx. 50-75 larvae of representative sizes on a food medium (raw hamburger, beef liver) and wrap loosely in aluminum foil. Place the raw meat and larvae into a rearing container with ½ to 1" of vermiculite.
    - BE AWARE of the potential of placing too many eggs or young larvae into a single container. If so, simply separated the live larvae into additional containers, label and feed as specified.
    - Be sure that the container lid is ventilated with very small holes to avoid escaping larvae.
    - Be sure to collect the LARGEST fly larvae present (or most mature larvae).
    - Be sure to look for presence of fly pupae. Place pupae in a ventilated rearing container with vermiculite (no raw meat needed).

### Look for ALL Life Stages for the Common Necrophilous Fly Species:

- ❖ Look for presence of blow flies (Calliphoridae), muscid flies (Muscidae), flesh flies (Sarcophagidae), etc. at the crime scene
  - Natural openings and/or bodily wounds, within folds of clothing, at the body/ground interface, etc.
  - Migrating fly larvae generally move in a southerly direction (each situation varies).
  - Pupae located within clothing, adjacent to body, and within a few meters away from the body.
  - Be aware to look for empty pupal cases and/or newly emerged blow flies (indicating completion of one generation at the crime scene).

### Look for ALL Insects Present at the Crime Scene:

- ❖ Predatory and necrophagous beetles (adults and immatures), later arriving fly species, etc. provide additional succession data for the estimations of PMI.
  - Types and species of insects associated with a crime scene will vary throughout decomposition (i.e., different stages of decay, availability of habitat and food resources, etc. will affect the diversity of insects present at the crime scene at a given time).

- ❖ Keep in mind that earth worms, pill bugs, spiders, etc. likely will not contribute to PMI estimations; however, collecting such specimens can not harm the investigation.

#### Document Pertinent Information About the Crime Scene:

- ❖ Entomological analyses are dependent on ambient temperature and micro-habitat associated with the corpse; thus, **always record the temperature at the crime scene, body/ground interface, maggot mass, etc.**
- ❖ **Thorough crime scene photographs** provide additional information potentially overlooked during collection of insect samples
- ❖ Furthermore, additional background information, crime scene and autopsy reports, etc. provide valuable information that may contribute to the final entomological analyses.

#### Suggested Items for a Forensic Entomology Kit:

- ❖ Tackle box
- ❖ Larval forceps (thin and wide tip forceps)
- ❖ Glass vials (20 ml or larger)
- ❖ Ethyl alcohol (80% or higher concentration)
- ❖ Collapsible sweep net
- ❖ Sandwich bags and twist-ties
- ❖ Rearing/storage containers for live specimens (such as 16 oz plastic cups)
- ❖ Small bag of vermiculite
- ❖ Collecting pan (shoe box or anything similar to sift ground samples)
- ❖ Disposable gloves
- ❖ Thermometer
- ❖ Small pieces of paper (alcohol labels)
- ❖ Pencils and permanent pens
  - **Labels placed in alcohol vials must be written in pencil or alcohol proof pens** such as Micron Pigma™
  - Permanent pens for writing on sandwich bags, whirl-paks, etc.

#### Additional Suggested Items:

- ❖ Sampling manual and/or insect identification flip cards
- ❖ 9 oz kill jar (to be 'charged' with ethyl acetate)
- ❖ Whirl-pak® bags
- ❖ Label tape or adhesive labels for vials
- ❖ Ethyl acetate
- ❖ Larval fixative (such as KAAD, etc.)
- ❖ Cotton balls (moistened cotton will reduce dessication of live larvae)
- ❖ Squares of aluminum foil (for transporting live larvae w/ food source)

*Many of the above items can be purchased from BioQuip® Products ([www.bioquip.com](http://www.bioquip.com))*

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