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Popular Article

## Blow Fly- A Indicator Insect in Forensic Entomology for Criminal Investigation

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### *Abstract*

The study of insect-arthropods in criminal investigations is known as forensic entomology. The decomposing body serves as food for a variety of insects. But among all of them, blow-flies and beetles are the most prevalent. Within minutes, blowflies in particular can identify the presence of dead stuff. Insects are drawn to the decaying carcass from the beginning and may lay their eggs there. Forensic scientists can estimate the post-mortem index, any changes in the corpse's posture, and the cause of death by examining the population of insects and their larval stages.

**Keywords:** Forensic, Blow-flies, Post-mortem, Criminal

### **Introduction**

The study of using insects and other arthropods in criminal investigations is known as forensic entomology (Catts and Goff, 1992). A decaying vertebrate carcass or carrion contains insects or arthropods (Amendt et al., 2004). These insect colonisers can be used to determine the reason and method of death, movement of the body, association of suspects at the death site, and time interval between death and corpse discovery- a measurement known as the postmortem index, or PMI (Sukontason et al., 2007). The majority of the decomposition of the body is caused by fly larvae, commonly referred to as maggots. Beetles, on the other hand, feed after the corpse has dried out. Examining the blowfly life cycle within a deceased body might be one of the most important hints for forensic investigators when the body has been dead for an extended period of time. The corpse is soon discovered by the flies, and the time of death may be determined by observing their developmental stages and the surrounding temperature. The days are calculated



backwards from the point at which the flies are developing inside the body (Bansode, 2016). Entomologists can easily determine the time of death by using blow flies as a tool. Now let's examine the many phases of the blowfly's development within the corpse.

### **What are Blowflies?**

The blowflies, often known as scavenger flies, are members of the Calliphoridae family. Their look is akin to that of houseflies that are frequently encountered. Adult blowflies, on the other hand, are slightly larger, have a massive head, and protruding eyes. They can be blue, black, or green, and have a metallic look. These flies resemble house flies in practically every way, including how they eat and reproduce. Blowfly maggots are the larvae of the fly that resemble tiny, whitish worms. Instead of biting people, blowflies feed on rotting food, damp trash, decomposing waste, and leftover bits of meat. Their ideal growing conditions are warm, humid locations.

### **Life Cycle of Blow Fly**

Up to 150–200 eggs can be laid by female blowflies in a batch. It takes about a day for the complete process, from egg laying to hatching.

**Larva - First Phase:** The larvae enter the body and feed on bodily fluids. It takes about a day to finish this step.

**The second phase:** The larvae is when they go around looking like worms. It takes about a day to go from the first stage to this one.

**Larva - Third Phase:** At this stage, the larvae are significantly larger than before although they still move around in groups. It takes about two days to reach this pre-pupa stage.

**Pre-Pupa:** The pre-pupae relocate to a suitable pupation site, usually the earth, from the body they were feeding on. They now change into a pupa, and the transition from pre-pupa to pupa form takes around four days.

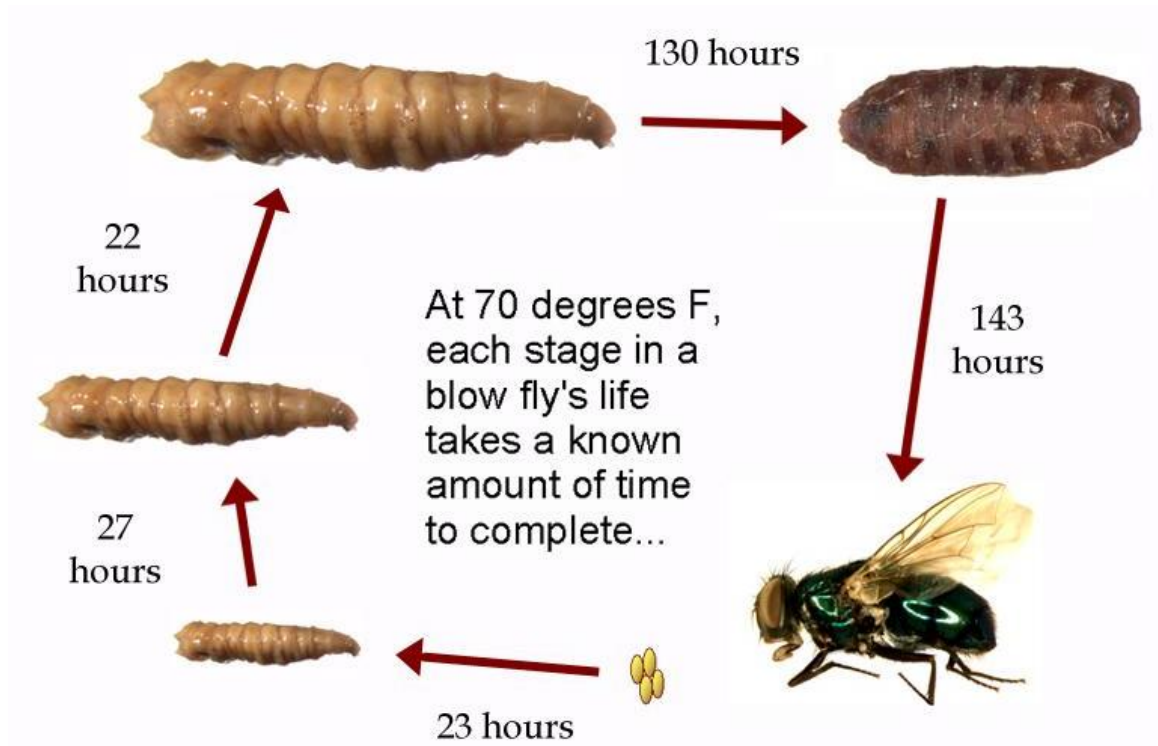
**Pupa:** The pupae remain at the location of pupation and develop into adult flies. It takes roughly ten days for a pupa to become an adult fly. They have not eaten since they moved to the pupation site till now.

**Adult Fly:** After emerging from the pupa, adult flies' mate, feed on the proteins in bodily fluids, and deposit their eggs on dead bodies. It takes a fly around two days to mature and lay eggs.

### **Physical Distinctive Features**

The larva stage is when flies feed primarily. The larva is roughly 2 mm long when it hatches and grows to be about 5 mm long before shedding its skin to enter the second stage. It grows to a length of approximately 10 mm before losing its skin to enter the third stage, when it grows to a length of approximately 15 mm to 20 mm before entering the pre-pupa stage.





(Source- visibleproofs%2Fgalleries%2Ftechnologies%2Fblowfly)

The general appearance of fly larvae at different stages does not differ much. To distinguish between larvae of different stages, one might look at the anatomy of the posterior spiracles, which the larva uses for breathing.



**Adult Blow Fly**



**Blow Fly laying eggs on dead**

(Source: Farm advisory service Scotland)

**Eating Habits**

A fly larva is a voracious eater. It feeds on the shredded, decomposing flesh of the corpse using its mouth hooks on the front end. The chamber in the back contains the anus and posterior spiracles. The larva uses these spiracles to help with breathing. Additionally, the spiracles' position aids in its breathing, allowing it to feed all day.



The larva's segmented and muscular structure makes it easier for it to turn on the corpse. Additionally, it is assisted in secreting digesting enzymes and dispersing putrefying bacteria to create a soupy environment by the existence of a simple intestine and two enormous salivary glands.

### **Intense Digestive Activities**

The maggot or larva prowls in large groups. It produces a great deal of heat due to its vigorous digestion processes. It is possible for the body near the mass to get heated to a high temperature up to 53 degrees Celsius at times.

### **References**

- Amendt, J., Krettek, R. and Zehner, R., 2004. Forensic entomology. *Naturwissenschaften*, 91, pp.51-65.
- Bansode, S.A., More, V.R. and Zambare, S.P., 2016. Effect of different constant temperature on the life cycle of a fly of forensic importance *Lucilia cuprina*. *Entomol. Ornithol. Herpetol*, 5(3), pp.2161-0983.
- Catts, E.P. and Goff, M.L., 1992. Forensic entomology in criminal investigations. *Annual review of Entomology*, 37(1), pp.253-272.
- Sukontason, K., Narongchai, P., Kanchai, C., Vichairat, K., Sribanditmongkol, P., Bhoopat, T., Kurahashi, H., Chockjamsai, M., Piangjai, S., Bunchu, N. and Vongvivach, S., 2007. Forensic entomology cases in Thailand: a review of cases from 2000 to 2006. *Parasitology research*, 101, pp.1417-1423.

