Forensic Entomology
An Introduction to Forensic Entomology
Forensic Entomology Definition

• The use of insects and related arthropods to assist in legal investigations, particularly to be used in a court of law
Insects vs. Related Arthropods

- Insects
- Many Others
  - Crustacea
  - Myriapoda
    - Chelicerata
    - Trilobites
- Mandibulata

ARTHROPODA
History of Forensic Entomology

• First known record of insects used to solve crimes was in China – 1235 AD
  – Tsung Tsu: more insects in summer, bodies decompose faster
Spontaneous Generation

• Prior to 1668 it was believed that maggots came from rotting meat
Francesco Redi’s Experiment - 1668

- Flask unsealed
- Flask sealed
- Flask covered with gauze
Redi’s Unexpected Results

• Redi also observed 4 different fly species that came to the meat – starting studies on insect behavior
Bergeret Case – 1855 France

• 1st Western case – used insect succession
  – Succession is the predictable colonization of a body over time
• Child’s body found behind home’s mantle
  – Found flesh flies and mites
  – Home had previous owners

Question: What is the time of death?
  i.e. The Postmortem Interval (PMI)
  - time from death to corpse discovery
Bergert Case – 1855 France

• Insects told him the body was more than 1 yr old
• Not all of his conclusions about insect behavior and life-cycles were accurate
Dr. Ruxton Case – 1935 Scotland
“Devil’s Beef Tub”

• More than 70 body parts were found in a river in Edinburgh, Scotland

Question: When were they dumped there?
Dr. Ruxton Case – 1935 Scotland

- 1\textsuperscript{st} time employed insect development to estimate PMI
- Found maggots on body parts
  - Oldest maggots were 12-14 days old
- Body parts were determined to be from Isabella Ruxton – wife of a local physician
- Dr. Ruxton was seen near the river within that timeframe and found guilty
Scientific Contributions: Myiasis

- Myiasis – infestation of the body of a live mammal by fly larvae (maggots) - INCLUDING HUMANS
Scientific Contributions: Maggot Therapy

• Put maggots on wounds to heal
• Maggots eat bacteria and secrete an enzyme that helps new cell growth
Scientific Contributions: Maggot Therapy

• Maggot development studies intended for physicians are now used to assist with death investigations

*1940s – 1st antibiotics on the market did away with maggot therapy
Next Steps...

• Finish **On Maggots and Murder** article and answer questions (blue sheet)

• Read and outline **The Use of Insects in Forensic Investigations**